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Elodie A. S. Besnier

Equity and Child Health

Addressing Health Inequalities and Improving Child Health Through a Public Health Approach

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of Philosophiae Doctor
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List of Acronyms

AMSTAR 2	Assessment of Multiple Systematic Reviews tool
APRM	African Peer Review Mechanism
CGP	Child Grants Program
CHAIN	Centre for Global Health Inequalities Research at the Norwegian University of Science and Technology
COVID-19	Coronavirus disease 2019
CT	cash transfer
DALYs	disability-adjusted life years
DARE	Database of Abstracts of Reviews of Effects
DDD	Triple differences model
DHS	Demographic Health Survey
E4HE Lesotho	Empowerment for Health Equity–Lesotho project
FAO	Food and Agriculture Organization
GAAP	Gender, Assets, and Agricultural Programs
GBD	Global Burden of Disease
GEH	Center on Gender Health and Equity
HIC	High-Income Country
IHME	Institute for Health Metrics and Evaluation
ILO	International Labor Organization
IOM	International Organization for Migration
LMIC	low- and middle-income country
MDG	Millennium Development Goal
NTNU	Norwegian University of Science and Technology
OECD	Organisation for Economic Co-operation and Development
OVC	Orphans and Vulnerable Children
PICOS	[in a systematic review] Patient or Population, type of Interventions (and Comparisons if there is any), the type of Outcomes, and Study design(s) of interest.
SDG	Sustainable Development Goal

SPIAC-B	Social Protection Inter-agency Cooperation Board
UN	United Nations
UNC	University of North Carolina at Chapel Hill
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNICEF ESARO	United Nations Children's Fund Eastern and Southern African Regional Office
UNDESA	United Nations Department of Economic and Social Affairs
V-Dem	Varieties of Democracy project
WHO	World Health Organization
WHO EURO	World Health Organization's Regional Office for Europe
WPEI	Women's Political Empowerment Index

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Health equity and public health have never been timelier as research topics than in the past few years of the coronavirus disease 2019 (COVID-19) pandemic. The past four years have brought the usual ups and downs associated with any PhD project, and the pandemic created many additional challenges. But it also served as a reminder of the importance of research to inform fair and effective policy responses. Besides the professional and academic drivers of this work, the thesis presented in these pages would not have been possible without the support of my family, friends, and colleagues in Norway and abroad.

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SUMMARY

The first few years of a child's life are essential not only to their current health and development but also to their future health and well-being as adults—and even to the health of the next generation. Tremendous progress has been made in the past few decades in improving child health globally, particularly in low- and middle-income countries (LMICs). However, major threats to the health and survival of preschool children in LMICs remain, notably the threat of infectious diseases. Additionally, inequalities persist within countries, placing children's current and future health at a disadvantage.

The focus on child health equity in the global agenda has led to a growing body of evidence in the field of public health on how best to promote health equity for these children. The concept of empowerment, in particular, has come to be considered a key component of health promotion and addressing the determinants of health. Because women bear a disproportionate burden of childcare, women's empowerment has been explored in the development agenda as a potential lever to improve child well-being. However, there is a lack of solid evidence regarding how various interventions and empowerment approaches can reduce child health disparities and improve child health at the community or population level. Hence, this thesis aims to provide a better understanding of whether and how an empowerment-based approach to holistic public health interventions (defined broadly) can further improve health and reduce health inequalities in children. To address this aim, this thesis relies particularly on a case study of a cash transfer (CT) program in Lesotho. Indeed, the approaches and goals of selected social protection programs such as CTs share many similarities with those of public health.

The first question that I aim to answer with this research is which public health interventions are effective in reducing morbidity, mortality, and health inequalities from infectious diseases among children in LMICs. The second question is how empowerment strategies affect health and burden of infectious diseases among preschool children living in LMICs. The third question is how empowerment strategies have been operationalized into public health interventions. Finally, my fourth research question focuses on how empowerment strategies affect health inequalities and child health in LMICs and whether they can provide a potential double gain of such strategies for child health at the population level and for health equity among children. These four questions are explored in five papers.

The first paper is an umbrella review of academic and grey literature, which provides an overview of the evidence concerning public health interventions that reduce morbidity, mortality, and health inequalities in children who live in LMICs and are under 5 years of age. The second paper explores the relationship between one type of women's empowerment (political empowerment) and selected child health outcomes using a fixed-effects regression model on global time series data sets from the V-Dem and Global Burden of Disease projects. These two papers informed the choice of CTs as a mixed method case study (Paper 3 to 5) as part of the Empowerment for Health Equity–Lesotho project (E4HE Lesotho). Given the complexity of the concepts of interest, Papers 3 and 4 examine, via the thematic analysis of program documents and key informant interviews with program stakeholders, how the concepts of child health equity and economic empowerment (especially for women) have been understood and operationalized in Lesotho's Child Grants Program (CGP). The findings in these papers informed the hypothesis and the design of the model used in Paper 5, which applies a triple difference model on the CGP evaluation survey data to assess the impact of the CGP on health disparities in children in the targeted communities.

The findings of this thesis support some of the theoretical pathways and expected effects of a health promotive approach to social protection on the promotion of child health equity. This thesis finds that empowerment strategies in public health–based interventions can reduce selected child health disparities and improve child health outcomes at the population level in LMICs. However, these effects are complex and vary according to (a) how we define and operationalize empowerment, women's empowerment and health equity, (b) the child heath outcome we consider and (c) the context or population where this intervention is implemented. For example, the case study of Lesotho's CGP shows how empowerment, when primarily defined as access to economic resources in a CT program, can improve the health of disadvantaged children and reduce the health gaps among specific groups in the community. However, in the Lesotho context, the effects of other definitions of empowerment or women's empowerment on child health disparities or child health at community level were more disputable.

This thesis makes two main contributions to health equity research and practice. The first is to the field of health equity research. To address the gaps previously identified in this field, I follow a comprehensive definition of health equity that goes beyond the exclusive focus on the most-disadvantaged groups, which has been traditionally adopted when studying health equity in LMICs. This approach clarifies the effects and the mechanisms of action of selected interventions and empowerment strategies not only on child health inequalities but also on child health in the wider community or population in LMICs. The second contribution of this thesis is to the field of social protection, particularly CT. Examination of the E4HE Lesotho project allows this thesis to provide a concrete case study of how empowerment strategies and child health equity are integrated into a specific program.

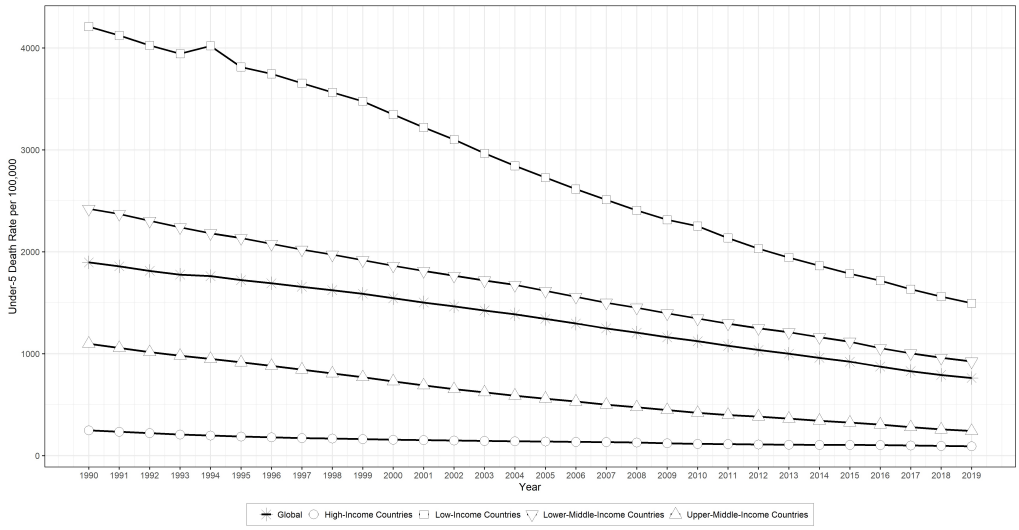
1. INTRODUCTION

1.1. GLOBAL PROGRESS IN CHILD HEALTH AND PERSISTING INEQUALITIES

At the global level, population health has made tremendous progress. According to the latest estimates from the Global Burden of Disease (GBD) Study by the Institute for Health Metrics and Evaluation (IHME), global life expectancy at birth gained 22.4 years between 1950 and 2019 (Wang et al., 2020). Mortality has been decreasing in all age groups, especially among children under 5 years of age (hereafter referred to as "under-5"; see Figure 1) (Dicker et al., 2018).

Figure 1

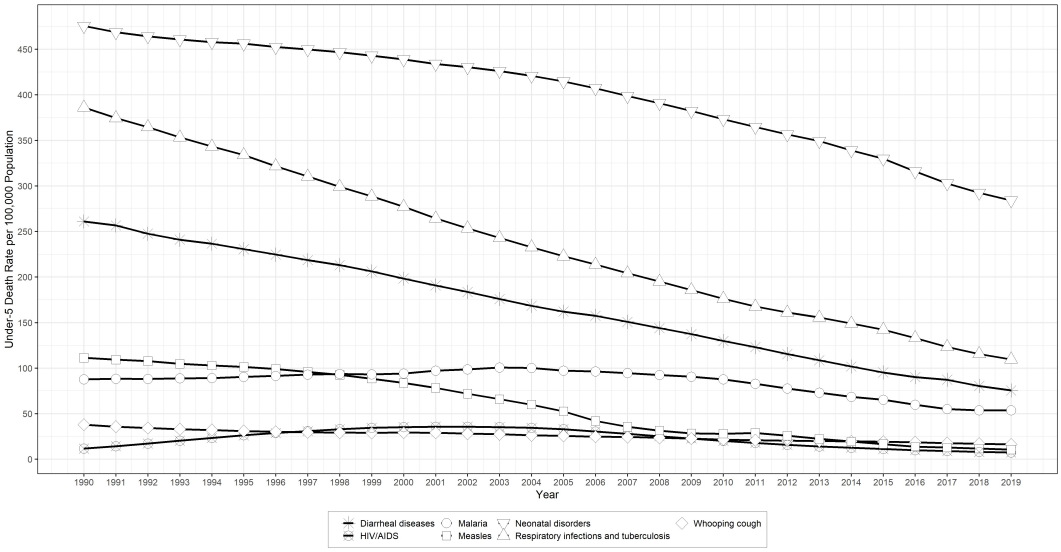
Child Mortality Rate by Country Income Group, 1990–2019



Between 1950 and 2019, the number of deaths among under-5 children dropped from 19.9 million to 5 million, with Sub-Saharan Africa—the world's region carrying the largest burden of under-5 mortality—contributing most to the decline since 2001 (Wang et al., 2020). In the last thirty years, the reduction of infectious diseases has been an important contributor to the reduction of under-5 mortality. For example, measles and HIV/AIDS were among the causes of death that saw the greatest reduction between 2000 and 2019 (see Figure 2) (Paulson et al., 2021). Other indicators of ill health, such as disability-adjusted life years (DALYs) that include both mortality and morbidity, also show downward trends for children in the last thirty years, predominantly driven by the decline of selected infectious diseases (Vos et al., 2020).

Figure 2

Child Mortality Rate by Main Communicable Disease, 1990–2019



Still, these trends remain insufficient to achieve the Sustainable Development Goals' (SDG) target of reducing under-5 mortality to a level below 25 per 1,000 live births (Paulson et al., 2021; UN General Assembly, 2015). According to IHME's projections, the global under-5 mortality rate under current trends would remain above the SDG target, and 25% of countries would not achieve this goal. Despites the progress highlighted above, infectious diseases remain a major contributor to child death globally and in low- and middle-income countries (LMICs) in particular (Paulson et al., 2021). In 2019, lower respiratory infections, diarrheal diseases, and malaria were among the five leading causes of death in under-5 globally (Paulson et al., 2021). Infectious diseases also accounted for over half of under-5 deaths and DALYs in low-income countries that year (IHME, 2020a). Finally, the progress made in reducing child mortality has been uneven among age groups, with neonatal mortality (deaths within the first 28 days of life) still lagging (Paulson et al., 2021).

Within countries, inequalities in child health have been identified across many factors (such as socioeconomic status, gender, ethnicity or place of residence). According to a recent global meta-analysis, completing a secondary education reduces under-5 mortality by 31% for mothers and 17.3% for fathers compared with parents who have no education (Balaj et al., 2021). Survey data in LMICs between 2005 and 2013 show that under-5 mortality is 1.7 times higher among rural children than among urban ones, 1.9 times higher among children from the poorest households than the wealthiest, and 2.8 times higher among children whose mothers have no formal education than among those whose mothers have at least a secondary education (United Nations Department of Economic and Social Affairs [UNDESA], 2015).

1.2. Early Years as a Key Lever for Health and Equity

The first years of a child's life are essential not only to their current health and development but also to their future health and well-being as adults—and even to the health of the next generation. Longitudinal studies have shown how health and development outcomes in the first years of life are closely related to outcomes later in life (Field, 2010; Mustard, 2002). According to U.S. research by Heckman (2008) and Heckman et al. (2006), investment in the first three years of life reduces inequalities later in life and provides the highest rate of return on investment in human capital than does investment at any other age. Studies in several European countries yielded similar findings (Field, 2010; Mustard, 2002). This may be explained by two intertwined mechanisms: life course effects and future determinants of health. "Life course effects" refers to how one's health is affected by experience and circumstances from the womb onward (Kawachi et al., 2002; Mustard, 2002). For example, neuroscience studies in the United States have found that brain development can be affected by exposure to toxic stress in utero or as a young child (i.e., stress caused by the social or environmental circumstances of pregnant women and children). These neurological changes can lead to physical impacts and behavior-related (higher risk of health-threatening behaviors) impacts in adulthood (Shonkoff et al., 2012). "Future determinants of health" refers to the link between child health and development, on the one hand, and educational achievements and job prospects, on the other (Diderichsen et al., 2012; Mustard, 2002; Wadsworth & Butterworth, 2005). Research from high-income and middle-income countries shows that investment in early childhood development programs boost future income (Britto, 2017; van der Gaag, 2002). In turn, this affects the socioeconomic and environmental conditions of these children's children, either breaking or perpetuating intergenerational cycles of poverty and inequality (Britto, 2017).

Children are particularly vulnerable in these early years because they are dependent on their caregivers for their health and development (Roelen, 2021; Sabates-Wheeler & Roelen, 2011). Hence, the health circumstances of caregivers—as well as their social, economic, political, environmental, and cultural circumstances—are essential determinants of children's health (Black et al., 2017; Powers & Faden, 2006). The overwhelming majority of child care remains women's responsibility; therefore, gender (in)equality and women's and girls' empowerment are key determinants of child health (Black et al., 2017; Cookson, 2018; Nussbaum, 2000; G. Sen & Östlin, 2008; L. C. Smith et al., 2003).

1.3. Research Gaps in Addressing Child Health Equity

Many gaps remain in identifying effective interventions that can reduce health inequalities in the early years (Saran et al., 2020; Victora et al., 2003). Although research in LMICs is on the rise, evidence is still disproportionally drawn from high-income contexts (Blas & Kurup, 2010; Bosch-Capblanch et al., 2017). The evidence that *has* been drawn from LMICs primarily focuses on a specific approach to health inequalities: targeted interventions in disadvantaged or vulnerable populations (Bosch-Capblanch et al., 2017; Victora et al., 2003; Welch et al., 2022). Therefore, there is a lack of solid evidence not only on other approaches to reducing child health inequalities but also on the potential community- or population-wide impact of targeted interventions.

One strategy to reduce health inequalities that has been promoted for more than two decades is changing power relations (Commission on Social Determinants of Health, 2008). However, evidence gaps remain regarding the effectiveness of specific empowering strategies on health inequalities, especially in the field of social protection (Owusu-Addo et al., 2018). Given the disproportionate childcare burden placed on women, women's empowerment, in particular, has been promoted in

social protection strategies as a way to promote child well-being and improve the health of the most disadvantaged (Holmes & Jones, 2010). However, the evidence supporting this assumption is mixed (Molyneux et al., 2016; Walque, 2017; Yoong et al., 2012).

1.4. Aim, Research Questions and Hypotheses

This thesis aims to provide a better understanding of whether and how an empowerment-based approach to holistic public health interventions—defined broadly—can further improve health and reduce health inequalities among children. Given the structure of the burden of diseases among children in LMICs, this thesis focuses particularly on infectious diseases. To address this overall aim, this thesis answers the following research questions (explored in five papers):

- Which public health interventions are effective in reducing morbidity, mortality, and health inequalities from infectious diseases among children in LMICs? [Papers 1 and 4]

- How do empowerment strategies affect child health and the burden of infectious diseases among children in LMICs? [Papers 2 and 3]

- How have empowerment strategies been operationalized into public health interventions? [Papers 3, 4 and 5]

- What have the effects of empowerment strategies been on health inequalities and child health in LMICs? [Papers 3,4 and 5]

As the theoretical framework developed for this thesis will illustrate, the distribution of power in a society is a structural determinant of health, which affects the distribution of health outcomes in the population by affecting determinants of health at the community, household, and individual levels (e.g., socioeconomic context and positions, material and psychological circumstances). Young children are dependent on their caregivers for many of their needs, so the status and circumstances of these caregivers are key determinants of child health and health inequalities. Hence, by empowering children's caregivers (especially women) and their communities, public health interventions that encompass empowering strategies are expected to affect several determinants of health, leading to a double gain for child health: improving child health outcomes at the population level and reducing health inequalities within the population of interest. Therefore, in exploring these questions, this thesis will test the following hypothesis:
The interventions that successfully address health inequalities and are effective at the population level are those that include a wide empowerment strategy targeting the multiple vulnerabilities that children and their households face in their communities.

Social protection programs, such as CTs, have become increasingly popular tools in LMICs to improve child well-being and empowering vulnerable groups (Bastagli et al., 2016; Beegle et al., 2018). Because of their approach and their goals, such programs can be viewed as public health interventions—or, at least, as sharing a public health approach, as I explain in the upcoming chapters. Hence, this thesis relies in part on a case study of a Lesotho CT called the Child Grants Program (CGP) to answer these questions.

1.5. Structure of the Thesis

This thesis is developed in seven chapters, followed by the list of references, the five papers that are part of this thesis, and annexes. In Chapter 2, I provide background information on the role of health equity and social protection on the global agenda and in Lesotho. Next, I present the theoretical and conceptual material that supports this thesis. I then provide an overview of the data sources and methods used in the different articles and present the ethical considerations raised by this research. The sixth chapter is a summary of the five papers that this thesis comprises. The first paper provides an overview of the evidence concerning public health interventions that reduce morbidity, mortality, and health inequalities in under-5 children living in LMICs. The second paper explores the relationship between one type of women's empowerment (political empowerment) and selected child health outcomes: child mortality, nutrition, and immunization (as a proxy for protection against key infectious diseases). The findings of these two papers informed the choice of CTs as a case study (Papers 3 to 5) as part of the Empowerment for Health Equity–Lesotho project (E4HE Lesotho). Given the complexity of the concepts of interest, Papers 3 and 4 examine how the concepts of health equity and economic empowerment (especially women's) have been understood and operationalized in the CGP. These findings informed the hypotheses and the design of the model used in Paper 5, which assesses the impact of the CGP on health disparities in children in the targeted communities. Building on Paper 5, I also present an analysis of the potential child health spillover effects of the CGP in targeted communities. In the last chapter, I present and reflect on the findings of this thesis.

1.6. Contribution of This Research Project

The contribution of this thesis is twofold. First, this project adopts a comprehensive approach to health equity, going beyond the sole focus on a single vulnerable group that has been typically adopted in health equity research conducted in LMICs. Through the review and case study, this project is intended to provide better understanding of the effects and mechanisms of action of various types of interventions—particularly of empowerment strategies—on child health inequalities in LMICs. Part of this approach is to explore the link between this inequality effect and the implication for the wider community's or population's health. Second, building on the gap identified in the first paper of this thesis, this project contributes to the global evidence base on the effects and implications of a particular intervention—CTs—or promoting health equity in children in LMICs. Through a case study of Lesotho's CGP, this thesis provides a concrete example of how empowerment strategies and health equity are implemented in a specific intervention. It also explores some of the ways in which these elements can affect CT programs' outcomes.

2. Background

Concerns over health equity, and over children of the working class in particular, have been present in public health debates since the birth of epidemiology as a discipline in the 19th century (Krieger, 2011). However, health equity and child health have become more prominent on the global agenda in the second half of the 20th century. In 1946, the World Health Organization's (WHO's) constitution acknowledged both the right to health for all and the importance of ensuring a healthy start in life (WHO, 1946). These principles were further reinforced in the Alma Ata Declaration on Primary Health Care, which made child health services a key primary healthcare component and called for immediate action in addressing health inequality, thus starting the Health for All movement (Solar &

Irwin, 2010; WHO, 1978). Children's equal right to health was also reaffirmed in the 1989 Convention on the Rights of the Child, which highlights States' responsibilities for child health services and for a number of determinants of child health, such as food, clean water, and a clean environment (United Nations [UN], 1989). At the same time, a growing number of studies highlighted the impact of socioeconomic conditions on health, moving health equity higher on national agendas (Solar & Irwin, 2010). These trends culminated in the adoption of the 2000 United Nations (UN) Millennium Declaration, launching the Millennium Development Goals (MDGs) and its subsequent 2030 agenda for sustainable development, which introduced the SDGs (UN General Assembly, 2015; UN General Assembly, 2000). The Millennium Declaration included equality and equity as key principles, with a focus on children. This focus was reflected in MDG 4, which was dedicated to reducing child mortality (UN General Assembly, 2000). In the SDGs, reducing inequalities and promoting good health at all ages became individual goals, although—as the declaration's text shows—equity is reflected as an overarching principle (UN General Assembly, 2015).

In the health sector, building on the landmark report from the Commission on Social Determinants of Health (2008), WHO adopted Resolution WHA62.14 ("Reducing health inequities through action on the social determinants of health"), which called on members states to "close the gap in a generation" (World Health Assembly, 2009, p. 3). In 2011, governments reaffirmed their commitment to "develop and support policies, strategies, programs and action plans, which address social determinants of health"(WHO, 2011, p. 2) as part of the Rio Political Declaration on Social Determinants of Health. This commitment and focus on health equity through a multisector approach addressing the wider determinants of health was renewed in 2021 at the World Health Assembly. In Resolution WHA74.16 ("Social determinants of health"), WHO and its member states are preparing to report in 2023 on the progress made on the social determinants of health in the last 15 years (World Health Assembly, 2021). As this resolution shows, scientific evidence is essential in allowing the global community and national governments to promote health equity for the first years of life.

The contribution of social protection to health equity was already acknowledged in the 2008 WHO report (Commission on Social Determinants of Health, 2008). In its 2012 Recommendation 202 on Social Protection Floors, the International Labor Organization (ILO) highlights the role of social protection in promoting equity and child health by identifying such "basic social security guarantees" as access to health care and the achievement of basic levels in several health determinants for all children (e.g., nutrition, education, essential services) (ILO, 2012). The SDG targets 1.3, 3.8, 5.4 and 10.4 further illustrate the contribution of social protection to several goals that either directly address health or are related to some of its determinants: ending poverty (SDG 1), achieving gender equality (SDG 5), promoting good health (SDG 3) and reducing inequalities (SDG 10) (UN General Assembly, 2015). The recent coronavirus disease 2019 (COVID-19) pandemic has illustrated once again the close ties among public health, health equity, and social protection. By threatening people's health, income, and employment, the pandemic has widened inequalities and revealed social protection gaps, especially among the most vulnerable populations like children. But social protection has also been an important tool for responding to the challenges of the pandemic and mitigating its impact on population health, health inequalities, and key determinants of health (ILO, 2021).

2.1. The Role of Cash Transfers in a Health Equity–Promoting Social Protection System

As part of the global effort to build social protection systems, CTs—noncontributory, regular transfers provided to households and individuals—have become increasingly popular in LMICs and particularly on the African continent. Between 2010 and 2016, the number of African countries with at least one unconditional CT program has doubled (Bastagli et al., 2016). CTs are the fastest-growing type of safety net program on the continent (Beegle et al., 2018). Such transfers are part of the African Union's Social Policy Framework for Africa (African Union Commission, 2008), which identifies benefits for children (including health care) as part of the essential social protection package for African countries. The Social Policy Framework for Africa also links social protection to both equitable access to health care and the reduction of inequalities both between and within countries of the region (African Union Commission, 2008).

Although primarily thought as a safety net for poor and vulnerable populations, CTs have been associated with wider, more structural impacts. These include improving the human capital and economic opportunities of beneficiaries, community-wide economic spillovers, economic growth, and state-building through the strengthening of the social contract and social cohesion (Beegle et al., 2018; Cookson, 2018; Molyneux et al., 2016; Omilola & Kaniki, 2014; United Nations Children's Fund [UNICEF] Eastern and Southern African Regional Office [UNICEF ESARO] & Transfer Project, 2015). Selected CT programs in Latin America and Africa have been associated with reduced income inequalities (Omilola & Kaniki, 2014). CTs have led to improved child health and development outcomes among beneficiaries in selected countries, including lower mortality and morbidity and improved nutritional outcomes, cognitive development, and access to child healthcare services, although the results are mixed (Bastagli et al., 2016; Beegle et al., 2018; UNICEF ESARO & Transfer Project, 2015; Walque, 2017). CTs have also been linked to improvement in many determinants of child health among beneficiaries, including a reduction of monetary poverty, improved food security in the household, and improved school enrollment (Bastagli et al., 2016; Lopez-Arana et al., 2016; Owusu-Addo et al., 2018; UNICEF ESARO & Transfer Project, 2015). Given women's roles in child care, some CTs have sought to improve gender equality and empower women and girls (Bastagli et al., 2016; Holmes & Jones, 2010; Yoong et al., 2012). Selected CTs have led to improvements in measures of empowerment among beneficiary women and girls, such as greater autonomy and influence over household decisions and greater bargaining power. However, the evidence for these outcomes is mixed and nuanced (Bastagli et al., 2016; Buller et al., 2018; Lopez-Arana et al., 2016; Owusu-Addo et al., 2018; Sabates-Wheeler & Roelen, 2011).

These findings support the hypothesis that, by addressing selected vulnerabilities in beneficiary children and their caregivers, CTs can contribute to promoting health equity. Evidence of CTs' effects on local economies would also suggest that CTs might have effects beyond the beneficiary group (Gupta et al., 2018; J. E. Taylor et al., 2016; Thome et al., 2016). However, strong variations exist according to individual CT program features and the outcomes used to measure impact (Bastagli et al., 2016). Additionally, CTs' effects on health inequalities at the community or population levels remain understudied (Owusu-Addo et al., 2018).

2.2. Social Protection and Child Health Equity: The Case of Lesotho

Lesotho's social protection programs, particularly its CGP, offer the opportunity to better understand the role of CTs in addressing health inequalities in young children and the role of empowerment in these processes. Indeed, as this section will describe, Lesotho has used social protection as a key strategy to address the many challenges and inequalities faced by Basotho children (Government of the Kingdom of Lesotho, 2018). A long-standing program focused on improving the health and well-being of children (Pellerano et al., 2014), the CGP offers a unique case study on whether and how CTs might health address child health inequalities.

2.2.1. A Challenging Context Exposing Children to Multiple Vulnerabilities and Inequalities

Lesotho is a landlocked country in South Africa. Economically, Lesotho is heavily dependent on its South African neighbor and has been regularly affected by the fluctuations of its economy and monetary policy (African Peer Review Mechanism [APRM], 2010; Government of the Kingdom of Lesotho, 2018; UN Lesotho, 2021). Because of limited employment opportunities in Lesotho, labor migration to neighboring countries has been a key source of revenue for the national economy and Basotho households (Ministry of Labour and Employment & International Organization for Migration [IOM], 2017). South Africa's decision to phase out foreign labor in the mines has had a tremendous effect on revenues from remittances, especially in rural areas, where 58% of the 2 million Basotho live (APRM, 2010; Ministry of Labour and Employment & IOM, 2017). These populations have primarily relied on subsistence farming, for which productivity has been affected by soil erosion and recurring extreme weather events (droughts, flooding) leading to persistent food insecurity (Government of the Kingdom of Lesotho, 2018; Shale, 2021). As employment opportunities in other sectors have not yet been able to compensate for the loss of revenues from remittances and farming, unemployment and underemployment remain high, especially among vulnerable populations, such as women and young people (Government of the Kingdom of Lesotho, 2018; Shale, 2021; UN Lesotho, 2021).

These economic challenges are coupled with political instability and conflicts. Since its independence in 1966, Lesotho experienced three coups d'état and 23 years of undemocratic rule before returning to a multiparty democracy in 1993 (APRM, 2010). After two decades of relative stability, Lesotho entered a new period of political instability in 2012, with none of the newly established coalition governments lasting more than two years (APRM, 2010; Shale, 2021). A lack of accountability and control mechanisms coupled with recurring conflicts between institutions and level of governments have also hampered government's normal operations (APRM, 2010).

These economic and political challenges have had an adverse impact on human development and the situation of Basotho children. The poverty rate has dropped by more than 7 percentage points since the CGP first started in 2009. But 50% of the population still lives under the national poverty line (Government of the Kingdom of Lesotho, 2018). According to the latest data on child multidimensional poverty in Lesotho from UNICEF, over 65% of children are multidimensionally poor, meaning that they do not have adequate access to goods and services considered essential to their development (Neubourg et al., 2013; UNICEF Lesotho, 2018). The burden of poverty is also unevenly distributed. UNICEF's multidimensional poverty rate rises to 72% in rural areas (compared with 43% in urban areas) and is more than 80% in the mountainous areas (UNICEF Lesotho, 2018). According to the latest Demographic Health Survey (DHS), over a third of Basotho children are stunted (Ministry of Health/Lesotho & ICF International, 2016). Almost 40% of households are food

insecure, a rate that rises to 70% in rural areas (Government of the Kingdom of Lesotho, 2018). One in 17 children dies before reaching 5 years of age. However, child mortality has declined from 115 per 1,000 live births when the CGP started in 2009 to 85 per 1,000 live births in 2014, when the latest DHS study took place (Government of the Kingdom of Lesotho, 2018; Ministry of Health/Lesotho & ICF International, 2016). Infectious diseases, such as lower respiratory infections, diarrheal diseases, and HIV/AIDS remain leading causes of child mortality (IHME, 2020a). With an estimated one-fourth of the adult population living with HIV, the HIV/AIDS epidemic has also had an indirect impact on children, contributing to orphanhood, poverty, and ill health (Government of the Kingdom of Lesotho, 2018; UNICEF Lesotho, 2018). In the years leading to the creation of the CGP, the HIV epidemic was a key factor in the rising child mortality rate (United Nations Population Fund [UNFPA], 2012). Although the number has been decreasing, Lesotho still had over 210,000 orphaned children as of 2016 as a result of the epidemic, migration, and other ill-health factors affecting caregivers (Government of the Kingdom of Lesotho, 2018; UNICEF Lesotho, 2011).

Gender is a crucial factor of vulnerability for Basotho children. As children, girls score better than boys in several key development indicators—including education and immunization (Ministry of Health/Lesotho & ICF International, 2016; UNICEF Lesotho, 2018). However, this advantage is lost in adulthood. Lesotho's governments have been committed to the removal of legal restrictions placed on women. Gender equality is to be mainstreamed across public policy, according to the latest National Strategic Development Plan (APRM, 2010; Government of the Kingdom of Lesotho, 2018). However, customary laws and patriarchal norms continue to affect women's economic opportunities and vulnerability (Government of the Kingdom of Lesotho, 2018; Organisation for Economic Co-operation and Development [OECD], 2019). For example, child protection, domestic violence, and inheritance disputes tend to be handled by traditional courts, where women's and girls' rights are less protected (because women are considered minors under customary law) (*SADC Gender Protocol 2015 Barometer*, 2015; OECD, 2019). The gender of the caregiver affects children's development and vulnerability. Because men traditionally carry the role of breadwinner for the household, Basotho children who have lost their fathers are more likely to be multidimensionally poor than those who have lost their mothers (UNICEF Lesotho, 2018). Gender inequalities have a direct impact on children living in female-headed households, as CGP data illustrates: a majority of the poor or vulnerable households targeted by the program were led by a woman (Pellerano et al., 2014). Women also tend to get lower wages than men (OECD, 2019). Women's protection from violence remains insufficient. Women are subjected to high rates of harassment in the workplace (OECD, 2019). Over 80% of them have experienced gender-based violence (UN Lesotho, 2021). Women's vulnerability is also reflected in the HIV burden that Basotho women bear. Overall, HIV prevalence is higher in women than in men, and it is particularly high in economic sectors where most workers are women (Government of the Kingdom of Lesotho, 2018). Because of women's traditional role as child caregivers and the growing number of female-headed households as a result of the HIV/AIDS epidemic and labor migration, the vulnerabilities and inequalities of women that are highlighted here directly affects their households in terms of access to resources, services, and opportunities.

2.2.2. A Commitment to Social Protection as a Response

In response to these challenges, Lesotho has made growing commitments to the development of a strong social protection system. With an annual ratio of social protection budget to Gross Domestic Product (GDP) systematically over 5% in the last five years, Lesotho's social protection budget is the largest as a percentage of GDP in the Southern African region (Government of the Kingdom of Lesotho, 2018; UNICEF Lesotho, 2020). Lesotho's social protection strategy has evolved from one

of preventing and mitigating vulnerabilities in key populations (including children) to a broader one that encompasses risk prevention, income enhancement, and a transformative dimension that addresses inequalities and social exclusion (Government of the Kingdom of Lesotho, 2002, 2012, 2014, 2018). As its Vision 2020 policy document illustrates, Lesotho has directly linked its investment in social protection to the development of its population's human capital and particularly, its health (Government of the Kingdom of Lesotho, 2002). CTs are an important tool in the development of Lesotho's social protection system and are core social assistance and poverty reduction instruments, particularly for children (Granvik & UNU-WIDER, 2016; UNICEF Lesotho, 2020). An overview of CT programs in Lesotho is provided in Table 1. Although the CGP is the main CT targeting children, all three CTs address the needs of vulnerable children, especially those affected by the HIV epidemic. Indeed, when the Ministry of Social Development was created in 2012, half of the public assistance's beneficiaries were orphans and vulnerable children (OVC) (W. J. Smith et al., 2013). As for the Old Age Pension, one of the leading incentives in the establishment of this program was the burden placed on the elderly caring for children orphaned by the epidemic (Granvik & UNU-WIDER, 2016). Finally, the growing number of OVC was also the driving factor behind the creation of the CGP (Pellerano et al., 2016). Although these programs are not necessarily designed to target women specifically, women's traditional role in childcare and their increased vulnerability as previously described make women key beneficiaries of these CTs, as CGP demographic data shows (OECD, 2019; Pellerano et al., 2012).

Table 1

Overview of Lesotho's CT Programs (as of 2020)

CT Program	Target Population	Benefits	Number of Beneficiaries	Annual Expenditure	Started in	Leading Governmental Institution
Public Assistance	"Destitute" (extremely poor and vulnerable individuals)	In-kind or CTs, medical fee exemptions. Six-month cash grant of LSL 250 per person per month	12,710 individuals	LSL 135 million	1970s	Ministry of Social Development
Old Age Pension	All Basotho over 70 years old (excluding civil servant pensioners)	CTs of LSL 700 per person per month	80,000 individuals	LSL 861 million	2004	Ministry of Finance
Child Grants Program	Poor and vulnerable households with children	CTs of LSL 360 to LSL 750 per household per quarter (according to the number of children in the household)	41,049 households (90,821 children between 0 and 17 years old)	LSL 95 million	2009	Ministry of Social Development

Note: LSL = Lesotho loti. The data are from *Lesotho—A Safety Net to End Extreme Poverty*, p. 175, by W. J. (W. J. Smith et al., 2013; UNICEF Lesotho, 2020)

As this section has shown, there is a growing interest at the international, regional, and national levels to use social protection (including CTs) as a way to address health equity in children, either directly or through their households. The next chapter will describe how social protection can affect child health equity. It will also explain why and how social protection can be directly related to public health's approach to equity.

3. THEORY AND FRAMEWORK

3.1. DEFINING KEY CONCEPTS

3.1.1. Toward an Equity-Promoting Definition of Public Health

The boundaries of public health—both as a field and as a concept—can appear blurry and often overlapping with other fields in health and social sciences (Detels, 2011; Powers & Faden, 2006). A key element across the various definitions of *public health* is the focus on health at a population level (rather than at the individual's). In this sense, the term can first be defined as the science and practice related to the health of the public (Detels, 2011). Yet, *public* has also been used to refer to the entities responsible for such action. Hence, Brown defines public health as "the arts and science which advisors to and agents of the state employ in exercising their (public) authority to identify and address threats that derive from sources in the environment for the health of populations"(Brown, 2010, pp. 156–157). In this case, public health is exclusively limited to the action of the state or public authorities and focused primarily on controlling the spread of diseases or the environmental sources of illnesses in a population. Because of its evolution over time and geographies, the field of public health has grown in terms of both scope and the actors involved.

According to Kickbusch (2003), the public health field has been through three revolutions. The first, still present in Brown's definition, focused on public health as the science and practice of fighting infectious diseases, particularly through hygiene and sanitary living conditions. This early definition of the scope of public health can be linked to the birth of epidemiology as a science but also to early concerns for health equity, through the focus on the living conditions of various disadvantaged populations (Krieger, 2011; Tulchinsky, 2009). The second revolution of the field occurred in the 20th century, as the rise of noncommunicable diseases led to the identification of and focus on individual behaviors and lifestyles associated with the development of such diseases. Although public authorities continues to play a role in this approach to disease prevention and health promotion, the identification of these behavioral determinants of health places a shared responsibility for public health between the authorities and the individual (Green et al., 2015). The third revolution of public health emphasizes the integrative, multiactor, multidisciplinary nature of the field (Kickbusch, 2003; Tulchinsky & Varavikova, 2010). In light of new epidemiological theories and conception of health, the field of public health now includes the broader socioeconomic or even structural determinants of health (emphasizing a collective responsibility for promoting health) (Krieger, 2011; Raphael, 2000). This evolution illustrates a shift from health as an individual responsibility to health as a collective or joint responsibility shared among people, communities, and authorities, calling for a collective and/or structural action (Green et al., 2015). International declarations, such as the WHO Global Health Promotion Conferences or the 2030 SDG Agenda, even extend public health responsibilities beyond national borders to international and global actors (Tulchinsky, 2009; UN General Assembly, 2015; WHO, 2016).

Today, the definition of public health developed by Sir Donald Acheson', former UK Chief Medical Officer, is widely accepted: "[P]ublic health is the science and art of promoting health, preventing disease, and prolonging life through the organized efforts of society" (Detels, 2011, p. 3). WHO has further highlighted public health's role not only in preventing diseases but also in improving the quality of life and promoting health through a holistic action on its determinants (WHO, 1998). This broader mandate of the public health field is reflected in the definition of the services and activities that public health ought to provide. National and regional health authorities have different lists, but they tend to share some key features. Besides the historical disease prevention function, regional public health frameworks highlight health protection (the regulatory and governance mechanisms to safeguard health and promote a healthy environment) and health promotion (including addressing the determinants of health and health equity) (Detels, 2011; WHO, 2018; World Health Organization's Regional Office for Europe [WHO EURO], 2015). As WHO's frameworks show, addressing health inequalities and the determinants of health sits at the heart of the modern definition of health promotion. In itself, this definition implies a particular conception of health and origin of diseases, which highlights the roles played by environment and by political and socioeconomic conditions.

Focusing on health inequalities involves such a conception of public health (and health promotion in particular). It emphasizes a collective, multidisciplinary response to health issues and considerations for the distribution of health across the population. It also highlights the importance of values and ideology in the conception of health and public health. These characteristics have direct implications for the type of action that such a public health approach mandates, the responsibility of different actors, and the targets of these actions (Green et al., 2015; Raphael, 2000). To understand these implications, one must first understand the meaning of the term *health inequalities*. Health inequalities might refer to observable differences in health status between different individuals, groups, or populations (Kawachi et al., 2002). Such a definition does not necessarily mandate action; it is neutral regarding the origin of such disparities. However, in line with the development of socioeconomic, political, or ecosocial epidemiological theories, health inequalities have also come to be used as a reference to systematic, socially produced inequalities between groups and individuals. As these disparities are not the result of nature or luck but of a social, political, or economic environment, they are considered avoidable and thus unfair. Therefore, they are referred to as health *inequities* (Kawachi et al., 2002; Whitehead & Dahlgren, 2006). WHO defines this term as "avoidable inequalities in health between groups of people within countries and between countries [arising] from inequalities within and between societies"(WHO Social Determinants of Health team, 2013). These disparities in health are not the result of individual characteristics or choices but the product of environment and society, so, under this definition, a collective, multisector response is called for to address these social and structural determinants of health. Put another way, these services and functions, under the modern definition of public health and its operationalization, are not the exclusive responsibility of public health authorities. For example, WHO EURO has advocated a "whole-of-government" and "whole-of-society" approach to public health, highlighting the multiactor, multidisciplinary nature of the field articulated in the third revolution of public health (WHO EURO, 2015).

The reference to *fairness* in differentiating health inequalities from health inequities also points to a value judgement or a conception of social justice in society (Kawachi et al., 2002; Peter & Evans, 2001). The importance of values and fairness in health equity makes this issue (and, therefore, public health) highly political because it implies a certain vision of society (Raphael & Bryant, 2002). Indeed, one's values and vision of social justice have direct implications not only for public health practice (the "how" and the "what" inequality that public health is addressing) but also for its focus or target population (the "who"). In their answer to A. Sen's (2009) "equality of what" question, Peter and

Evans (2001) identify four main aims in health equity theories: equality of health outcomes, of opportunities for good health, of a minimum threshold guaranteed to all, or of resources that each individual is free to use as they wish. The adoption of one or more of these theories to guide public health practices raises several challenges. First, these different aims present practical difficulties in setting objectives and monitoring outcomes. Using the example of internal and external measures of illness as health outcomes, A. Sen highlights how these measures, although both potentially valuable, present challenges in terms of accuracy, measurability, consistency, and comparability (A. Sen, 2001). Second, these different aims imply different visions of the roles played by different actors, particularly the freedom left to the individual. Indeed, theories of justice that make individual freedom preeminent—e.g., Rawls' theory of justice (1971)—are likely to clash with the utilitarian objective of public health, as has been illustrated by the debates regarding the response measures to the COVID-19 pandemic. Finally, the choice of one theoretical aim over the others might also imply giving priorities to a specific group in the population. As Peter and Evans (2001) explains, some of these theories imply a focus on or particular effort directed toward the most-disadvantaged groups. For example, the sufficiency or prioritarian approach discussed by Powers and Faden (2006) argues for prioritizing the most-disadvantaged groups within a specific context until they achieve a certain level across six key dimensions of well-being. A Sen's (1995) notion of basic capabilities also implies a focus on the most disadvantaged to achieve a given threshold in capabilities, although the wider notion of capabilities ought to be applied universally. Modern definitions of public health, such as New Public Health or population health, add a layer of complexity by maintaining the double imperative of maximizing health at the population level while reducing inequities (Kindig & Stoddart, 2003; Tulchinsky & Varavikova, 2010). This combination of a utilitarian and social justice approach to public health, although not necessarily antagonistic, could create tensions between different public health priorities. For example, focusing on the most-disadvantaged populations might achieve this double imperative in certain contexts (Ruger, 2006), but doing so has implications for other types of inequalities—disparities between the most disadvantaged and other groups might not be reduced, or the needs of the groups right above the threshold used to identify the most-disadvantaged group might go unmet (Graham, 2004; Graham & Kelly, 2004).

On these points, Graham's (2004) typology of policies and interventions addressing health inequalities offers an inclusive and flexible caveat when thinking about these inequalities and the public health response to them. As the first paper of this thesis illustrates, Graham's typology can be adapted to different intervention approaches but also combined with other frameworks to provide an inclusive approach to health inequalities. Because it is anchored on the wider determinants of health that provide a structure of health inequalities, Graham's typology can be adapted to all the different functions of public health (prevention, protection, promotion). This focus on the root causes of inequalities also allows the interaction of various factors of inequalities to be accounted for. In contrast, social epidemiology frameworks based on exposure, susceptibility, and capacity to respond to risks are primarily applicable to public health's prevention function (Diderichsen et al., 2019). The risk approach has also been criticized for inadequate consideration of the multiple societal factors of vulnerability that contribute to a group's risk and of individual resources and ability to respond to and benefit from an intervention (Diderichsen et al., 2019; Frohlich & Potvin, 2008). Graham's approach allows greater flexibility in considering the stratifying factors relevant to particular context. This approach is in line with the PROGRESS-Plus framework, which provides a list of potential factors of inequalities (Graham & Kelly, 2004; O'Neill et al., 2014). Finally, this typology allows a progressive or cumulative targeting and prioritization of different population groups. Although Graham and Kelly (2004) primarily focus on inequalities of health outcomes, the flexibility of this approach still

could allow for a wider range of health equity aims, thus accommodating the different theories previously mentioned.

Looking at Graham's typology as a continuum, one end defines health inequalities as an equivalent to health disadvantages that require targeted interventions for specific disadvantaged groups. This is similar to the prioritarian or basic capabilities approaches. However, health inequalities as health disadvantages do not take the rest of the population into account. Targeting the most disadvantaged can improve health in that group, but disparities with the rest of the population might continue to grow (for example, if other factors lead to faster improvements in the health of more-privileged groups). Targeted public health approaches have also been criticized for their risk of stigmatizing already vulnerable groups while failing to address the contextual factors that make individuals more vulnerable or to provide a holistic response to the clustering of multiple vulnerability factors among the most-disadvantaged group (Frohlich & Potvin, 2008). Therefore, Graham identified two more approaches. Farther along his continuum, the "health gap" approach defines health inequalities as the disparities in health between two groups (usually the worst off and the better off as determined by specific indicators). The targets of this approach might be more ambitious, but, in practice, the interventions implemented remain focused on disadvantaged groups. Indeed, the health gap approach implies that the worst off in the population should "catch up" through targeted interventions. Under this approach, the structural factors that led to this gap are likely to be ignored. The health gap approach is also likely ignoring the groups in between the worst-off and better-off groups (Graham, 2004). At the far end of Graham's continuum, health inequalities are defined as a gradient reflecting the socioeconomic structure of a population. Addressing inequalities in this way requires a population-wide approach that targets the systemic factors behind the socioeconomic gradient and gives each group an "equal chance" to health. This approach is reflected in Marmot's *proportional universalism*, which calls for the scale and intensity of a universal intervention to be adapted to the relative level of disadvantage of the population it serves (Marmot et al., 2010). Combining universal interventions with multisectoral and participatory targeted interventions, as advocated by Frohlich and Potvin (2008), could also be linked to the health gradient approach. According to the authors, such a combination maintains the benefits of universal public health interventions in lowering society's risks, removes the barriers that prevent vulnerable groups from benefiting from the intervention, and addresses the root causes of vulnerabilities. Although more inclusive, the health gradient approach may also be more complex, less affordable, or less politically acceptable; this is because such an approach involves covering the whole population and potentially challenging the roots of socioeconomic privileges. Once again, this reflects the intrinsic political nature of the health equity imperative adopted in more recent definitions of public health and of health promotion in particular.

If the approach to health equity influences the approach to public health, then the reverse process is also true. For example, by highlighting empowerment; participation; and giving people the ability, opportunity, and/or resources to take control of their own health (Raphael, 2000; WHO, 1986), modern definitions of health promotion reflect A. Sen's (1995) capability approach to inequalities. Mechanic's (2003) definition of *population health*—a terminology developed in Canada in response to a vision of public health focused on individual responsibility and lifestyle modifications (Raphael & Bryant, 2002)—considers environmental and social determinants rather than interventions at the individual level as opportunities for health improvement action. Because this approach concentrates on more-structural determinants of health, it might be more likely than other approaches to address the health gradient. Finally, promoters of the population health terminology have described how this vision of public health addresses the dual imperatives described by the New Public Health movement. According to these conceptualizations of population health, health disparities within a group or

society are as important as the health of the whole (Kindig & Stoddart, 2003). Ruggiero et al. (2017) also applies this equity lens to define population health practices, arguing that the health of the group as a whole can be improved by addressing the sources of inequities within it. Thus, these authors solve the potential tension between the two public health imperatives by placing them as equal and parallel objectives.

As illustrated here, health equity has been widely adopted as key function and objective of the public health field. Yet, the meaning of this term and its implications for public health practices remains highly political and dependent on individual societies' own values and visions of social justice. Because of the multisector, multiactor imperative raised by the public health and health equity agendas, the role and understanding of equity in other fields, such as social protection, have a direct impact on the progress made towards health equity.

3.1.2. From Utilitarian to Transformative: The Political Nature Social Protection's Definition

Like public health, the scope and terminology of *social protection* are also debated (Sabates-Wheeler et al., 2017; UNICEF, 2019). According to Brunori et al. (2010), there are three broad approaches to social protection: risk management, right-based, and pro-poor growth. The risk management approach, championed by the World Bank's 2003 Social Risk Management, primarily sees social protection as a poverty reduction tool (Brunori et al., 2010; Devereux & Roelen, 2016; Devereux & Sabates-Wheeler, 2004; Holmes, 2013; Holzmann et al., 2003; World Bank Group, 2012). In its initial design, the World Bank's approach was focused on preventing risks that would negatively affect people's income, building resilience to mitigate risk impacts, and developing coping strategies. Hence, the risk management approach focused primarily on ensuring and securing income to individuals and populations (Holzmann et al., 2003). This approach has been particularly influential among governments in LMICs, especially on the African continent (Devereux & Sabates-Wheeler, 2004; Holmes, 2013). The right-based approach to social protection, as promoted by the ILO, considers social protection to be a citizen's social right. Under this approach, social protection is seen as tool for social justice, redistribution, and inclusion —part of the social contract between states and their citizens (Brunori et al., 2010; Holmes, 2013; ILO, 2012; Molyneux, 2006; Sabates-Wheeler et al., 2017; UNICEF, 2019). The pro-poor growth approach operates on the principle that social protection can have a transformative impact at population level through investment in the human capital of poor and vulnerable individuals and creation of labor opportunities; this, in turn, economically benefits the whole society—especially the poor. This is the approach adopted in the World Bank's current social protection strategy. Its objectives are threefold: building resilience and coping strategies against shocks; supporting inclusive economic growth; and investing in human capital, especially among the poor (World Bank Group, 2012). In practice, these three approaches often overlap (Brunori et al., 2010), as the definition adopted by the Social Protection Inter-agency Cooperation Board (SPIAC-B) illustrates. SPIAC-B was created in an attempt to improve coordination among social protection actors and to bring together UN institutions, nongovernmental organizations, and development agencies working on social protection. SPIAC-B defines social protection as "a set of policies and programs aimed at preventing and protecting all people against poverty, vulnerability and social exclusion, throughout their life cycle placing a particular emphasis on vulnerable groups" (SPIAC-B, 2019, p. 2).

The concepts of risk and vulnerability are key to all definitions of social protection. *Vulnerability* defines one's susceptibility to risks and the impacts that risks may have (Holmes, 2013). Hence, vulnerability defines one's potential for bad outcomes when faced with a shock or an adverse event. According to Devereux and Sabates-Wheeler (2004), vulnerability in social protection is seen as

linked to either personal characteristics (e.g., disability, age, gender) or a context (e.g., social, economic, political conditions). The definition of vulnerability predefines a type of social protection response and the level of that response. Social protection responses addressing individuals' vulnerability are likely to be targeted toward a specific population and its specific needs (e.g., orphans, the elderly, poor farmers). Social protection responses addressing contextual vulnerability are likely to focus on structural community- or population-level changes (Devereux & Sabates-Wheeler, 2004; Sabates-Wheeler & Roelen, 2011). Although Devereux and Sabates-Wheeler (2004) had criticized the social protection literature for being disproportionally focused on individual vulnerability, more-recent publications and international strategies suggest that the dual nature of vulnerability and the interaction between individual and contextual vulnerability are better acknowledged (see, for example, (Brunori et al., 2010; Holmes, 2013; UNICEF, 2019). The literature also seems to account for a broader range of vulnerabilities, shaped by a person's or a community's environment and context, rather than focusing primarily on economic vulnerability, as had been the case historically (Devereux & Sabates-Wheeler, 2004; Holmes, 2013; Sabates-Wheeler & Roelen, 2011).

Choosing an approach to social protection and a definition of vulnerability determines the components included in a definition of social protection. Social safety nets, sometimes referred to as *social assistance* or *social security*, are designed to provide relief from adverse shocks and ensure a minimum standard of living to poor and vulnerable populations (Beegle et al., 2018; Brunori et al., 2010; Devereux & Sabates-Wheeler, 2004; ILO, 2012). Social insurance aims to protect against risks throughout life (Brunori et al., 2010). Some authors also add macropolicies aimed at providing a conducive socioeconomic environment or reducing contextual vulnerability as a component of social protection (e.g., labor standards, macroeconomic policy, labor policy) (Brunori et al., 2010; Slater et al., 2008). Finally, a growing number of international organizations also include programs and policies to ensure access to essential services (e.g., health care, social welfare, education) as part of social protection in an effort to improve intersectoral coordination to address multiple risks and factors of vulnerability (Devereux & Roelen, 2016; International Labour Office, 2012; SPIAC-B, 2019; UNICEF, 2019). An alternative taxonomy developed by Guhan (1994) and adopted by the ILO divides social protection into three components: promotion, prevention, and protection. *Promotion* refers to measures that enhance people's incomes and capabilities. *Prevention* refers to measures that avert vulnerability and deprivation. *Protection* reflects the notion of a safety net and involves measures designed to provide relief from deprivation (Brunori et al., 2010; Devereux & Sabates-Wheeler, 2004; Guhan, 1994). Guhan's definition of social protection's components has two key strengths: inclusiveness and flexibility. First, his definition allows a wide range of vulnerabilities and risks to be considered and addressed through social protection measures. Second, by including the promotion component, Guhan acknowledges the role and contribution of measures and programs not traditionally considered social protection mechanisms (Devereux & Sabates-Wheeler, 2004). Hence, this taxonomy implies the involvement of a broader number of sectors and actors in wider social protection objectives. Finally, Guhan (1994) recognizes that a single tool (e.g., health insurance, CT) could be categorized as several of these components, thus acknowledging the multisectoral purpose and value of these social protection tools. Devereux & Sabates-Wheeler (2004) build on Guhan's definition, adding a fourth "transformative" component: measures bringing structural changes and challenging power imbalances or norms that create or perpetuate vulnerability. This approach extends social protection to the issue of equity, social inclusion, empowerment, and the fulfillment of social and cultural rights (Devereux & Sabates-Wheeler, 2004; Sabates-Wheeler et al., 2017).

Following Guhan's and Devereux & Sabates-Wheeler's taxonomies, several international agencies have adopted inclusive social protection frameworks aimed at making different

components of social protection "sensitive to" or "transformative for" one or more factors driving vulnerability, such as age, gender or disability (see, for example (Food and Agriculture Organization [FAO], 2018; Sabates-Wheeler & Kabeer, 2003; SPIAC-B, 2019; UNICEF, 2019). For the purpose of this thesis, I focus particularly on gender-sensitive and child-sensitive social protection. Such approaches are not limited to programs targeted at these specific vulnerable groups but are based on acknowledging that certain populations have different risks or vulnerabilities that social protection can and should address (FAO, 2018; Peterman et al., 2019; Roelen, 2021; UNICEF, 2012, 2019). Hence, a specific lens reflecting gendered or age-related vulnerabilities and risks should be applied to social protection policies and programs across the program cycle (from needs assessment to evaluation) and across program features (e.g., targeting, benefit design, recipient participation, case management) (FAO, 2018; Holmes & Jones, 2010). In line with the growing interest in contextual factors of vulnerabilities, some of these frameworks also call for applying such lenses to wider policies and institutions that affects children's or women's vulnerabilities (Banati et al., 2020; UNICEF, 2019). The focus on children in social protection is not recent, and some of the early CTs were specifically designed to address the vulnerability of children (Molyneux, 2006; UNICEF, 2012). However, this approach has evolved from being child-targeted to being child-sensitive, or even transformative—social protection. Under this shift, more programs or policies should be considering their impact on and implications for the well-being of children, their families, and their communities (Roelen, 2021; UNICEF, 2019). Despite this historical anchoring and expansion of social protection for children, universal child-sensitive social protection is far from a reality. UNICEF (2019) assesses that, as of 2017, 72 countries did not have any kind of child or family benefits in their national legislation and 1.3 billion children globally were not receiving any such benefits.

Unlike the focus on children, integrating gender into social protection is a fairly recent development. Although women were the primary recipients of some of the early social protection or assistance programs, this targeting was primarily because of women's roles as mothers, and child well-being was the ultimate goal of these programs (Molyneux, 2006). As recently as 2003, Sabates-Wheeler and Kabeer (2003) noted the lack of a gender lens in the social protection agenda. Jones (2021) illustrated how addressing gendered vulnerabilities was often perceived by decision-makers as outside the scope of social protection. Hence, the gendered impact of different social protection programs and program features is not well known (Peterman et al., 2019). The very terminology remains an object of debate. Some authors include gendered vulnerabilities of both male and female recipients in their approach to social protection, but the historical exclusive focus on women and girls remains a prominent feature in gender-sensitive social protection (Holmes & Jones, 2010). Although the disproportionate vulnerability borne by women and girls justifies this focus in many contexts, certain programs nonetheless could be blinded to other gendered vulnerabilities (as discussed in Paper 3). In addition, the terminology used in organizations such as UNICEF and the Food and Agriculture Organization (FAO) have evolved from "gender-sensitive" to "gender-responsive" to reflect the different degree of integration of gender considerations into social protection systems. In this typology, programs are categorized from gender-discriminatory (reinforcing gendered biases) to gender-transformative (actively tackling the roots of gendered vulnerabilities and inequalities) (Banati et al., 2020; FAO, 2018). While this typology can allow more flexibility in the integration of a gender lens into social protection programs, it may also contribute to the debate and lack of clarity on what constitutes a gendered approach to social protection.

CT programs are generally categorized as social safety nets or social assistance program (Beegle et al., 2018). However, UNICEF makes a further distinction between social safety nets (seen as

providing temporary or emergency relief) and social transfers, which are long-term, predictable transfers and can contribute to the broader social protection system (UNICEF, 2012). Indeed, depending on targets (e.g., vulnerable groups or universal), objectives (e.g., relief or empowerment tool), and complementarity with other interventions or services (integrated social protection, sometimes referred to as "Cash Plus" programs), CTs are tools that can be used across several components of a social protection system. Molyneux et al. (2016) also note how CTs are moving away from narrowly focused safety net tools toward becoming more-transformative ones.

A clear parallel can be made between Guhan's components of social protection and Graham's (2004) typology of interventions addressing health inequalities. Guhan's protective measures can help address the health disadvantage faced by those who are worst off in society and/or help reduce the health gap. Guhan's (1994) promotive measures—or Devereux & Sabates-Wheeler's (2004) transformative measures—would be particularly relevant in addressing the health gradient, by targeting more structural determinants of health. As previously explained, Graham's typology allows for flexibilities regarding the stratifying factors of inequalities. Hence, this typology can accommodate inclusive social protection frameworks where the disadvantage, gap, or gradient is defined in part by age or gender (Graham & Kelly, 2004).

Besides the parallel approaches to health inequalities, this overview of social protection definitions also reveals several overlapping areas with the definitions of public health previously presented.

3.1.3. Social Protection as a Public Health Intervention

As the previous overview of definitions illustrates, the scopes of both public health and social protection are points of debate. But these definitions also demonstrate how social protection and public health share more than a focus on the determinants of health when it comes to their relevance to health equity. Both social protection and public health aim to not only address and mitigate the risks faced by vulnerable populations but also promote well-being for all (Brunori et al., 2010; Frohlich & Potvin, 2008; WHO, 1998; WHO EURO, 2015). To do so, both concepts require a collective, multisectoral action. In their more-inclusive definitions, both also involve a whole-of-government and whole-of-society approach, acknowledging not only their multisectoral but also their multiactor nature (Brunori et al., 2010; Frohlich & Potvin, 2008; WHO, 1998; WHO EURO, 2015).

Similar terminology also appears in both the WHO definitions of public health functions and Guhan's terminology on social protection: promotion, protection, and prevention. Guhan's promotion refers to measures that enhance people's incomes and capabilities; WHO's promotion refers to measures that enhance people's health. Guhan's protective measures can reflect WHO's tertiary prevention in the health sector, which aims at limiting the progression of a disease and supporting recovery from it (Devereux & Sabates-Wheeler, 2004; Guhan, 1994; WHO, 2018; WHO EURO, 2015). Guhan's preventive measures are those aiming to avoid vulnerability and deprivation and can echo WHO's definitions of health protection (referring to health safeguarding regulation and norms) and primary prevention (referring to services aiming to prevent at-risk population from contracting and developing a disease). However, the relevance of social protection to health equity is most visible in "transformative" social protection (Devereux & Sabates-Wheeler, 2004). This approach to social protection can be placed in parallel to the more modern definitions of health promotion, as inaugurated in the 1986 Ottawa Charter for Health Promotion. Under these definitions, health promotion involves a collective effort and an enabling environment to "[enable] people to increase control over, and to improve, their health" (Green et al., 2015; WHO, 1986, p. 2) A key component of both these definitions is the crucial role of empowerment in promoting health or social equity.

3.1.3.1. The Role of Empowerment in Health and Social Protection

Several definitions of *empowerment* can be found in the literature, depending on the type of empowerment and the fields in which it is studied (Luttrell et al., 2009; Narayan-Parker, 2005; Sundström et al., 2017). However, these different definitions do share selected characteristics. The simplest definitions refer to changes in power relationships (Holmes, 2013; Luttrell et al., 2009). More-detailed definitions describe either a process or an outcome that implies the awareness and capacity to make choices, to act freely on or according to them (agency) to achieve a goal considered desirable (Center on Gender Health and Equity [GEH], 2020; Donald et al., 2020; Kabeer, 1999; Luttrell et al., 2009). This can be an individual or collective process (the empowerment of a group or a community) (Keleher, 2009; Luttrell et al., 2009; WHO, 1998). Besides individuals' or groups' own capacity (the power from within), the notion of freedom is key to empowerment. This directly tie in with enabling and hindering factors that affect one's power, such as the resources available (and one's control over them) and the social, economic, political, or cultural context that may promote the power of some over that of others (GEH, 2020; Kabeer, 1999; Luttrell et al., 2009; Malhotra et al., 2005; Narayan-Parker, 2005). In that sense, empowerment is highly context specific (Luttrell et al., 2009). These elements of definition show the strong influence of A. Sen's capabilities approach and theory of justice (GEH, 2020; Holmes, 2013). In his theory of justice, A. Sen defends an approach that focuses on equity of capabilities—a person's ability to pursue a goal they value (A. Sen, 1995; A. Sen, 2009). As in the definitions of empowerment described earlier, A. Sen sees freedom as a crucial component of capabilities, reflecting the opportunity to pursue one's objectives but also an absence of constraints or subjugation to the power of others (A. Sen, 2009).

The concept of empowerment is also strongly associated with the feminist movement. Here, the term does not necessarily imply the transfer of power from one group to another (a zero-sum game); rather, it suggests a change in the structure of power that does not reproduce the inequalities that the movement is trying to address (Kabeer, 1999; Luttrell et al., 2009). Selected development agencies, such as the American or Swedish development agencies (USAID and SIDA), use the terminology of empowerment exclusively in relation to gender (Luttrell et al., 2009). In the field of women's empowerment, the work of Kabeer has been particularly influential (GEH, 2020; Luttrell et al., 2009). Kabeer defines empowerment as the ability to make and exercise choices and refers to inequalities in one's capacity to make choices (rather than inequalities of the achievements or outcomes of those choices) (Kabeer, 1999). She identifies three key dimensions of empowerment: resources (preconditions that define what choices are available), agency (the process by which one is able to define a goal and act) and achievements (or the outcomes of this process). Although contextual factors are not a formal dimension in Kabeer's definition of empowerment, she acknowledges the role of contextual constraints (particularly gendered constraints) in shaping this process and how empowerment can potentially shape or change these constraints (the transformative potential of empowerment) (Kabeer, 1999). In her definition of empowerment, Kabeer also makes an important distinction that is relevant to the application of the concept to equity objectives: Only those who were previously denied the ability to make choices or act on them can be empowered (Kabeer, 1999). Under this approach, empowerment applies only to those in a position of disadvantage, not universally. However, this focus on the disempowered does not necessarily imply an exclusive focus on the most disadvantaged. Indeed, while Kabeer's approach would require a particular focus on groups that have been historically disempowered (such as women), her definition of empowerment could be compatible with a proportional universalist approach, in which empowerment efforts are proportional to the level of power that different groups in society hold, with a particular attention to the most disempowered. In that sense, it would follow Nussbaum's women's capabilities approach, which places particular

emphasis on women—because the urgency of their situation and their historical subordinate status has particularly hampered their capabilities, while considering central human functional capabilities as universal and relevant for all human beings (Nussbaum, 2000).

Empowerment is an important determinant of health (Commission on Social Determinants of Health, 2008; Green et al., 2015). In public health, empowerment strategies—such as participatory processes to build beneficiaries' capacity and allow them to take control over their health—have been associated with improved program effectiveness and better health outcomes (Keleher, 2009; Wallerstein, 2006). As Green et al. (2015) explain, having or gaining control is part of the definition of health. It is also central to the modern definitions of health promotion (Raphael, 2000; WHO, 1986). The WHO Commission on the Social Determinants Health considers empowerment an important driver of health equity because power distribution and power relationships affect the political, economic, social, and cultural determinants of health (Commission on Social Determinants of Health, 2008; Green et al., 2015). As our review of empowerment definitions suggests, empowerment strategies can affect several of these determinants by affecting the contextual factors that enable or constrain one's opportunities, choices and actions; change the resources available to act upon one's goals; build agency or ability to act; and improve conditions by allowing attainment of one's goals. In contrast, disempowerment has been associated with poor health as a result of psychological and material impacts. Disempowerment is often associated with determinants of poorer health such as lower education, poor employment opportunities, social exclusion, and limited access to services. These factors, as well as the stress and feelings resulting from the experience of being disempowered, are associated with poorer physical and mental health outcomes (Brunner & Marmot, 2005; Commission on Social Determinants of Health, 2008).

As previously mentioned, empowerment is also central to the transformative component of social protection, which involves pursuing policies and actions designed to modify power relations in favor of vulnerable groups (Brunori et al., 2010; Devereux & Sabates-Wheeler, 2004). However, even other conceptualizations of social protection show its relevance to empowerment. Indeed, social protection can promote empowerment in the economic, social, and political fields. Both promotive and protective social protection measures aim to support the provision of a minimum level of resources or to enhance people's income and livelihood opportunities. Although securing access to and control over economic resources may not be enough on its own to economically empower individuals and groups, it is a precondition to the ability to define choices and the ability to act (Kabeer, 1999; Luttrell et al., 2009; Malhotra et al., 2005). As the strategies previously described highlight, social protection measures are also used to support investment in human capital, which support individuals' future resources and agency (Barca et al., 2015; Owusu-Addo et al., 2018; World Bank Group, 2012). Placing resources in the hands of vulnerable groups—especially women—has been thought of as a way to promote agency within the household (bargaining power, participation in decision-making) or in the community (voice, participation in public decisions). Hence, empowerment is among the key goals of gender- and child-sensitive social protection (Banati et al., 2020; Holmes & Jones, 2010; UNICEF, 2019). However, several authors have highlighted that the simple provision of resources is not enough to promote these changes and that the impacts of social protection programs on these outcomes are highly context-dependent (Bastagli et al., 2016; Holmes, 2013; Laszlo et al., 2020; Luttrell et al., 2009). By supporting a minimum standard of living for poor and vulnerable populations or supporting investment in household incomes and capabilities, social protection can support individuals' participation in community, social, and economic networks, thus promoting social cohesion and supporting the community's demand for services (Barca et al., 2015; Owusu-Addo et al., 2018). In turn, this can strengthen the social contract between the state and its citizens (Molyneux et al., 2016;

Sabates-Wheeler et al., 2017). Finally, the macro-level policies shaping the political, social, economic, and cultural context included in some of the definitions of social protection can create more-favorable conditions and norms, conducive to freedoms and choices; so, too, can the redistribution of local power resulting from other empowerment approaches presented here (Devereux & Sabates-Wheeler, 2004; Kabeer, 1999).

All of these pathways have been discussed in the theory of change of CT programs, although the actual impacts of this type of program on these different areas are mixed and context-specific (Bastagli et al., 2016; Owusu-Addo et al., 2018; Peterman, 2019; Walque, 2017) .When it comes to child health and social protection, women's empowerment has been a field of particular interest. Indeed, because of women's preeminent role as caregivers, several CT programs have been designed according to the assumption that empowering women will improve child outcomes (Holmes, 2013; Holmes & Jones, 2010; Sabates-Wheeler & Roelen, 2011; Yoong et al., 2012). However, the body of literature testing this assumption shows mixed findings (Molyneux, 2006; Walque, 2017; Yoong et al., 2012). Moreover, some authors have argued that such designs reinforce gendered roles and norms (Holmes & Jones, 2010; Molyneux, 2006). By considering women's empowerment only as far as it can benefit children, such programs risk further disempowering women or maintaining them in their subordinate status (Nussbaum, 2000). This critique also originates from earlier CT programs, in which the conditionalities imposed on caregivers were found to place an unfair burden on women, thus risking further disempowerment. When studying the conditional CT *Juntos* in Peru, Cookson (2018) described how women's empowerment was not part of the program's objectives but that its design and implementation tended to serve as tools to exercise power over the beneficiary women as a byproduct of poverty reduction and child well-being (i.e., making poor households make the "right" choices). The move to unconditional CTs in Sub-Saharan Africa may partially address the time burden placed on women and the critiques of paternalism in conditional CTs (i.e., the idea that without constraints and incentives, the poor would not make the "right" choices and might waste the money). However, the absence of conditionality does not necessarily remove all risks of power manipulation and disempowerment of beneficiaries (see Paper 3). Hence, I aim to go further with this thesis than simply testing the link between women's empowerment and child health equity; I explore how these pathways are operationalized in CT programs (see Paper 3 and 4). By considering empowerment beyond its instrumental value, this thesis aims to help avoid potential trade-offs between women's empowerment and their children's health equity. Instead, I explore whether both processes can reinforce each other for a more equitable future.

As this discussion illustrates, social protection (and CT programs in particular) can promote health equity by addressing the material determinants of health (e.g., income, education, and other resources) and supporting the redistribution of power in a more equitable way (thus influencing more structural determinants of health). In that sense, selected types of social protection schemes, including CTs, could be considered public health interventions—or, at least, as sharing a public health approach. This crossover does not imply that social protection ought to become part of public health services' responsibility. As previously highlighted, both fields involve a multisectoral, multiactor approach. For example, UNICEF has described social protection as "a tool for enhancing sector outcomes," including child health (UNICEF, 2012, p. 46). Adopting a public health or a health promotive approach to social protection allows better understanding of the potential of such programs to promote child health and health equity through and alongside empowerment processes. Most of the empowerment pathways described in this section have focused on targeting the most vulnerable or

disadvantaged, but the redistribution potential of social protection does not necessarily preclude such measures from being applied proportionally to the level of power (and relative inequities) held by different groups in the community. However, as previously mentioned, the wider impact and implications of CT program at the community level in LMICs remain understudied. The next section presents the theoretical framework summarizing how CT program operations could promote the health equity of children through and alongside the empowerment of their caregivers.

3.2. THEORETICAL FRAMEWORK

The theoretical framework supporting this thesis is presented in Figure 3. Given the centrality of power and power relations in the framework developed by the WHO Commission on Social Determinants of Health, I use it as a starting point. Under this conception of health, addressing inequalities is not only a matter of allocating resources and services but also of remedying unequal power relations through the empowerment of comparatively less privileged groups. This framework also offers the advantage of accommodating a variety of different determinants of health as a result of being built on three epidemiological theories: social production of disease and political economy of health, psychosocial approaches, and ecosocial theory (Solar & Irwin, 2010). The social production of disease and political economy of health describe how political and economic institutions shape societies and, therefore, the distribution of health within them. Psychosocial approaches focus on how one's perception of their social condition and place in the social hierarchy can trigger a biological response affecting physical and mental health. Finally, the ecosocial theory highlights how a person's health is affected by the interactions among the organism, the population, and the environment (Krieger, 2011). Solar and Irwin (2010) organize the contributions of these different theories into two main types of determinants of health: structural determinants of health (that define one's position in society) and intermediary determinants of health (through which structural determinants of health operate and affect the distribution of health in society). Using this same framework, the study by Owusu-Addo et al. (2019) has mapped how CTs in Sub-Saharan Africa can affect determinants of health. Their findings show that CTs primarily affect socioeconomic positions (including investment in human capital), access to services, social inclusion and intermediary determinants of health, such as material and psychological circumstances. Similar pathways are highlighted in UNICEF's Social Protection Strategic Framework. However, the latter also highlights wider structural impacts that can benefit the community as a whole (including nonrecipient households). These collateral benefits include social transfers' multiplier effects on the local economy and the transfers' potential to transform social norms and to improve the supply and quality of services (UNICEF, 2019). The intermediary determinants of health identified by Owusu-Addo et al. (2019) are also found in the family investment and family stress models described by Walque et al. (2017) in their assessment of the impact of CTs on child and adolescent development.

Because of the mediated relationship between a young child and their environment through their dependency on their caregivers, the WHO framework in Figure 3 is further adapted to reflect both the direct impact of various determinants on the distribution of child health and the mediated impacts through caregivers' own determinants. This distinction also allows a better illustration of the gendered effects of CTs and the implications of those effects on child health equity. As Holmes and Jones (2010) describe, both the distribution of inequalities and one's experience of vulnerability are gendered. Indeed, the social and economic risks that are targeted by social protection affect women and men differently, and thus would have different implications for their households. For example, as the brief presentation of gender issues in Lesotho shows (see Background), female-headed households are

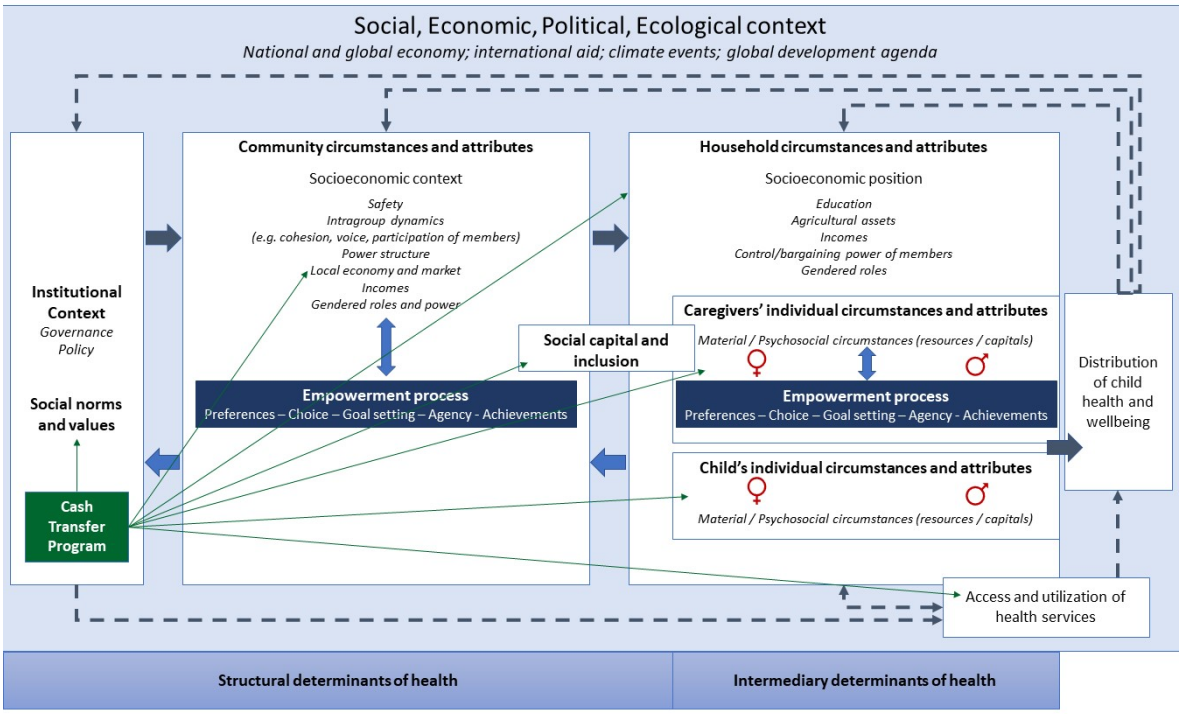
affected by increased economic and social vulnerabilities because of patriarchal gender norms, insufficient protection from gender-based violence, and fewer economic opportunities. At the same time, men's traditional roles as breadwinners can mean that a father's loss of employment, illness, or death has a greater impact on Basotho children's multidimensional poverty than similar shocks affecting the mother in the household. The systematic review by Yoong et al. (2012) also illustrates that economic transfers like CTs are used differently by male and female recipients, thus affecting their impact on different household and child outcomes. Recipients' choices in the use of this additional income are affected by their preferences and by intrahousehold dynamics, such as control over the household's revenues, bargaining power, and role in decision-making (Yoong et al., 2012). Gendered preferences also apply at the structural level (e.g., community or policy level), as male and female decision-makers have been found to prioritize different policies (Duflo, 2012). Hence, if social transfers were to lead to structural changes in women's social and political inclusion or power, this process could further affect child health equity over time by leading to further changes in the country's or community's socioeconomic and political context.

To better reflect these potential changes, the current framework also reflects the empowerment processes and outcomes associated with CTs, using the Center on Gender Health and Equity's (GEH) model for measuring and operationalizing the empowerment process (GEH, 2020). The GEH's model is based on a review of existing frameworks and practices in measuring empowerment. Therefore, it has incorporated the findings of the theories described in the previous section. The model is also designed to account for both individual and collective empowerment processes and describes empowerment as a step-by-step process starting with the consciousness of choice and ending with the achievement of one's self-determined goals. To better illustrate the gendered preferences mentioned before, the notion of preferences was added prior to the choice step. The GEH model also shows the interactions between the empowerment process and three main elements: the internal attributes of the individual or the group, the external context and institutions, and the wider social norms. Internal attributes overlap with the behavioral and psychosocial factors defined as intermediary determinants of health in the WHO framework; the external context, institutions and social norms are reflected in the structural determinants of health.

Finally, CTs have been implemented primarily in rural areas, so particular attention is given to the specificities of farming communities, using the Gender, Assets, and Agricultural Programs (GAAP) framework developed by the International Food Policy Research Institute (Meinzen-Dick et al., 2011). Although it focuses primarily on economic processes, the GAAP framework provides a better grasp of gendered livelihood strategies, households' reaction to shocks, and implications for household well-being in agricultural communities such as the ones targeted by Lesotho's CGP.

Figure 3

Conceptual Framework on How CTs Affect Children's Determinants of Health and Health Equity



As CT programs like Lesotho's CGP are being scaled up to urban households, their adaptation to specificities of urban populations is likely to modify their effects on the determinants of child health. Indeed, urban populations represent unique challenges that affect the design and effectiveness of CTs, such as high mobility of the population and the difficulty to identify vulnerable households in informal settlements (Beegle et al., 2018). Although this framework was designed with the context of rural communities in mind, the main building blocks have been made inclusive enough to be adapted to an urban context.

4. METHODS AND DATA

This section presents an overview of the methods and data used in this thesis.

4.1. DATA SOURCES

4.1.1. Qualitative Data

Papers 1, 3 and 4 rely on qualitative data: systematic reviews (Paper 1), CGP program documents, and semistructured interviews (Papers 3 and 4).

Paper 1 synthesizes systematic reviews from the academic and grey literature published between January 2014 and January 2021. The six-year period was defined to gather the latest evidence arising from the MDG era (no publication date threshold was applied to the primary studies that these reviews covered). The scope of the study was designed to cover a large set of interventions and provide a good overview of the status of the evidence in the field. By covering both academic and grey literature, the search strategy was structured to capture evidence from both the academic and operational sectors.

The inclusion/exclusion criteria were defined a priori in the review's protocol using the PICOS framework (Patient or Population, type of Interventions—and Comparisons if there is any, the type of Outcomes, and Study design(s) of interest). The population of interest included under-5 children and their households in LMICs. The targeted interventions were public health interventions addressing infectious diseases or associated risk factors in children. To be included, the systematic reviews or evidence syntheses had to include primary studies with control groups or other comparison groups. Both health and health inequality outcomes reflecting the effectiveness of the intervention were considered relevant. Finally, the Database of Abstracts of Reviews of Effects (DARE) criteria were used to define what constituted a systematic review (with or without meta-analysis) or evidence synthesis. Reviews also had to synthesize the findings of at least two relevant primary studies to be included. Hence, focusing on systematic reviews rather than primary studies allow identification of the strongest evidence available in a given field (Bambra et al., 2010).

The academic search was carried out in 10 academic databases using a combination of MeSH terms and free-text keywords (see protocol in Annex 1.2): the Cochrane Library (includes the Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled Trials and the Cochrane Clinical Answers), Medline (Ovid), EMBASE (Ovid), the CAB Global Health database (Ovid), Health Evidence (McMaster University), the Campbell Collaboration Library of Systematic Reviews (The Campbell Library), International Initiative for Impact Evaluation Systematic review repository (International Initiative for Impact Evaluation—3ie), Scopus (Scopus), the Social Sciences Citation Index (SSCI, Web of Science) and PROSPERO (Centre for Reviews and Dissemination, University of York). A manual search was also conducted using Google Scholar and the websites of the international organizations UNICEF Office of Research–Innocenti, UNICEF, and WHO.

From the initial 8,980 unique citations screened for titles and abstracts, 60 systematic reviews covering 453 individual primary studies from 72 different LMICs were included in the umbrella review.

Papers 3 and 4 rely on the triangulation of a review of Lesotho CGP's program documents (e.g., briefs, analyses, and reports generated by program stakeholders) and semistructured interviews with program

stakeholders. This study focused primarily on the early phases of the CGP (prior to the implementation of complementary Cash Plus interventions), so the desk review and interviews were centered on the period between 2009 and 2013. However, information on the pilot phase (pre-2009) and the post-evaluation phase (post-2014) were also considered, when relevant, to aid in understanding the evolution of the program over time.

Program documents were obtained through a manual search of stakeholders' websites between November 2020 and January 2021 and from key informants themselves. Fifty-one documents were included in the final analysis, including 19 monitoring and evaluation reports, 12 academic papers produced by program stakeholders, 10 program manuals and guides, three program instruments (e.g., survey questionnaires), three stakeholder reports describing their contribution and activities in the CGP, three internal briefings, and one press release.

Key informants were identified from a stakeholder mapping and snowballing sampling, with inputs from the project partners in Lesotho. The sampling strategy was structured according to the different organizations involved in the CGP, the different phases of the program, and the roles of individual informants; this was done to ensure a good coverage of the different point of views. Twenty-five interviews with stakeholders from local, national, and international entities involved in the CGP were carried out in summer 2021. In line with national infection control and travel guidance, all the interviews took place online. The interview guide can be found in Annex 2.

4.1.2. Quantitative Data

Papers 2 and 5 rely on quantitative data: global time series data from the 2018 Varieties of Democracy (V-Dem) project and IHME's 2017 GBD data set (Paper 2) and household surveys from the CGP evaluation (Paper 5).

4.1.2.1. Global Data Sets

Because of the dynamic nature of the empowerment process and the complex interdependence between child health outcomes and their contexts over time, global time series data sets were preferred to explore whether women's political empowerment is associated with improved health among under-5 children.

The V-Dem project is a global data set on democracy and related issues that was started in 2012. The 2018 version covered over 350 indicators from 174 countries for the period 1900 to 2017. The V-Dem methodology relies on the aggregation of assessment from 2,800 country experts collected through online surveys (Coppedge et al., 2017). This data set offers several advantages. Experts are asked to assess the actual situation in the country of interest rather than reflecting the government's official position. Both the coding and aggregation methodology are designed to ensure comparability over time and between countries, limiting individual biases. Hence, the V-Dem offers a cohesive, complete, and balanced panel data set for a wide range of countries and indicators related to liberties, rights, governance, and democracy.

IHME's 2017 GBD data set provides annual estimates of the burden of diseases and selected health-related SDG indicators for 195 countries and territories between 1990 and 2017. These estimates rely on data extracted from the literature through systematic review and from online databases, such as administrative records, population censuses, clinical trials, demographic surveillance, disease and vital registries, environmental monitoring, epidemiological surveillance, financial records, and other population surveys (IHME, 2020b). As it generates annual, updated estimates for a set list of health

issues in all 195 countries and territories, it offers a more complete, balanced data set than those offered by international organizations relying on a country's periodic reporting. To ensure the reliability of the GBD estimates, the consistency of the GBD's variables of interest and the World Bank's World Development Indicators (which rely on national reported data rather than estimates) were tested using correlation coefficients prior to the study.

Paper 2 uses data from for 161 UN member countries, covering the period from 1990 until 2016. The 2017 GBD data set provided the main dependent variables, covering key child health indicators: child mortality rate, child stunting prevalence, and child immunization rates with the diphtheria, pertussis and tetanus vaccine. The main independent variable was the Women's Political Empowerment Index (WPEI) from the V-Dem project, which includes indicators covering women's civil liberties, their ability to express themselves and take part in civil society's organizations, and their political participation and representation. These individual components of the WPEI were also tested separately to assess whether some specific component of women's political empowerment was more influential on child health than the others (Coppedge et al., 2018; Sundström et al., 2017). The correlation between WPEI and child health indicators was controlled for using structural determinants of health related to specific SDGs. The 2017 GBD data set provided the data regarding maternal education. Data on democratization, corruption, and access to health care was taken from the V-Dem data set. When SDG-related variables were not available either in the 2017 GBD or the V-Dem, public databases from international organizations (e.g., World Bank, UNDESA) and academic institutions (Uppsala Conflict Data Program) provided the missing control variables. These included variables on national economic growth, population density, stability (presence of civil wars), women's labor participation, countries' income, and development levels classification. Although different databases were searched for data sets providing comparable, annual datapoints for all the countries of interest, one indicator—women's labor participation—was available only from periodic national surveys in some countries. In these cases, the missing years were linearly interpolated.

4.1.2.2. Lesotho's CGP Household Survey Data

The CGP was designed as a clustered randomized controlled trial covering 10 rural Community Councils in the five districts of Qacha's Nek, Maseru, Leribe, Berea and Mafeteng. Within each of the Community Councils, half of the electoral divisions were randomly assigned via a lottery to the treatment group (covered by the CGP) and control group (where the CGP's implementation would be delayed until the end of the evaluation). A total of 80 electoral divisions were included in the trial (40 in control and 40 in treatment areas), further divided into 160 village clusters, equally distributed between the treatment and control groups. As part of the 2014 evaluation of the CGP, Oxford Policy Management and Sechaba Consultants were contracted to collect household survey data from both CGP-eligible and CGP-noneligible households in treatment and control areas. The survey has a panel design. The baseline survey of 3,054 households took place in 2011; the follow-up survey of 2,300 households was carried out in 2013. Due to program constraints, follow-up data were collected among only half of the noneligible households. The overall sample attrition was low (6%). The household questionnaire covers household-level and individual-level indicators on 22 broad themes. The household-level indicators include households' general characteristics (e.g., composition and demographics), economic characteristics and activities (e.g., incomes, assets, agricultural production, risk preferences, businesses), consumption, food security, and community networks. The individual-level indicators include demographics, health, child education, adult labor participation, and child labor and time use (Pellerano et al., 2014).

Building on the findings from the qualitative study illustrated in Papers 3 and 4, Paper 5 of this thesis uses the child health and food security modules of the CGP household questionnaire as dependent variables (see Annex 3). These cover indicators on child morbidity, healthcare spending for children, self-assessment of the health status of the children in the household, and the frequency and size of children's meals (as proxy for child nutritional status). Other child health outcomes—such as immunization or anthropometric indicators—were excluded because they were collected only in the follow-up survey and were reported to be imprecise and incomplete by the evaluators (Pellerano et al., 2014). As the CGP targets households categorized as poor and ultra-poor, eligibility to the program is used as a proxy for socioeconomic status, which is the independent variable. In a second model, we explore the effect of the CGP in specific vulnerable subgroups, according to the definitions of vulnerability and markers of economic empowerment identified in Papers 3 and 4. In the first subgroup analysis, vulnerability is defined by food security at baseline. This indicator is used as a proxy for access to resources and a marker of economic empowerment identified in the qualitative study. In the second subgroup analysis, vulnerability is defined by the gender of the head of the household. Indeed, the qualitative study had identified relevance of gender issues in the CGP due to the increased vulnerabilities of female-headed households and women's role in childcare.

The questions from the child health module were asked only in households with preschool children (under 6 years old). Therefore, our sample covers 1,532 households (870 households in the treatment areas and 662 in the control areas). The sample size was a key constraint in the phenomena that we were able to explore, especially regarding the link between empowerment and changes in health disparities. Indeed, the small size of the population of interest affected our ability to consider indicators of empowerment and women's empowerment identified in the qualitative study and to explore district-level trends and specificities.

4.2. METHODS

4.2.1. Umbrella Review

Paper 1 is an umbrella review, also called a review of reviews or an overview of reviews. Because of the growing number of systematic reviews and the need for a clear, easy-to-use overall summary of a large body of evidence, umbrella review methodology has become increasingly common in public health and medical research (Bambra & Gibson, 2016; Pollock et al., 2021). Umbrella reviews use systematic and explicit methods to search, appraise, and synthesize the evidence of competing interventions addressing the issue of interest (Becker & Oxman, 2008; Grant & Booth, 2009; Pollock et al., 2021). This methodology is based on the methodology of systematic reviews and follows the same steps: a systematic literature search, a screening and identification of relevant records according to predefined criteria, systematic data extraction and quality appraisal, and synthesis of the results. However, unlike systematic reviews, umbrella reviews synthesize systematic reviews rather than primary studies (Pollock et al., 2021). Although such methodology might miss the evidence from new primary studies that have yet to be synthesized into systematic review, they are regarded as a way to present the strongest available evidence in a field where several competing interventions are available (Bambra & Gibson, 2016; Grant & Booth, 2009). Hence, they can cover a broad scope of interventions, which was what motivated the choice of this methodology for Paper 1.

Paper 1 aims to identify public health interventions that are effective in reducing morbidity, mortality, and health inequalities from infectious diseases among under-5 children living in LMICs. This umbrella review allows better assessment of the state of the evidence coming specifically from LMICs

and better addressing of causes of deaths and illnesses that remain prevalent among young children. Previous mappings and reviews had identified gaps in the type of health inequalities explored in systematic reviews and the way that the terminology of health equity was used. Welch et al. (2010, 2022) found that a majority of systematic reviews of interventions focused on targeted approaches to health equity (i.e., addressing the needs of the most disadvantages) and that the gap and gradient were more marginal. The 2018 Mega Map by the Campbell Collaboration and UNICEF Office of Research–Innocenti had found that very few reviews had an explicit focus on equity, even when reporting the effects of interventions on different groups (Campbell Collaboration & UNICEF Office of Research- Innocenti, 2018; White et al., 2018). This paper has taken an inclusive definition of the public health interventions and outcomes of interest in an attempt to identify any reviews with findings that could be relevant to our understanding of effective public health interventions against infectious diseases in LMICs and their impact on both population health and health equity.

In line with the established methodology (Pollock et al., 2021), this umbrella review followed a preestablished protocol, registered in PROSPERO (CRD42019141673) and published in BMJ Open prior to the completion of the review (see Annex 1.2.). To limit the risk of bias in the record selection and data extraction, the protocol provided for these steps to be carried out either in duplicates or with a quality check on a sample of records. The Assessment of Multiple Systematic Reviews tool (AMSTAR 2) checklist was used to appraise the quality of included reviews, with a second reviewer checking the assessment made by the first reviewer (Shea et al., 2017). Although a meta-analysis was initially discussed by the research team, the wide range of interventions covered made this synthesis method unsuitable (Bambra et al., 2010). Instead, a narrative synthesis was performed, according to the preestablished theoretical framework.

4.2.2. Fixed-Effects Regression

In Paper 2, a fixed-effects regression model was chosen to assess the effect of women's political empowerment on child health outcomes. The justification for the choice of this method is theoretical. In this study, political empowerment was considered as a dynamic process over time that would indirectly affect child health outcomes by expanding women's choices, agency, and participation in society. The dynamic nature of this phenomenon and the diversity of factors that affect child health make fixed-effects regression models particularly attractive. Indeed, these models are designed to study change over time while controlling for unobserved stable variables that may interfere with the interaction of interest (Petersen, 2004; Pevehouse & Brozek, 2008). Although fixed-effects regression models would ignore countries in which women's political rights and power remain unchanged, they provide more-solid estimates when these variables do change (meaning when empowerment actually occurs), which is at the heart of this paper's research question (Petersen, 2004).

The need for a fixed-effects model was confirmed with statistical tests. The Wooldridge test for first-order serial correlation and a Breusch–Pagan/Cook–Weisberg test for heteroskedasticity confirmed that a standard ordinary least squares model would be problematic (Breusch & Pagan, 1979; Cook & Weisberg, 1983). Hence, the Driscoll and Kraay method was used for estimating the standard errors; this method was found to be more accurate when spatial dependence occurred—as was likely the case given the phenomena of interest in this paper (Hoechle, 2007). Although both random- and fixed-effects models were initially tested, the Hausman test confirmed the need for a fixed-effects regression model with this data set. Finally, the potential delayed effect of women's political empowerment on child health outcomes was also tested, applying two-year, five-year and 10-year lags. This would

account for the fact that political changes and improvement in women's rights might take time before affecting children's health.

4.2.3. Mixed-Method Case Study

Yin defines a case study as "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context" (2009, p. 18). Whether a case study is a research methodology rather than a way to identify an object of study remains debated (Creswell, 2007). In fact, Yin argues that case studies do not imply a specific research design but can accommodate a variety of designs (Yin, 2009). Despite the discussions of what case studies are, the various definitions share some key traits. Case studies involve the in-depth study of a bounded phenomenon (a single-case study) or phenomena (multiple-case study) in real-life circumstances. Hence, the case's context (time and place) is key to the study. As case studies are not tied to a specific research design, they offer great flexibility on the choice and combination of methodologies that can best answer a research question. However, case study research designs systematically rely on the triangulation of data from multiple sources and may use theoretical proposals to guide the data collection process (Creswell, 2007; Yin, 2009).

Papers 3 to 5—designed as a series presenting the findings of the E4HE Lesotho project—follow a mixed-method case study methodology. This methodology was chosen because of the object of interest and the flexibility that the methodology offers. This case study focuses on one program, the CGP in Lesotho, to explore and illustrate the potential for CT programs to reduce disparities in child health in the targeted communities through the economic empowerment of vulnerable groups, especially women. Previous research found that the impact of CT programs on child health and empowerment was highly program- and context-dependent, and this study required a methodology that would use the details of the specific case in a real-life environment to investigate and illustrate the issues of interest. These are among the strengths of the single case study design (Creswell, 2007; Yin, 2009). Although the choice of a single-case study would affect the generalizability of the findings, this project was thought of as a first step, or pilot, that can be replicated in other contexts to better understand the role of economic empowerment and health equity in CT programs. The issue of generalizability was addressed as part of the discussion.

The choice of mixed-method was also driven by the complexity of the concepts and outcomes of interest, which a single methodology might have failed to capture. Johnson and Onwuegbuzie define mixed-method research as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (2004, p. 17). These authors highlight that the inclusive and complementary nature of mixed-method research can provide stronger conclusions (through corroboration of findings) and better insights into complex phenomena. Thus, the combination of the case study methodology and a mixed-method design allows for a pragmatic, flexible research design that provides an in-depth understanding of the CGP and its implications for child health equity and economic empowerment (Johnson & Onwuegbuzie, 2004; Yin, 2009).

Yet, mixed-method research also raises some challenges. Johnson and Onwuegbuzie (2004) explain that because such a design requires a good understanding and the implementation of different methods into a single study, mixed-method research is more difficult for a single researcher to implement; it is also more expensive and more time-consuming. For the E4HE Lesotho project, key preparatory steps involved securing the collaboration of method specialists for both the qualitative and the quantitative parts of the project and securing additional funding to provide the necessary manpower to do this research. For this study, the mixed-method component of the design was articulated by phases (rather

than mixing both methods in each step of the project). The first, qualitative phase focused on understanding the meaning and conceptualization of the concepts of interest, using thematic analysis. The second, quantitative phase involved using a triple differences model to re-analyze program data in light of the qualitative findings to better understand the effects of the CGP on child health equity and its links to empowerment processes. An important part of my role in the project was to ensure the coherence and exchange of information between the two phases, allowing this corroboration of findings and developing in-depth insights into the CGP and its implications for child health equity.

4.2.3.1. Thematic Analysis in a Case Study

Thematic analysis involves organizing qualitative data into themes and categories (or secondary and tertiary themes) to obtain a good overview of the main issues emerging from that data to answer research questions (Skovdal & Cornish, 2015). Although thematic and case study analyses may be considered as two separate methodologies, they can be combined to better suit the data and research questions at hand (Skovdal & Cornish, 2015). In Papers 3 and 4, we chose to thematically code the data and explore emerging themes within the case's context.

Papers 3 and 4 rely on the triangulation of information from the desk review (review of CGP documents) and from semistructured interviews with key informants (program stakeholders). In line with the case study methodology, extensive discussions were held with UN agencies in Lesotho involved in the fields of economics, politics, gender, human rights, and child health and nutrition to contextualize the case (Skovdal & Cornish, 2015). Collaboration with a researcher from the National University of Lesotho who had prior experience researching the CGP was also key to this contextualization effort.

Desk review documents were coded deductively using an initial coding framework based on the conceptual literature on health inequalities and economic empowerment (Graham, 2004; Kabeer, 1999; Laszlo et al., 2020). The coding framework also contained elements related to the source of the document; the phases of the program it covered; and the context in which the CGP was developed, implemented, and evaluated. To avoid the theoretical framework being too restrictive and possibly biasing our coding, the framework was piloted with a sample of documents before being expanded to the whole desk review. Skovdal and Cornish also recommend taking extensive notes while going through the material to allow a "thick description" of the case (Skovdal & Cornish, 2015, pp. 172–173). Hence, the coders wrote extensive memos throughout the coding process; these memos were exchanged and discussed to both allow in-depth exploration of the case and limit the risk of individual bias. To allow new categories and themes to arise from interviews, the transcripts were coded inductively. Codes were then organized into predefined categories similar to those used for the document coding, although the categorization was kept flexible. The inductive approach used for the interview transcript also allowed more-granular coding to better capture links between the phenomena of interest and the context. Contextual codes were also applied to allow exploration of the interaction between contextual codes and themes emerging from the data. As with the desk review, coders took extensive notes, organized in memos.

These memos were essential in identifying emerging themes but also in rethinking our approach to the data. Initially, the documents and interview transcripts were categorized by organization and type of stakeholder (according to roles and program cycles). The objective was to develop short narrative summaries for each type of organizations and stakeholders on the different issues of interest and then fit them into a role-ordered matrix. Role-ordered matrix displays allow comparisons of specific

dimensions and issues of interest across different "role-occupants" and, thus, the identification of convergences and divergences of perception and views (Miles et al., 2018). However, the memos and initial exploration of the data showed that this categorization was inadequate to explore the different understanding and operationalization revealed by the data. A more fluid categorization was required to illustrate the various patterns and contrasts between stakeholders' point of views. Hence, themes were explored individually to understand their meaning but also to identify areas of consensus and disagreements. The use of different matrices was essential in this process. As Miles et al. (2018) explains, visual displays, such as matrices or graphs, can help understand and identify patterns, contrasts, or trends. In Papers 3 and 4, a two-way matrix was used to explore potential interactions between context codes and each code category, which better contextualized the data. Two-way matrices were also used to explore differences or disagreements found within each theme to identify the determining factor behind these variations (e.g., change over time, change in organizations, or change in types of stakeholders). The summary of findings was structured around the papers' research question. The findings on the definitions of the concepts of health equity and economic empowerment (especially empowerment of women) were key in defining the variables used in the triple differences model in Paper 5, while the contextualization allowed for a finer analysis and interpretation of the findings from the model.

4.2.3.2. Triple Differences Model

The triple differences (DDD) models can be described as the difference between two difference-in-differences models (Olden & Møen, 2022). Difference-in-differences models compare changes over time between a treatment group receiving the intervention of interest and a control group that does not (Gertler et al., 2016). DDD models allow inclusion of a second control group to account for additional factors that might affect the outcome of interest (Gruber, 1994). Paper 5 uses such a model to explore the effects of the CGP on health disparities in children in treatment communities while controlling for other factors and trends using control communities. First, the DDD model is used to test whether children receiving the CGP saw their health outcomes "catch up" with that of children in noneligible households living in treatment communities (i.e., improved faster thanks to the CGP) compared with the trends observed in children of eligible and noneligible households in control areas (i.e., in the absence of intervention). Second, in a subgroup analysis, DDD models are applied to explore whether and how comparatively more-vulnerable population groups may have benefited from potential "catch-up" effects.

Because DDD models are based on difference-in-differences models, the two models are based on the same assumptions and share similar properties (Olden & Møen, 2022). As is the case with fixed-effects regression models, difference-in-differences models allow researchers to control for unobserved variables that are constant over time, thus measuring only changes between the two groups (Angrist et al., 2008; Gertler et al., 2016). Difference-in-differences models have been widely applied to CT evaluations in LMICs (Lopez-Arana et al., 2016). DDD models control for additional factors that may interfere with the effects of the intervention of interest, including potential spillovers within treatment communities or environmental factors affecting the trends observed over time in the different groups (Olden & Møen, 2022). Since the CGP targets poor and vulnerable households, beneficiary and nonbeneficiary households are, by definition, different, and beneficiaries were found to be consistently worse off than their nonbeneficiary counterparts (Pellerano et al., 2012). However, DDD models, like difference-in-differences models, do not necessarily require the two groups to be comparable at baseline. These models assume that both groups are affected by equal trends over time (Gertler et al., 2016; Olden & Møen, 2022), The CGP data did not allow for a comparison of trends between eligible

and noneligible households prior to implementation of the program. However, the DDD model allows control of external factors that may have affected the trends between the two groups by including the difference between treatment and control groups in its estimator. The 2014 evaluation demonstrated that both the households and the community characteristics between the treatment and control areas were not significantly different (Pellerano et al., 2014). We further test this assumption for our sample by estimating the baseline balance between treatment and control areas. The baseline balance shows that, overall, the two groups did not have statistically significant differences ($p < 0.05$).

Finally, the DDD model allows identification of potential spillover effects by providing an estimate for the differences between noneligible groups in the treatment and control areas over the intervention period (equivalent to a difference-in-differences model among noneligible in treatment and control areas) (Olden & Møen, 2022). As Angeles (2022) explains, a difference-in-differences model among noneligible households is one of the three methods to assess the spillover effect of a program like a CT. Although spillover analysis was not part of Paper 5, I present this analysis later in this thesis (See section 6.3.4, A Quantitative Case Study of Lesotho's Child Grants Program—Supplementary Spillover Analysis).

A key challenge raised by the CGP evaluation data was the presence of other local interventions, especially in response to the food security emergency in 2011–2012, which may have interfered with the trends compared in the DDD model. As the CGP classifications were used to identify beneficiaries of some of these interventions, we acknowledge that the effects captured in our regression may include both the CGP and these emergency top-ups. However, informants confirmed that eligible households in control areas also received this emergency relief, so the DDD model allows assessment of whether the CGP provided an additional benefit to that of the emergency relief alone. This case illustrates the challenges of real-life trials, where methodological rigor must be balanced with both ethical and practical considerations. These limitations were accounted for in Paper 5's discussion of the findings. In the next section, I will further discuss the methodological challenges faced during the research that led to this thesis.

4.3. METHODOLOGICAL CHALLENGES

4.3.1. Operationalizing Complex Concepts

As the theoretical framework supporting this thesis illustrates, the key concepts at the heart of this thesis are complex and thus challenging to operationalize or measure.

4.3.1.1. Health Inequalities

Whether defined as a disadvantage, a gap or a gradient, health inequalities are determined according to several factors that reflect the variety of determinants of health. These factors' importance and relevance in a given society also vary over time and across locations (Evans et al., 2001; Kelly et al., 2007). Welch et al.'s (2022) latest update on how equity is assessed in systematic reviews of interventions shows that although socioeconomic status remains among the most commonly assessed dimensions of equity, the type and number of dimensions covered by individual reviews have diversified since 2010. The acronym PROGRESS-Plus adopted by the Campbell and Cochrane Equity Methods Group Data provides a nonexhaustive list to help identify health inequality dimensions relevant to individual contexts (see Table 2). Besides the number of factors of health inequalities, a second difficulty comes from their interactions. As Kelly et al. (2007, p. 12) explain, "these factors

intersect, interact, overlap, and cluster together in their effects." To account for the multidimensional and context-specific nature of health inequalities, the papers included in this thesis attempt to move away from the traditional measure of inequalities according to socioeconomic status and consider a wider list of factors according to the level of intervention (regional and national in Paper 1; global and regional in Paper 2; national and local in Papers 3 to 5). The combination of qualitative and quantitative methods also allows me to explore how interventions may impact these individual factors differently, as illustrated in Papers 1 and 5. For example, Paper 1 found that certain interventions may have a positive effect on one factor of health inequalities (e.g., age or health risk) but be detrimental to another (e.g., place or country of residence). Paper 3 illustrates how an ambitious and holistic approach to addressing the health determinants of the most disadvantaged may be challenging to implement in a lower-resource setting. These findings further illustrate the challenges of addressing health inequalities holistically.

Table 2

PROGRESS-Plus Factors

Place of Residence	Rural/urban, housing characteristics
Race, ethnicity, cultural background	Racial, ethnic, and sociocultural background
Occupation	Employment status, type of occupation, employment-based benefits
Gender and sex	Biological and gender-based differences and characteristics
Religion	Religious background
Education	Years in and/or level of education attained, school type
Social capital	Social relationships and networks, support and participation at neighborhood / community / family level
Socioeconomic status	Income, welfare, assets and resources at individual or household level
+	These include other factors of inequalities such as age, disability, health condition (e.g., HIV/AIDS, mental health issues); refugee or displaced person status

Note: Adapted from "Reflections on developing and using PROGRESSPlus," by J. Kavanagh, S. Oliver, & T. Lorenc, 2008, *Equity Update, 2*(1),pp. 1–3.Copyright 2008 by Cochrane Health Equity Field and Campbell Equity Methods Group. "Applying an equity lens to interventions: Using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health," by J. O'Neill, H. Tabish, V. Welch, M. Petticrew, K. Pottie, M. Clarke, T. Evans, J. P. Pardo, E. Waters, H. White, and P. Tugwell, 2014, *Journal of Clinical Epidemiology*, *67*(1), pp. 56–64. https://doi.org/10.1016/j.jclinepi.2013.08.005. Copyright 2014 by *Journal of Clinical Epidemiology.*

4.3.1.2. Women's Empowerment

Given women's roles as primary caregivers for children and the gendered risks of vulnerability, gender and the multidimensional marginalization of women remain a factor of interest throughout the present work. As a result, women's empowerment is a major concept of interest for this thesis. However, its complex definition creates challenges in the operationalization of this concept in research. In reference to women's economic empowerment, Laszlo et al. (2017, p. 1) comment that "there are almost as many different instruments used to measure [women's economic empowerment] as there are research papers or development projects that utilize them." The nature of women's empowerment as both an

outcome and a process and the various dimensions that women's empowerment encompasses makes this concept challenging to translate into measurable indicators (Malhotra et al., 2005).

When referring to empowerment as a process, the dynamic nature of the object of interest makes it particularly hard to capture empirically. Hence, Malhotra et al. (2005) and Duflo (2012) highlight how many empirical studies tend to use proxies. Besides being indirect measures of the process (and possibly largely indirectly connected to it), these measures also tend to reflect the outcome of the empowerment process rather than the process itself (e.g., employment, education, women's health) (Laszlo et al., 2017; Malhotra et al., 2005). Although such outcomes might reflect a change in women's agency, resources, or the norms that constrain their choices in certain contexts, they may also be misleading or misinterpreted (Kabeer, 1999; Laszlo et al., 2017; Malhotra et al., 2005). Hence, careful considerations have to be given to the meaning of this proxy measure in the particular context in which it is applied (Laszlo et al., 2017; Malhotra et al., 2005).

A second group of measures commonly used to capture women's empowerment focus on women's decision-making, primarily within the household (GEH, 2020; Lopez-Arana et al., 2016). Although indicators of women's decision-making can help capture women's agency, Peterman et al. (2021) warn that such indicators should not be interpreted as representing women's empowerment as a whole. As women's role in decision-making is often measured by asking women themselves, researchers should also be mindful of the impact of internalized norms and the subjectivity of the measure. To address these limitations, both Donald et al.(2020) and Peterman et al. (2021) recommend cross-referencing women's views of their own decision-making with views provided by men and/or to consider combining traditional surveys with innovative measurement methods (e.g., vignette or simulation games). These authors also highlight the importance of triangulating decision-making measures with other measures of women's agency or other dimensions of women's empowerment.

Regardless of the indicator(s) and measurement method(s) used, there is a consensus over the importance of context when choosing measures of women's empowerment (Buller et al., 2018; Kabeer, 1999; Malhotra et al., 2005; Peterman et al., 2021). Several lists of key measures of women's empowerment (as a whole or specific to a particular empowerment dimension) have been developed for researchers to choose from according to the specificities of the setting in question (for example, see GHE, 2020; and Laszlo et al., 2017). However, the preeminence of context-specific factors also raises the issue of the comparability of empowerment measures and the generalizability of research findings on this issue (GHE, 2020; Laszlo et al., 2017). Following one of the approaches suggested by Malhotra et al.(2005), this thesis relies on a broad theoretical framework for empowerment from which dimensions can be specified and selected in individual papers to match the level (global, national or local) and context in which the concept is applied to measure empowerment (e.g., rural Lesotho). However, this approach can only partially address some of the challenges highlighted here. In Paper 2, the global lens adopted for the analysis limits the application of the findings to individual countries. In Paper 5, the small sample size limited exploration of the dimensions of empowerment that had been identified as relevant to the CGP in Paper 4, thus preventing assessment of the role that empowerment processes play in the CGP's effects on child health disparities. These limitations were primarily addressed when discussing the findings.

4.3.2. Data Availability in LMICs

The study of health inequalities and of interventions' impact on them is hampered by the uneven availability and accessibility of data in LMICs (Welch et al., 2022). This challenge was persistent

throughout the work that supports this thesis. In Paper 1, the lack of evidence regarding the effects on health inequality of various interventions can be partially explained by their disaggregated effects on different groups not being systematically collected or reported. In Paper 2, the choice of data sets (which relies on expert opinions and global estimates) was partially driven by missing data in international organizations' databases based on national information systems. In Paper 5, the analysis relied entirely on the CGP's own evaluation data because other data sources on these communities that might have provided a wider sample (e.g., from National Information System for Social Assistance or the health system) were not publicly available.

The challenges behind this lack of data in LMICS are twofold: the collection and generation of reliable disaggregated data in LMICs, and their sharing or availability. The cost and complexity of building large longitudinal datasets mean that many LMICs still rely, in part, on external support to collect data on their population. Hence, the data landscape in LMICs is made more complex by the involvement of international development actors (e.g., development or UN agencies, nongovernmental organizations) and, more recently, by the growing role of the private sectors (L. Taylor & Broeders, 2015). These various networks do not necessarily overlap with states' own infrastructure and data systems, so the data landscape in LMICs is decentralized and fragmented (L. Taylor & Broeders, 2015), which makes it harder find inclusive data sets that allow monitoring of health progress at population level and across different groups. Global estimates, such as those used in Paper 2, may fill some of the gaps left by a lack of regular, comparable and accessible data at the national or subnational levels, but their reliability still requires the availability of solid information systems globally (Vos et al., 2020).

A second set of barriers involves the sharing of available data. Looking at public health surveillance data, Sane and Edelstein (2015) identify six broad categories of challenges: technical (linked to capacity and infrastructure), motivational (reflecting the lack of incentive at the individual and policy levels to share data), economic (related to the cost of sharing but also the impact of sharing negative health data), political (reflecting the factors leading to more-restrictive data sharing policies), legal (related to data protection laws and unequal data ownership agreements) and ethical (particularly related to the lack of reciprocity and of shared benefits for sharing). Bezuidenhout and Chakauya (2018) further highlights how the solutions and infrastructures set up to support data sharing—and especially Open Data—still have to better account for the challenges specific to research environment in LMICs.

These challenges are not only a barrier to health equity research but also can be seen as symptoms of inequity. Aside from being fragmented, the data landscape in LMICs is also unequal (L. Taylor & Broeders, 2015). Data make population and territories visible not only for researchers but also policy-makers and private actors. Hence, the lack of data or of accessible data reflects not only who is taken into account in research and public action but also who has the power to inform policy and research. As Taylor and Broeders explain: "Visual equality is a rare thing, especially when states are involved. (In)visibility is therefore a power struggle" (2015, p. 231). This control over generation and sharing of data further reflects the power inequalities between high-income countries (HIC) and LMICs that are at play in global health, where resources, capacities, and legal agreements give disproportionate power to HIC institutions rather than to the populations these data aim to reflect (Sane & Edelstein, 2015; L. Taylor & Broeders, 2015). In turn, this creates further disincentives for researchers and policy-makers in LMICs to support data sharing (Bezuidenhout & Chakauya, 2018; Sane & Edelstein, 2015).

Besides their implications for access to data, the power inequalities between HICs and LMICs have raised several ethical considerations for the work undertaken as part of this thesis, as illustrated in the next chapter.

5. ETHICS

This section discusses the ethical approval processes that the research included in this study went through, as well as selected ethical considerations that have affected this work.

5.1. ETHICAL APPROVAL

Papers 1 and 2 worked exclusively with anonymous group-level information or national estimates that are publicly available. There was no risk to identifying individual data or disclosing confidential information, so these studies did not require ethical approval.

For the qualitative part of the E4HE Lesotho case study (Papers 3 and 4), a notification regarding the project was given to the Norwegian Centre for Research Data (NSD Notification Form 828582) to ensure adequate management of personal data. No health or sensitive data were collected, so a clearance from the Norwegian Regional Committees for Medical and Health Research Ethics was not necessary. Partners in Lesotho confirmed that no further authorization was necessary in Lesotho. Consent for the interviews was obtained in writing, using the NSD template letter and form. The documents used in the desk review were either publicly available or obtained through the authors/editors or the organizations that generated or published them. In these cases, prior authorization to include them in the study was obtained.

As for the quantitative part of the E4HE Lesotho case study (Paper 5), no data were directly collected by the project team. The data set from the CGP surveys was obtained from the University of North Carolina at Chapel Hill's (UNC) Carolina Population Center Data portal (UNC Carolina Population Center, 2021). Application for access and use of the data was made by all relevant team members (application number 30032001). In line with the data security pledges submitted in the application, only project team members identified in that application had access to the data. The data file and supporting information was kept on NTNU cloud services in line with university guidelines for storage of personal information. No further ethical approval was required.

5.2. ETHICAL CONSIDERATIONS

As described in the theory section of this thesis, health equity involves a vision of social justice. Therefore, working on promoting health equity is, by definition, a value-based and subjective endeavor. Working on this topic in a global context, with flagrant inequalities in resources, power, and opportunities between countries, adds another layer of complexity to addressing such a political topic.

As a white researcher born and raised in a former colonial power, I cannot avoid questioning my own subjectivity and the paradoxical nature of my work when trying to address health equity in LMICs. In the words of Abimbola and Pai, global health "is a discipline that holds within itself a deep contradiction—[it] was birthed in supremacy, but its mission is to reduce or eliminate inequities globally" (2020, p. 1). The privileged position through which I was able to undertake this research and

the risk to unconsciously reproduce or reinforce power inequalities through my work were recurring considerations over the past four years. The distance to the field of this research caused by the COVID-19 pandemic has further reinforced my concerns over imposing my own biases onto the country, the people, and the program at the heart of the E4HE Lesotho project.

At the individual level, a number of safeguards were put in place to mitigate these risks and concerns. The first one was to ensure an inclusive and transparent coordination of the project. This involved securing the participation of key international and national actors and experts and providing them with the chance to inform and influence the project at different stages. The role and the principles behind this agreement with the main partner—the UNICEF Lesotho country office—were formalized in the agreement letter between NTNU and UNICEF. The second safeguard involved securing resources that could not only compensate but also facilitate the participation of national partners. The third safeguard was a close collaboration with Mme Thandie Hlabana, a lecturer at the National University of Lesotho who was essential both in contextualizing the research and in talking with informants about difficult issues in a sensitive manner. As a fourth safeguard, discussions were held early on about how the contribution of each organization and individual would be acknowledged in the final deliverables. Finally, the dissemination activities have been designed in a way that allows exchanges with and feedback from both informant organizations and current program stakeholders, so this research can provide practical information to and on the CGP.

Still, I cannot ignore the power dynamics that have manifested themselves at different stages of this project. As the initiator of the project and the manager of project funding from my institution, I retained important influence over the content and timing of the project compared with the national partners. Despite my efforts to expand my collaborations globally, I must recognize that, aside from the E4HE Lesotho project, the network of professionals and academics that have supported and advised this thesis comes almost exclusively from HIC institutions. In that sense, this research was very much carried out according to the traditional model of global health collaboration, with the driving force being the HIC institution (Chaudhuri et al., 2021; Pai, 2021). Bearing in mind the key concepts that support this thesis, the safeguards described above were very much designed to mitigate the effect of power inequalities in global health research rather than transform them. Hence, while I hope that the knowledge generated by this research may help empower the populations targeted by CTs and other public health interventions, I must acknowledge that the research itself may not have been empowering to my collaborators.

Despite these limitations, I was fortunate to access a growing number of resources and initiatives to support my thinking and to develop these safeguards around the E4HE Lesotho project. The growing debate on equal global partnerships in research and the calls for decolonizing global health provide a rich arena for individual researchers to debate and reflect on their own posture (Khan et al., 2021; Pai, 2021). However, reluctance persists at the institutional level to engage fully with this debate, as I experienced when organizing a panel discussion on these issues for the NTNU Global Health Research group. With global health student organizations engaging actively on these issues, researchers and their institutions ought to respond—only institutional change can help future research projects to be truly empowering of all the partners involved (Pai, 2021).

6. SUMMARY OF ARTICLES

PART I. STATE OF THE RESEARCH ON PUBLIC HEALTH INTERVENTION AND CHILD HEALTH INEQUALITIES

Paper 1. Which Public Health Interventions Are Effective in Reducing Morbidity, Mortality and Health Inequalities from Infectious Diseases Amongst Children in Low- and Middle-Income Countries (LMICs): An Umbrella Review.

Besnier E., Thomson K., Stonkute D., Mohammad T., Akhter N., Todd A., Jensen M. R., Kilvik A., Bambra C. (2021) Which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases amongst children in low- and middle-income countries (LMICs): An umbrella review. *PLoS ONE, 16*(6), Article e0251905. https://doi.org/10.1371/journal.pone.0251905

Despite significant progress in the past few decades, infectious diseases remain a major threat to child health in LMICs—particularly among more-disadvantaged groups. It is imperative to understand the strongest available evidence concerning which public health interventions reduce morbidity, mortality, and health inequalities in under-5 children.

To address this gap, the research team carried out an umbrella review (a systematic review of reviews) to identify evidence on the effects of public health interventions (promotion, protection, prevention) on morbidity, mortality, and/or health inequalities resulting from infectious diseases amongst children in LMICs. Ten databases were searched for records published between 2014 and 2021 alongside a manual search of grey literature. Articles were quality-assessed using the AMSTAR 2 checklist. A narrative synthesis was conducted.

The team identified 60 systematic reviews synthesizing 453 individual primary studies. A majority of the reviews reported on preventive interventions (n = 48), with a minority on promotion (n = 17) and almost no reviews covering health protection interventions (n = 2). Effective interventions for improving child health across the whole population, as well as among the most disadvantaged, included communication, education, and social mobilization for specific preventive services or tools, such as immunization or bed nets. For all other interventions, the effects were either unclear, unknown, or detrimental, either at the overall population level or regarding health inequalities. Among the gaps that this umbrella review revealed, the health equity impact of CT was identified as an area where the evidence is limited and inconclusive. We found few reviews reporting health inequalities information and the quality of the evidence base was generally low.

This umbrella review identified some prevention interventions that might be useful in reducing mortality from infectious diseases in under-5 populations in LMICs, particularly among the most-disadvantaged groups. However, many gaps remain regarding the health equity and population health impact of health promotive and protective interventions.

My contribution to this umbrella review included the study's oversight and coordination, the conceptualization and study design (with advice and inputs from co-authors), data collection (in

duplicate with co-authors), and analysis, as well as draft writing and reviewing (with reviews from co-authors and supervisors).

This paper was published in *PlosOne* on the 10th of June 2021. The supplementary material published alongside the paper is in Annex 1.

PART II. WOMEN'S EMPOWERMENT AS A LEVER FOR IMPROVING CHILD HEALTH

Paper 2. Women's Political Empowerment and Child Health in the Sustainable Development Era: A Global Empirical Analysis (1990–2016)

Besnier E., (2020): Women's political empowerment and child health in the sustainable development era: A global empirical analysis (1990–2016), *Global Public Health*, DOI:

10.1080/17441692.2020.1849348.

Empowering women is presented as a key strategy to achieve several goals of the SDG agenda, including child health. However, the literature on the subject shows mixed results and is limited regarding political empowerment. Responding to this gap, this study explores whether women's political empowerment is associated with positive health outcomes for under-5 children.

This study uses the V-Dem project's WPEI in combination with selected SDG indicators of child health from IHME's 2017 GBD for 161 countries between 1990 and 2016. This study estimates fixed-effects regressions for the WPEI against child mortality, stunting, and immunization coverage, controlling for structural and socioeconomic indicators from the SDGs and potential lagged effects.

The WPEI is associated with improved nutrition and immunization but its substantive effect is small. This suggests that although women's political empowerment may contribute to improving child health, other factors—including women's socioeconomic empowerment—might offer stronger leverage as structural determinants of child health. High-income, low-income, and least-developed countries benefit more from the effect of women's political empowerment on child mortality. The effect of women's political empowerment on stunting is stronger in middle-income countries, and its effect on immunization is more relevant to low-income and least-developed countries.

This study demonstrates the complexity of relations between women's political empowerment and child health.

This paper was published in *Global Public Health* on the 26th of October 2020. The supplementary material published alongside the paper is in Annex 4.

PART III. CASE STUDY: EMPOWERMENT FOR HEALTH EQUITY, USING ECONOMIC EMPOWERMENT TO PROMOTE EQUITY IN CHILD HEALTH IN LESOTHO: A CASE STUDY OF THE CHILD GRANT PROGRAM

Paper 3. Exploring Economic Empowerment and Gender in Lesotho's Child Grants Program. A Qualitative Study.

CTs have been increasingly used in LMICs as a poverty-reduction and social-protection tool. Despite their potential for empowering vulnerable groups (especially women), evidence of such outcomes remains unclear. Additionally, little is known about how these broad concepts fit into and are perceived in such programs. Lesotho's CGP is an unconditional CT targeting poor and vulnerable households with children. As one of the longest-running government CT programs in Sub-Saharan Africa, the CGP has been presented as one of Lesotho's flagship programs in developing the country's social safety net system.

Using the CGP's early phases as a case study, this research aims to capture how program stakeholders understood and operationalized the concepts of economic empowerment (especially for women) in Lesotho's CGP.

The qualitative analysis relied on the triangulation of information from a review of program documents and semistructured key informant interviews with program stakeholders. The program documents were coded deductively; the interview transcripts were coded inductively; then both groups of material were analyzed thematically. Differences or disagreements found within each theme were explored individually according to the program's chronology and according to the stakeholders' affiliations and roles in the CGP.

The complexity of the concept of interest was reflected in the diversity of definitions found in the desk review and the interviews. *Economic empowerment* was primarily understood as improving access to economic resources and opportunities—and, to a lesser extent, agency and social and economic inclusion. Other dimensions (community empowerment, lifting families out of poverty, and women's empowerment) were more disputed and seemed to be terminologies used by specific stakeholders. For example, the definition of *women's empowerment and gender issues* came predominantly from international organizations and stakeholders in position of leadership. *Gender* was overwhelmingly understood as referring to the situation of women. *Women's empowerment* mainly referred to giving women access to or control of economic resources in the household, although this definition was disputed.

This diversity of definitions affected how these concepts were integrated into the CGP, with particular gaps between the strategic vision and operational components, and between the role these concepts were perceived to play and the effects explored so far. This study identified a clear link between the level of agreement on a particular definition of empowerment between stakeholders and its level of integration into the program. The role of these different concepts and their evolution over time further illustrate two findings. First, the program's design itself was found to be (dis)empowering, also leading to different empowerment processes conflicting with one another. Second, the evaluation seems to have played a key role in progressively integrating empowerment and its different dimensions into the CGP. Gender sensitivity and women's empowerment issues in particular, were first formally included in the program through the first evaluation. Because of their debated role(s) and importance in the

CGP, a number of potential effects of the CGP, such as its community empowerment and women's empowerment effects, remain under studied.

This study illustrates the complexity of the concepts of economic empowerment (especially women's) as applied to the CGP. This complexity had a direct impact on the uneven operationalization of the concept into the program, with individual empowerment definitions' level of integration being strongly linked to the level of consensus on this particular definition. Besides these discrepancies according to the meaning of empowerment, this study also found more-systematic divisions, particularly between the strategic and operational levels of the program—pointing to operationalization gaps as well as stakeholder-specific agendas and priorities.

Besides the overall coordination of the E4HE Lesotho project, my contribution to this study was in the development of the theoretical framework, study design (with advice and inputs from a method specialist and the project partners), data collection (with support from a research assistant), analysis, contextualization, and interpretation of the results (with inputs from the project partners), as well as draft writing and reviewing (with reviews from co-authors and supervisors).

This paper was submitted to *Health Policy and Planning* in April 2022. The supplementary material submitted alongside the paper is in Annex 5.

Paper 4. Exploring Health Equity in Lesotho's Child Grants Program. A Qualitative Study.

Despite their growing popularity, little is known about how CTs can affect health disparities in targeted communities. Lesotho's CGP is an unconditional CT targeting poor and vulnerable households with children. Started in 2009, the CGP is one of Lesotho's key programs in developing the country's social protection system.

Using the CGP's early phases as a case study, this research aims to capture how program stakeholders understood and operationalized the concept of child health equity in Lesotho's CGP.

The qualitative analysis relied on the triangulation of information from a desk review and semistructured key informant interviews with program stakeholders. The program documents were coded deductively; the interview transcripts were coded inductively. Both materials were analyzed thematically before comparing their findings. When differences or disagreements arose within a theme, we explored potential determining factors for these variations according to the program's chronology and the stakeholders' affiliations and roles in the CGP.

Our analysis of *health equity* definitions in the context of the CGP reflected the complexity and multidimensional (or even debated) nature of the concept. A similar analysis applies to the definition of *child health*, which often included two or more components. Looking at these different definitions individually, *child health equity* was overwhelmingly defined as focusing on children's access to health services for the most-disadvantaged households. Other definitions were more disputed and seemed to be terminologies used primarily by specific stakeholders. These discrepancies in the definitions were further reflected in the role that this concept played in the CGP: The more-disputed definitions were also comparatively less integrated into the program. But even the most-agreed-on definitions of this concept did not seem fully operationalized throughout the program. There was a clear gap between the strategic and operational levels (e.g., day-to-day operations and reporting at the local level) as to the role of health equity as an objective. Hence, the ambitious approach to the root causes of

disadvantage and the holistic vision of children's health and well-being failed to be translated into specific, operational activities and targets. This ambitious approach was also further hampered by operational challenges, such as coordination issues between different programs and organizations. This health equity operationalization gap not only affected the study of selected health spillover effects of the CGP but also might have undermined other program effects related to specific health disadvantages or gaps.

This study shows how the CGP's initial holistic and ambitious vision of children's health and well-being was hampered by operational gaps between the strategic and operational levels of the program and by operational challenges. As a result, a number of potential effects of the CGP, such as its health community–wide spillover, remain under studied while other effects related to specific health disadvantages or gaps may have been weakened.

Besides the overall coordination of the E4HE Lesotho project, my contribution to this study was in the development of the theoretical framework; study design (with advice and inputs from a method specialist and the project partners); data collection (with support from a research assistant); analysis, contextualization, and interpretation of the results (with inputs from the project partners); and draft writing and reviewing (with reviews from co-authors and supervisors).

This paper was submitted to *Health Policy and Planning* in April 2022. The supplementary material submitted alongside the paper is in Annex 5.

Paper 5: Using Cash Transfers to Promote Equity in Child Health In Lesotho: A Quantitative Case Study of Lesotho's Child Grants Program

CTs have been increasingly popular tools for promoting social inclusion and equity among children in Sub-Saharan Africa. However, less is known about CTs' implications for reducing health disparities in children across the community, beyond the targeted group. Using the Lesotho CGP as a case study, we aim to better understand the potential for CT programs to reduce the child health gap in the targeted communities.

Using a triple differences model, we examine the extent to which CGP improved child health outcomes in eligible households compared with noneligible households in treatment communities versus control communities and the extent to which this effect varied in different population subgroups. The two population subgroups were defined according to households' food security at baseline (as a proxy for access to economic resources) and the gender of the head of the household.

We find that while the changes observed may suggest a catch-up effect among beneficiary households, these effects are not statistically significant. The robustness tests and subgroup analysis show that these overall results might be affected by local or group-specific opposing trends. A catch-up effect was observed for selected nutrition outcomes among female-headed households and for subjective child health assessment for comparatively more food-secure households at baseline. Hence, these catch-up effects did not necessarily benefit the comparatively more-vulnerable groups across all outcomes.

This study highlights the potential of CT programs, such as the CGP, to address health disparities in preschool children for selected population groups in the community. However, these effects are complex and do not necessarily lead to an overall catch-up effect for beneficiary children.

Besides the overall coordination of the E4HE project, my contribution to this study was in the development of the conceptual framework and the hypotheses, the contextualization and interpretation of the results (with inputs from the project partners), and the draft writing and reviewing (with reviews from co-authors and supervisors).

This paper was submitted to *Health Policy and Planning* in April 2022. The supplementary material submitted alongside with paper is in Annex 6.

A Quantitative Case Study of Lesotho's Child Grants Program—Supplementary Spillover Analysis

To complement the analysis carried out in Paper 5, I explore the potential indirect effects (spillover) of the CGP on nonbeneficiary households. Indeed, stakeholders have suggested that the CGP may have indirectly affected the health of nonbeneficiary children, through economic or behavioral spillovers (see Paper 4). If so, such outcomes could affect the structure of health inequalities in treatment communities by modifying the determinants of health of both beneficiary and nonbeneficiary children. In this case, some groups may benefit more than others. Hence, the structure of health inequalities would be modified between or across all groups, but relative disparities would not necessarily be reduced. Spillovers have only been selectively tested in previous studies. For example, the CGP 2014 evaluation had found no spillover effects on child morbidity (illness in the last 30 days) or healthcare utilization (visit to a healthcare provider in the last 30 days) (Pellerano et al., 2014). To complement these findings, I explore whether the CGP has had spillovers on health and nutrition outcomes of nonbeneficiary children.

As previously explained, spillovers can be assessed using a difference-in-differences model among noneligible households in treatment and control areas over the intervention period. The DDD model used in Paper 5 already provides such an estimate, reproduced in Table 3 with updated number of observations and R-squared estimate (the full DDD model results can be found in Paper 5). I did not replicate the subgroup analyses carried out in Paper 5 for this spillover analysis because the sample size for these subgroups among noneligible households was very small, which would affect the statistical power of the analysis. As Table 3 shows, there was no statistically significant spillover effect on almost any of the outcomes of interest. This confirms the initial findings from the CGP evaluation, which found no or minor spillovers across the outcomes evaluators tested (Pellerano et al., 2014). The only exception in Table 3 is healthcare spending, where the coefficient suggests a statistically significant negative spillover in treatment areas.

Table 3

Difference-in-Difference Estimates for Child-Level Outcomes Among Non-Eligible Households in Household-Level Analysis

	No Child Illness in Past 30 Days	Healthcare Spending on Children in Past Three Months	Self-Assessed Child Health Status	No Child Going to Bed Hungry in Past Three Months	No Child Eating Fewer Meals in Past Three Months	No Child Eating Smaller Meals in Past Three Months
Area_Treat*F-up	0.034	-0.149**	-0.034	0.017	-0.009	0.002
[Spillover]	(0.082)	(0.071)	(0.050)	(0.070)	(0.081)	(0.080)
Observations	458	458	454	457	458	458
R-squared	0.007	0.010	0.017	0.003	0.017	0.021

Note. Standard errors clustered on household in parentheses

*** p<0.01, ** p<0.05, * p<0.1

This result is surprising because it goes against the expected spillover (if any) of a CT program and the program stakeholders' perceptions reported in Paper 4. The sample of noneligible households was generally balanced (see Annex 7, Table A7a). However, controlling for the two household characteristics whose differences were statistically significant at $p < 0.05$ at baseline affects this coefficient and the associated p value (see Annex 7, Table A7b). As noneligible households in the treatment area also had a higher mean healthcare spending for children at baseline, the negative effect captured in this analysis is likely linked to other household characteristics rather than to a spillover of the CGP.

To conclude, this analysis does not support the observations from program stakeholders that the CGP had a positive spillover effect on nonbeneficiary children's health and nutrition. When studying the CGP's effects on communities' network structure, Carraro & Ferrone (2019) found that the CGPs spillover effects on food security and consumption varied according to the level of geographical and relational proximity between eligible and ineligible households. They also highlighted the role of gender in these networks; they did not observe positive spillovers on these outcomes within women's networks. While this would suggest that spillovers—like the catch-up effects observed in Paper 5—are group-specific effects rather than overall ones, the sample size for the preschool children outcomes studied here prevents me from further investigating these subgroup effects. However, this analysis further highlights the importance of exploring CTs' effects across different population groups among both beneficiary and nonbeneficiary groups (Bastagli et al., 2016).

7. DISCUSSION

The body of evidence for health and social protection interventions promoting health equity for children in LMICs has been growing. Still, it remains limited and unevenly distributed among different types of interventions and approaches to health equity (Saran et al., 2020; Welch et al., 2022). This thesis has contributed to the further building of this body of evidence by exploring whether and how an empowerment-based approach to holistic public health interventions—including selected social

protection programs, such as CTs—can further improve health and reduce health inequalities in children.

In this chapter, I present the main findings of this thesis according to each of my research questions and in light of my initial hypothesis. Then, I discuss the main contributions of the present work. Finally, I conclude with a reflection on two areas for future research.

My first research question focused on identifying public health interventions that are effective in reducing morbidity, mortality, and health inequalities from infectious diseases among children in LMICs. Preventive interventions supporting access to and utilization of preventive tools, such as vaccines or bed nets, are those where the evidence of a double gain for population health and for the most-disadvantaged children is the strongest. Yet, while the majority of the evidence on this issue covers such traditional preventive public health interventions, research on interventions from Kickbusch (2003)'s third revolution of public health and their implication for child health and health equity is growing. These include interventions outside the healthcare sector, including social protection programs such as CT. However, findings on the health equity and population health impacts of this type of intervention are mixed and, as the E4HE Lesotho case study shows, these impacts on health equity are complex. Second, the growing interest for the health promotive or even transformative potential of such interventions for well-being and equity from the first years of life reflect the conceptual evolutions observed in the fields of public health and social protection (see Devereux & Sabates-Wheeler, 2004; Green et al., 2015). The inclusion of more-structural actions in complement or instead of individual-based or disadvantage-based approaches in the global development agenda and in international organizations' framework reflect this shift (SPIAC-B, 2019; UNICEF, 2019; WHO, 2018). However, as this thesis illustrates, the historical approaches of risk management in social protection and public health as means of disease control remain strong in practitioners' day-to-day approaches—and with them, an approach to health equity focused on disadvantaged groups.

My second research question explored the effect of empowerment strategies on child health and particularly, the burden of infectious diseases in LMICs. Exploration of this question posed two main challenges. The first was the complexity of the concept of empowerment and the lack of agreement on how to measure it. The second was the indirect nature of the relationship between empowerment and child health, which makes causality difficult to test for. However, through the study of women's political empowerment at the global level and the study of empowerment of vulnerable groups (especially women) and child health in the case of Lesotho's CGP, my findings suggest that empowerment strategies affecting the intermediary determinants of child health (such as the material or psychosocial circumstances of the household, the caregiver(s), and the child) are associated with an improvement of selected child health outcomes. Hence, in line with previous research (Kuruvilla et al., 2014), social or economic empowerment—including women's social and economic empowerment—may offer a stronger lever for improving child health, at least in the short term. However, this effect is not straightforward and seem to be unevenly effective depending on the context of the country or the community considered. As both the public health and social protection literature indicate that empowerment strategies affect households' opportunities and choices (Barca et al., 2015; Commission on Social Determinants of Health, 2008; Green et al., 2015; Owusu-Addo et al., 2019; A. Sen, 1995), it is possible that the effects of these strategies on child health would only become apparent in the long term or in the next generation. The literature on investing in early-years interventions would support such a hypothesis (Britto, 2017; Mustard, 2002)

My third research question focused on how empowerment strategies had been operationalized into public health interventions. Building on the gaps previously found in the body of evidence on public health interventions and the role of social or economic empowerment for child health, I have chosen to focus on a particular intervention, with the case study on Lesotho's CGP. This case study reveals that the complexity of the concept of empowerment affects not only its understanding by decision-makers and practitioners but also its operationalization into a specific program like the CGP. In their paper on operationalizing empowerment, Luttrell et al. (2009) had already noted how one's conception of empowerment tended to lead stakeholders to prioritize specific empowerment processes or outcomes. Hence, disagreements over the definition of empowerment would inevitably affect its operationalization. In the E4HE Lesotho project, the definitions of empowerment that were the most agreed upon were also those that were most integrated across the CGP's components. However, this case study also illustrates that consensus on a definition and role or empowerment, while essential, does not guarantee implementation. Operational barriers remain a challenge, thus the importance of implementation research to support such programs. This case study can also be seen as a snapshot of the evolution and debates in the field of social protection. Part of the strategic/operational divide observed in the operationalization of empowerment in the CGP can be linked to different approaches to social protection. Stakeholders working at the strategic level reflected the right-based or transformative approach to social protection, but the position of stakeholders working at the local or operational level was closer to a risk management or safety net approach, as defined by Brunori et al. (2010). The evolution of the program over time also shows a progressive shift, from a protective safety net to a more promotive program, if we follow Guhan (1994)'s taxonomy. The way that gender issues and women's empowerment were defined and introduced into the CGP also reflect the growing advocacy of international organizations for inclusive social protection (FAO, 2018; Sabates-Wheeler & Kabeer, 2003; SPIAC-B, 2019; UNICEF, 2019), but also the potential gaps between these international frameworks and the specificities of the context. Therefore, although there is a consensus in the literature on the importance of context-specific definitions of women's empowerment (Kabeer, 1999; Malhotra et al., 2005; Peterman et al., 2021), the case study included in this thesis shows that this recommendation is not yet fully implemented in CT program development and operations.

My final research question examined the effects of empowerment strategies on health inequalities and child health in LMICs, in an attempt to explore a potential double gain of such strategies for child health at population level and for health equity among children. This line of research was affected by the different definitions of both the key concepts: empowerment and health equity. When defining *empowerment* as access to economic resources and *health equity* as focusing on the most disadvantaged groups—the way that most CGP stakeholders did in the E4HE Lesotho project—I found that empowerment seems linked to a reduction of this type of inequality for selected health outcomes (e.g., morbidity from infectious diseases, nutrition outcomes). However, such definitions of these concepts have their limitations and are disputed in the literature. As Graham's (2004) typology illustrates, defining *health equity* as synonymous with health disadvantage ignores how a specific intervention might affect the health of the targeted group in comparison with the rest of the population or the health of the population as a whole. Hence, while this approach may promote a certain vision of social justice—the prioritarian approach of Powers and Faden (2006)—it does not necessarily reduce disparities between groups. As for *empowerment* defined as access to resources, women's empowerment researchers have highlighted how resources were essential but not sufficient to the empowerment process or the improvement of empowerment outcomes (Kabeer, 1999; Luttrell et al., 2009; Malhotra et al., 2005). Exploring of the effect of other definitions of empowerment on child health and health equity was challenging. As previously explained, the relations between empowerment and health

outcomes are mediated by several determinants of health, so a causal relationship between empowerment and child health or health inequalities is difficult to prove. Using the case study, this thesis has found some qualitative evidence that selected definitions of empowerment (empowerment as resources, agency, or social and economic inclusion) may be linked to a reduction of the health gap between beneficiary and nonbeneficiary children, as well as to potential community-wide child health improvement through economic or behavioral spillovers. However, I found limited quantitative evidence to support either hypothesis. Instead, findings from this thesis suggest that the provision of additional resources may reduce the health gap among selected vulnerable groups (including female-headed households), although this catch-up effect varies according to the group and the outcome considered. This latter case study finding also echoes a finding from the umbrella review included in this thesis. Indeed, both illustrate how interventions' effects on child health inequalities depend on the factor of inequality considered. For example, the CGP is associated with a reduction in the child health gap when the gender of the head of household is chosen as the determining factor of vulnerability and driver of inequality but less so when choosing a marker of socioeconomic circumstances (here, food security). In the review, I found similar discrepancies between factors of inequalities (defined according to the PROGRESS-Plus framework) and other interventions, such as introducing new vaccines into national immunization programs, implementing sanitation and hygiene interventions, and integrating HIV services with other health services. Thus, this thesis further supports the importance of a multidimensional, context-specific definition of *vulnerability* and factors of health inequalities (Evans et al., 2001; Kelly et al., 2007). In this regard, the growing awareness and reflection of this diversity in health inequalities research globally described by Welch et al. (2022) is encouraging.

At the beginning of this research, I hypothesized that the interventions that would successfully address health inequalities and be effective at the population level would be those that include a wide empowerment strategy targeting the multiple vulnerabilities that children and their households face in their community. This thesis has provided some evidence that economic empowerment (defined as access to resources) and women's empowerment were associated with the improvement of selected child health outcomes (Papers 2, 3, and 5). The case study included in this thesis also presents two further findings. First, it highlights the role and mechanisms of action of CT programs to the empowerment of women, vulnerable households, and their communities (Paper 3). Second, this project illustrates the contribution of CTs to selected child health equity outcomes in the targeted communities (health disadvantage or health gap), although their effects seem to remain primarily restricted to specific beneficiary groups (Papers 1, 4, and 5). These findings corroborate some of the pathways and effects of such a health promotive approach to social protection on advancing child health and equity, as illustrated in the theoretical framework of this thesis. Although this thesis has found some correlations among CTs, empowerment, and improved child health and child health equity, the findings presented here do not allow confirmation of a causal link between such a strategy and all the desired child health and child health equity outcomes.

7.1. Discussing the Main Contributions of This Thesis

Despite these limitations, the present thesis makes some important contributions to the fields of health equity research and policy. The first important contribution of this work comes from the inclusive definitions of health equity and of public health this thesis adopted. The combination of the intervention typology by Graham (2004) and the PROGRESS-Plus framework allows movement beyond the dominating approach to health equity in LMICs, which focuses on targeting the needs of the most disadvantaged (O'Neill et al., 2014; Welch et al., 2022). The broad definition of public health

adopted here not only allows better integration of the efforts on the determinants of health but also acknowledges the contribution of different sectors and types of interventions to health and equity promotion, starting with social protection. For example, in Paper 1, these definitions led to a more inclusive review of existing evidence on different interventions adopting a public health approach. Building on existing mappings of evidence and methodologies (Saran et al., 2020; Welch et al., 2022), this review went further, linking these different types of interventions to their population health and health equity effects. This umbrella review also pointed out some methodological gaps, such as the lack of systematic reporting on the details of the included or excluded studies. This lack of detail affects the development of a strong evidence base on intervention promoting health equity, as further confirmed by Welch et al.(2022). In Paper 4, this inclusive definition of health equity also helped identify discrepancies in stakeholders' understanding and application of this concept in the CGP as well as implications for the program's effect on different types of health inequalities. This case study highlights the challenges of operationalizing such a complex global objective as health equity. It also emphasis the key role of consensus building (and rebuilding) in operationalizing such a concept into programs.

The second contribution of this thesis comes from the study of different definitions of empowerment and the implications of those varied definitions as determinants of child health. Research from the MDG era had already identified how certain markers of empowerment, especially markers of women's empowerment (e.g., education, labor participation, representation), were associated with the reduction of child mortality in LMICs (Kuruvilla et al., 2014). This thesis goes further by exploring the association of these women's empowerment markers with various child health outcomes and their implementation and mechanisms of action in a particular program. This work leads to two important conclusions for research and practice. First, there is a lack of research on the impact of more-structural interventions and processes on specific child health outcomes in the long term and for the next generations. Such effects are particularly difficult to study and explore due to a lack of comparable data covering several generations. Second, these various processes may not necessarily work together and may, in fact, conflict with one another. For example, the CGP features that support community empowerment might have detrimental implications for beneficiary households' agency. This calls for a detailed analysis of the power structures of the communities and societies of interventions, as well as a consensus on the populations or groups whose empowerment should be prioritized (potentially to the detriment of others).

This study of empowerment and its contribution to child health also raises the issue of the instrumental use of empowerment, especially women's empowerment, in development programs. For example, Paper 3 illustrates the paradoxical case of women's empowerment in such a program. Although CGP helped many women to access economic resources, this unintentional targeting resulted from their traditional gendered role as caregivers and their increased vulnerability in a patriarchal society. Hence, although the CGP may have helped women access and control economic resources, it also did not challenge the causes of women's and female-headed households' increased vulnerability. This echoes the critiques of feminist scholars on conditional CTs, who have highlighted how "blinds spots" in development programs and the selective implementation of empowerment mechanisms toward the poor (especially poor mothers) might actually reinforce patriarchal norms and disempower these women (Cookson, 2018; Molyneux, 2006). The journey behind this thesis itself is not exempt from such blind spots. Indeed, in Paper 2, women's political empowerment is exclusively considered in its instrumental role to improve child health outcomes. However, the case study of Lesotho's CGP allowed for a deeper understanding of empowerment and gender issues in this program, alongside a deeper understanding of child health equity. Such an understanding can help avoid a trade-off between

health equity and empowerment, and it could contribute to better identifying approaches that could allow these objectives to reinforce each other. This suggests a need to challenge part of the child-centered perspective of such programs. The child-centered approach has undeniably achieved great progress in child health and well-being. However, the lack of consideration for the caregivers' vulnerabilities hides the true costs of this progress and risks a loss of these gains in the long term—for example, when the family leaves the program. Hence, in line with the ongoing shift in the academic international development approach to social protection, this thesis further supports moving from a child-centered approach to a "multisensitive" approach (e.g., child-sensitive, gender-sensitive, context-sensitive) that addresses the different levels of vulnerability that contribute to poor child outcomes in a specific context. However, the findings from this thesis also illustrate the operational challenges of designing, funding, and implementing such an inclusive approach.

7.2. Concluding Remarks

To conclude, I would like to highlight two issues for future research on empowerment and child health equity. The first one concerns our approach to health equity in public health and social protection interventions. As this thesis has highlighted, even targeted approaches to health disparities have wider implications for communities and the population as a whole. While methodological, political, and operational challenges may constrain the choice of interventions and approaches to health equity in a specific context, this work shows the need to better understand and measure how such interventions may affect different types of health inequalities in different subpopulations both within and beyond the targeted group.

The second issue pertains to our approach to women's empowerment in development programs and in CTs in particular. Focusing on women's empowerment makes the challenges and structural disempowerment of women visible on the global development agenda. However, as I have experienced myself throughout this work, the operationalization of women's empowerment in research and programs risks inadvertently reinforcing gendered norms and constraints. The focus on women's empowerment in development programs also risks ignoring the gendered vulnerabilities of other groups. We saw this in the CGP, with the situation of Basotho boys being widely ignored in the stakeholders' apprehension of gender issues. Reframing our development approach in terms of gendered empowerment rather than women's empowerment might avoid some of these challenges. As Molyneux (2006) highlighted in her study of CTs in Latin America, the role that men play in child development is widely ignored in such programs. By reinforcing the responsibility of women in childcare, these programs may also prevent challenging the norms that limit fathers' contribution to their children's health and development, as Cookson (2018) discovered in her study of the Peruvian CT *Juntos*. By reframing our approach to empowerment as gendered empowerment, I suggest moving toward a broader account of gender dynamics and power distribution in individual contexts, to make those visible and more directly addressed in development programs. This approach does not imply abandoning the current focus on women and girls or the global advocacy for their rights; in most contexts, a gendered approach would highlight their disproportionate and structural vulnerability, thus requiring steps toward their empowerment. Instead, this approach suggests emphasizing an equal chance and responsibility for all parents to take part in and contribute to a more prosperous and equitable society.

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PAPER 1. WHICH PUBLIC HEALTH INTERVENTIONS ARE EFFECTIVE IN REDUCING MORBIDITY, MORTALITY AND HEALTH INEQUALITIES FROM INFECTIOUS DISEASES AMONGST CHILDREN IN LOW- AND MIDDLE-INCOME COUNTRIES (LMICS): AN UMBRELLA REVIEW

PLOS ONE

RESEARCH ARTICLE

Which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases amongst children in low- and middle-income countries (LMICs): An umbrella review

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Abstract

Despite significant progress in the last few decades, infectious diseases remain a major threat to child health in low- and middle-income countries (LMICs)—particularly amongst more disadvantaged groups. It is imperative to understand the best available evidence concerning which public health interventions reduce morbidity, mortality and health inequalities in children aged under five years. To address this gap, we carried out an umbrella review (a systematic reviews of reviews) to identify evidence on the effects of public health interventions (promotion, protection, prevention) on morbidity, mortality and/or health inequalities due to infectious diseases amongst children in LMICs. Ten databases were searched for records published between 2014–2021 alongside a manual search of gray literature. Articles were quality-assessed using the Assessment of Multiple Systematic Reviews tool (AMSTAR 2). A narrative synthesis was conducted. We identified 60 systematic reviews synthesizing 453 individual primary studies. A majority of the reviews reported on preventive interventions (n = 48), with a minority on promotion (n = 17) and almost no reviews covering health protection interventions (n = 2). Effective interventions for improving child health across the whole population, as well as the most disadvantaged included communication, education and social mobilization for specific preventive services or tools, such as immunization or bed nets. For all other interventions, the effects were either unclear, unknown or detrimental, either at the overall population level or regarding health inequalities. We found few reviews reporting health inequalities information and the quality of the evidence base was generally low. Our umbrella review identified some prevention interventions that might

Data Availability Statement: This review exclusively worked with information available from published reviews. A list and description of these reviews is available in S9 Appendix.

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be useful in reducing under five mortality from infectious diseases in LMICs, particularly amongst the most disadvantaged groups.

Introduction

The reduction of child mortality and improvement of child health over the last thirty years has been one of the greatest successes achieved in global health [1]. Globally, under five mortality has declined from 85.9 deaths per 1 000 live births in 1990 to 37.1 in 2019 [2–5]. However, this burden remains unevenly distributed both within and between countries. According to the Institute for Health Metrics and Evaluation (IHME) Global Burden of Diseases (GBD) estimates for 2019, under-5 mortality represented more than a third of all deaths in low-income countries whereas it is less than 10% of all deaths globally [5]. Within countries, inequalities in health have been identified across many socio-economic factors. Household surveys from the Millennium Development Goals era show that children from the poorest households are almost twice as likely to die before the age of five compared to their wealthiest counterparts [1]. Similarly, children born from mothers with no education are almost three times as likely to die than those born from mothers with secondary or higher education [1]. Inequalities are not only found between the most privileged and the most deprived groups but also *within* deprived groups. For example, a 2018 report by the United Nations Children's Fund (UNICEF) reveals that inequalities in child health indicators and outcomes not only vary between rural and urban populations but also within urban populations [6].

Despite major progress in fighting infectious diseases [7, 8], the disease burden in children under five remains significant, especially in low- and middle-income countries (LMICs) [9]. According to IHME 2019 GBD estimates, lower respiratory infections such as pneumonia, diarrheal diseases, malaria, HIV/AIDS and even vaccine-preventable diseases like measles remain among the leading causes of deaths and illness in children under five living in LMICs [9]. Since effective means of prevention and control for many infectious diseases exist [10–12], any inequalities in the burden of these diseases between population groups or countries are an equity issue as they are "avoidable inequalities in health between groups of people within countries and between countries [arising] from inequalities within and between societies" [13].

The evidence base concerning the effect of public health interventions on health inequalities in children is growing globally. However, gaps remain. Among these gaps in the literature on child health and public health interventions is a persistent lack of explicit or broad focus on equity issues in systematic reviews [11, 14–17]. Additionally, the majority of available evidence on equity and public health comes from high-income countries, for children and adults alike [14, 18–20].

In this umbrella review, we aim to address some of these gaps by searching for public health interventions that are effective in reducing morbidity, mortality and health inequalities from infectious diseases (as defined by the 11th International Classification of Diseases [21]) amongst children under five years of age living in LMICs. More specifically, we aim to answer the following research questions:

- Which public health interventions are effective in reducing morbidity and mortality from infectious diseases amongst children in LMICs?
- What are the effects of these interventions on health inequalities?

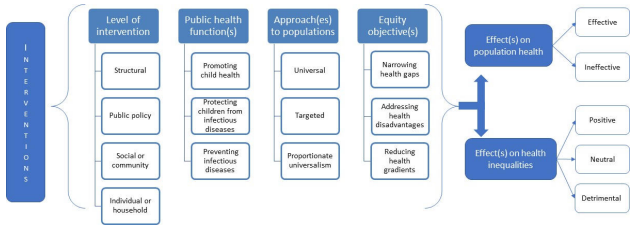

Fig 1. Analytical framework to understand the effect of public health interventions on health inequalities in LMICs [33].

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Model, framework or theory

In line with the concept of population health [22], we defined public health interventions as policies, programs or actions aiming at "preventing disease, prolonging life and promoting health through the organized efforts of society" [23] and "shift[ing] the distribution of health risk by addressing the underlying social, economic and environmental conditions" [24].

The analytical framework of our review (Fig 1) builds on the framework proposed by Bambra et al. [25], itself developed from the health inequalities conceptual literature [26–28]. Using this framework, we identified four levels of interventions: *the structural and macro-policy level* (the macro-economic, cultural and environmental context that influences the living standards of the whole population), *the public policy level* (policies that influence the environments in which people live, work or study), *the social networks and community level* (the collective actions that affect the health of communities and local areas by building social cohesion and mutual support), and *the individual or household level* (the interventions and strategies targeting the health of individual people or households). Then, we identified three conceptual intervention approaches to populations and health inequalities, as well as three equity objectives for these interventions. These include *targeted approaches* (directed at specific groups—i.e. deprived, vulnerable or disadvantaged groups—in a population), *universal approaches* (interventions that apply uniformly to the population) or *proportionate universalism* (interventions that are applied universally but their intensity and scale is proportionate to the level of disadvantage or health gradient across that population) [29]. Following Graham's typology [26], our framework identifies three equity objectives for these interventions: "*remedying health disadvantages*", which addresses the health needs of the most deprived or disadvantaged population; "*narrowing health gaps*", which focuses on reducing the difference in health found between the most privileged and the most disadvantaged groups; and "*reducing health gradients*", which aims to reduce health differences across the whole population.

To reflect this umbrella review's focus on public health interventions, our framework was augmented with the three core public health functions or services identified by the World Health Organization Regional office for Europe's (WHO EURO) as essential public health operations [30]: *promoting* child health, *protecting* children from infectious diseases and *preventing* such diseases. Following WHO EURO's definition, health promotion is defined as intersectoral and interdisciplinary operations enabling people to maintain or improve their health and its determinants. Health protection covers the use of legal, regulatory or enforcement mechanisms to safeguard public health. Finally, prevention involves the targeting of individuals or populations at risk of developing a disease using public health services within the

health system [30]. However, WHO EURO recognizes that certain actions may overlap between these three different public health functions [30]. Therefore, we used the Campbell Collaboration and UNICEF Office of Research- Innocenti evidence mega-map on child welfare [15] and feedback from researchers contacted by the review team to identify and define broad types of interventions under each of the three core public health functions (see S1 Appendix). Secondary prevention activities (early detection of a disease before it becomes symptomatic), tertiary prevention activities (involving improving treatment and recovery, improving the health outcomes in those already affected by a disease) [31] and curative approaches were excluded.

Materials and methods

We conducted an umbrella review to identify systematic reviews or evidence synthesis of public health interventions which reduce morbidity, mortality and/or health inequalities due to infectious diseases amongst children (aged under five years) in LMICs. An umbrella review, also called an 'overview of reviews' or 'review of reviews', involves the compilation and synthesis of evidence from multiple (systematic) reviews into a single, easy-to-use document [32]. The full methodology has been described in a published protocol (see S2 Appendix) [33], which was also registered with PROSPERO (Registration number: CRD42019141673). The PRISMA-E checklist [34] for this review is attached in S3 Appendix.

Search strategy

The following databases were searched from January 2000 until January 2021 (by EB): the Cochrane Library (includes the Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled Trials and the Cochrane Clinical Answers), Medline (Ovid), EMBASE (Ovid), the CAB Global Health database (Ovid), Health Evidence (McMaster University), the Campbell Collaboration Library of Systematic Reviews (The Campbell Library), International Initiative for Impact Evaluation Systematic review repository (International Initiative for Impact Evaluation - 3ie), Scopus (Scopus), the Social Sciences Citation Index (SSCI, Web of Science) and Prospero (Centre for Reviews and Dissemination, University of York). These search dates allowed us to capture the increased efforts in improving child health further to the adoption of the Millennium Development Goals (MDGs). However, given the number of reviews captured in the search that had been updated several times within these dates, the records were later limited to records published from January 2014 (i.e. in the five years before the initial search) until January 2021 (the date of the updated search). Research librarians (MRJ, AK) provided guidance and support in the choice of databases and the design of the search strings. These search strings involved a combination of MeSH terms and free-text keywords. They were piloted in Medline (via Ovid) and Scopus (see S4 Appendix). Once finalized, we (EB) adapted the search strings for each database. To facilitate their translation from one database to the other, we used the Polyglot Search Syntax Translator [35, 36], No restriction of language was applied.

In addition to the searching of these databases, we (EB) performed a manual search in Google Scholar and on the following international organizations' websites, using selected keywords:

- UNICEF Office of Research–Innocenti [37]
- UNICEF [38, 39]
- World Health Organization (WHO) [40, 41]

The full search strategy for both the databases and manual searches can be found in S5 Appendix.

Finally, and in addition to what was stated in our protocol, we (EB/TM or EB/DS) conducted citation follow-up by searching the reference lists of umbrella reviews captured by this search for potential additional records. The umbrella reviews themselves were excluded from our review. For the systematic review protocols captured in our search, we (EB, TM, DS) searched for the review's full text or contacted the authors to inquire about the status of the review.

Selection criteria

The inclusion/exclusion criteria (Table 1) were defined *a priori* using PICOS:

- **Population**: children under five years old or households with at least one child under five years old, living in countries that have been listed as low-, lower middle or upper middle-income by the World Bank at least once from 2000 to present [42].
- **Intervention**: public health interventions targeting infectious diseases or associated risk factors in children, as defined in our framework.
- **Comparison/control**: systematic reviews and evidence synthesis of primary studies with control groups or other comparison groups, such as pre- and post- or alternative intervention comparisons. If no control or comparison was provided, the study was excluded.

Table 1. Inclusion/exclusion criteria.

Inclusion	Exclusion
The review team has access to the publication's full text.	The publication's full text cannot be obtained by the review team (e.g. reviews withdrawn or unpublished)
The article was published after 2014.	The article was published before 2014.
The publication is an academic article or a report of a systematic review (including a meta-analysis) or an evidence synthesis as defined in PICOS, synthesizing at least 2 relevant primary studies.	The publication is a primary study, an umbrella review, a conference proceeding or paper, an abstract, editorial, letter, comment, erratum, survey, note or a doctoral thesis; or does not meet one or more of the three key elements of systematic reviews and evidence syntheses as defined in PICOS; or does not synthesize at least 2 relevant primary studies.
The publication covers exclusively or synthesizes separately, studies in countries defined at least once since 2000 as low-, lower-middle or upper-middle-income by the World Bank historical classification [42].	The publication only includes interventions in country/ies the World Bank historical classification has continuously defined as high-income between 2000 and 2019 [42], or does not synthesize or report on low-, lower-middle or upper-middle-income countries separately.
The publication covers interventions targeting children from livebirth until five years old or households with children under five years old.	The publication only includes interventions targeting adults, pregnant women, adolescents or children older than five years old; or fail to synthesize primary studies' results for the under-5 age group separately.
The publication covers active, collective health promotion, health protection or primary prevention public health interventions addressing or affecting the burden of infectious diseases or their risk factors.	The publication only includes curative interventions or secondary or tertiary prevention interventions; is not addressing or affecting the burden of infectious diseases or their risk factors; or only report trends in individual behaviors without any actions aiming at changing or influencing them.
The publication reports health or health inequalities outcomes in and between populations, disaggregated by one or more of the PROGRESS+ factors as defined in PICOS.	The publication does not include a relevant overall health outcome or disaggregated information by or between population groups.

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- **Outcomes**: both health and health inequality outcomes reflecting the effectiveness of the intervention. Primary outcomes included overall population level measures of mortality, morbidity or service uptake and coverage reflecting the effectiveness of the intervention. Secondary outcomes included health inequality measures (defined as variations between groups or populations) in these primary health outcomes according to the Progress + factors [43, 44]: Place of Residence, Race/ ethnicity/ cultural background, Occupation, Gender and sex, Religion, Education, Social capital, Socio-economic status, Others (e.g. age or health status)
- **Study design**: systematic reviews (including meta-analyses) and evidence syntheses covering at least two relevant primary studies and published since 2014. The primary studies covered by individual reviews included both randomized and non-randomized design. Following the criteria of the Database of Abstracts of Reviews of Effects (DARE) [45], we identified three key elements for systematic reviews or evidence syntheses to be included in this umbrella review: 1) a clear question, 2) a transparent method for the search, selection and appraisal of evidence or studies and 3) a separate synthesis of the results or evidence meeting this umbrella review's scope and inclusion criteria. When a review had been updated, only the most recent version was included.

Screening

We used Endnote x9 to remove duplicates from the list of citations [46]. The duplicates that failed to be captured by the software were removed manually during screening. Article screening was carried out using the software Rayyan [47]. For articles in languages other than English, reviewers were supported by a translator or a native speaker. One reviewer (EB) screened citation titles and abstracts. A random ten percent sample was screened independently by a second reviewer (KT). Discrepancies were resolved by consensus and with the discussion with the team (DS, TM, AT). Agreement between reviewers was high (95% of the articles, kappa score $K = 0.63$). All full texts were assessed independently by two reviewers (first team: TM, EB; second team: DS, EB). Discrepancies were resolved by consensus or with the arbitration of the third reviewer. Agreement was high (85%of the articles, kappa score $K = 0.63$ for the first team, 94% of articles, kappa score $K = 0.65$ for the second team).

Data extraction

The extraction template was developed a priori at the same time as the protocol for this review. This form (S6 Appendix) was piloted by three reviewers (EB, TM, DS) and checked by a fourth (KT) using a sample of three articles [48–50]. Once the template was finalized, individual articles were extracted by one reviewer and checked by a second.

Quality appraisal

Each extractor (EB, TM, DS) critically appraised individual articles using the Assessment of Multiple Systematic Reviews tool (AMSTAR2) at the same time as the data extraction (see S6 Appendix) [51]. Then, this appraisal was checked by a second reviewer (EB, TM, DS). Discrepancies were resolved by consensus.

Overlaps between studies

As part of the extraction, each reviewer listed the relevant primary studies covered by individual review into a citation matrix developed by Thomson et al. [52] in order to identify overlaps

(S6 Appendix). This list was checked by a second reviewer alongside the critical appraisal and extraction sheet.

Data synthesis

The broad scope of interventions, study designs and type of outcomes included in this umbrella review made quantitative analysis difficult. Hence, the systematic reviews were narratively synthesized using the framework in Fig 1. The results were grouped first by level of interventions, public health functions, and then by approach to population for analysis. To ensure the comparability of individual reviews' results, they were synthesized according to broad types of interventions previously defined (S1 Appendix). When contradictory or heterogeneous results were found within the same category, these were explored according to the quality of the review, the quality of the evidence base, the characteristics of the review. the details of the intervention and the detail of the population and setting of the intervention. The findings of high- and moderate-quality reviews were also synthesized separately for each category. When narrating findings from reviews synthesizing together different levels of intervention, we took the pragmatic decision to synthesize together the results for the structural and policy levels, and those for the community, households and individual levels. Due to the number of reviews covering certain types of interventions, these were further divided into smaller categories according to their aim or main components.

Ethical approval

This review exclusively worked with anonymous, group-level information available from published reviews. As a result, there is no risk to identifying individual data or disclosing confidential information. This study did not require ethical approval.

Results

As shown in the PRISMA chart (Fig 2), the database searches identified 17 895 citations while the website searches identified 105 records. After removing duplicates, a total of 8 980 unique citations were screened for titles and abstracts, leading to 393 full texts being assessed. The reference lists of umbrella reviews captured by these searches were screened manually but did not identify any further citations matching our criteria that were not already captured by previous searches. Finally, 60 systematic reviews reporting on 453 individual primary studies (587 references) were included in our qualitative synthesis. The list of excluded records at full text assessment and reasons for exclusions can be found in S7 Appendix.

Of the 453 individual primary studies covered, twenty-one percent were covered in more than one review (S8 Appendix). For each broad type of intervention, we identified the number of studies overlapping across reviews using the citation matrix developed by Thomson et al. [52]. We reported the number of individual studies actually covered in the results, to reflect the size of the evidence base. Our umbrella review focused on reviews' syntheses and did not re-analyze the findings of the primary studies covered. Hence, we did not exclude overlapping studies from our synthesis. However, these overlaps were reflected in our analysis of the evidence base and heterogeneity of findings on individual intervention's impact.

Quality of the evidence

Overall, the quality of the reviews was mixed (see Table 2). While 57% of them rating as low or critically low on the AMSTAR 2 tool, a third were rated as high quality and 10% were of moderate quality. Fig 3 shows the occurrence of methodological and reporting weaknesses from the AMSTAR 2 checklist found across the 60 reviews we included.

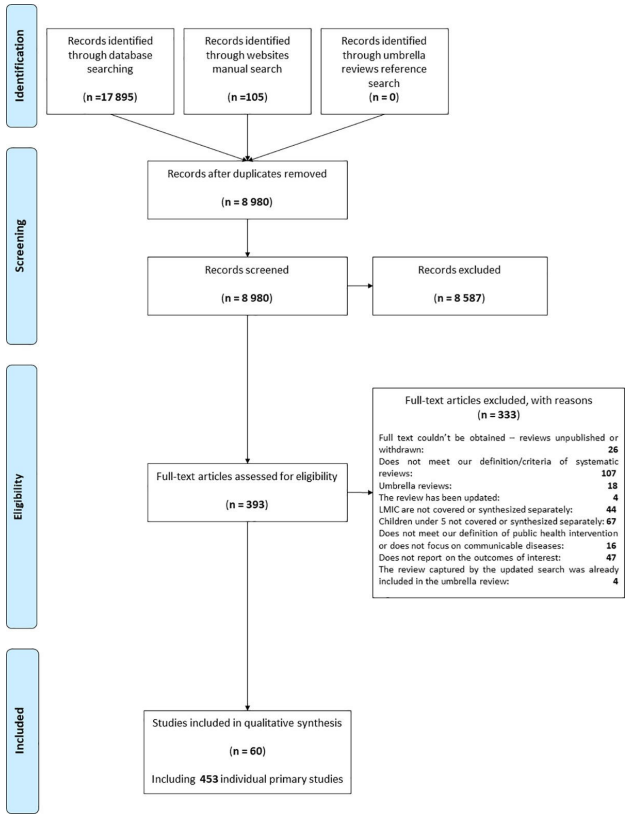

Fig 2. PRISMA chart [53].

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Summary of studies characteristics

Included reviews covered 23 narrative or qualitative reviews, 20 meta-analyses and 17 mixed-methods reviews which had both a quantitative and qualitative synthesis. The primary studies covered 72 different LMICs with four countries–India, Bangladesh, Brazil and Pakistan–accounting for over a third of the studies (Fig 4).

The vast majority of included reviews covered interventions aiming at preventing infectious diseases in children [49, 50, 54–59, 62, 64, 65, 68, 69, 71–82, 84–99, 101, 102, 104, 106, 108–110]. Over a quarter included health promoting interventions [48, 49, 60–64, 66, 67, 70, 72, 78,

Table 2. Quality assessment of included reviews.

Amstar 2 overall rating	Number of reviews	Reference
High	20	[48, 49, 54–71]
Moderate	6	[72–77]
Low	9	[50, 78–85]
Critically low	25	[86–110]

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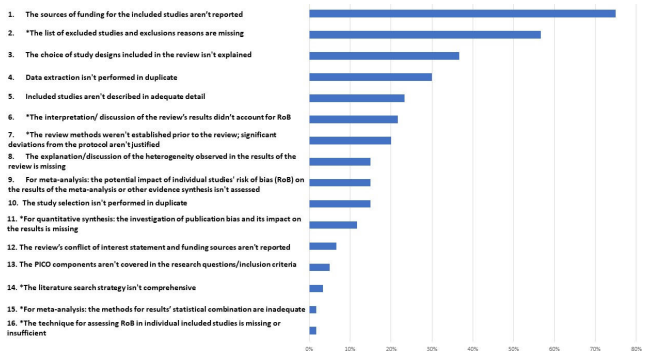

Fig 3. Included reviews' methodological weaknesses identified according to the AMSTAR2 checklist [51]. (*) Items identified as critical in the AMSTAR2 tool checklist.

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83, 92, 103, 107] and only two covered health protection interventions [100, 105]. The description of the various interventions covered can be found in Tables 3–5.

Looking at the number of included reviews per intervention level, two reviews included interventions at the structural level [49, 85], twenty-five covered interventions at the public policy level [49, 55, 58, 62, 64, 68, 69, 72, 78, 81, 83, 85–88, 90, 91, 93, 97, 98, 101, 102, 104, 108, 110], twenty-four at the community level [50, 59, 62, 64, 65, 69, 72–74, 76, 78, 80, 82, 84, 85, 89, 92, 95–97, 99, 100, 106, 109] and twenty-five at the individual level [48, 55–57, 60, 61, 63, 64, 66, 67, 69–71, 75, 77, 79, 80, 84, 90, 92, 94, 99, 103, 105, 107]. As the numbers show, individual reviews often included interventions covering several levels. Hence, we took the pragmatic decision to report together the impact of structural and policy level interventions (found in 25 reviews), and also combined the impact of community, households and individual level interventions (found in 44 reviews), under each of our three key public health functions: promotion, prevention, protection. Four reviews also included multilevel interventions that were analyzed separately [62, 69, 85, 97].

Regarding approaches to health inequalities adopted by the interventions covered, the vast majority of reviews (forty-five in total) included interventions with a universal approach

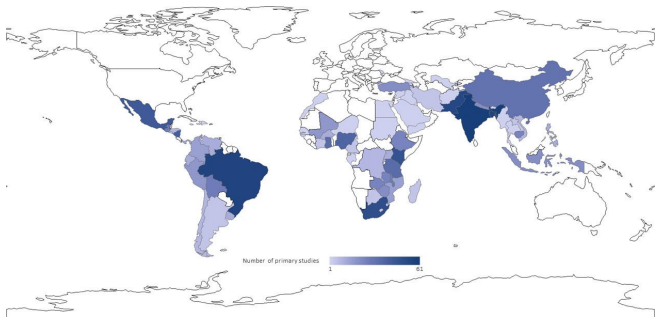

Fig 4. Distribution of the primary studies covered in included reviews, by countries*. * Seven primary studies from Lamberti et al. [93] were only identified by their country development category and world region. These studies couldn't be represented in this map.

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Table 3. Overview of interventions promoting child health covered by the reviews and their impacts on child health and health inequalities.

Public health function	Level of intervention	Approaches to population and health inequalities	Intervention (n = number of reviews)	Description of the intervention covered	Impacts on child health at population level	Impacts on health inequalities in children
Promoting child health	Structural and policy levels	Universal	*No review found*			
		Targeted	Contracting out health promotion services (n = 1)	Contracting out health promotion services to non-governmental actors to improve service utilization and health outcomes in rural, under-resourced communities. (n = 1)	No effect on diarrhea incidence (n = 1)	Neutral effect on health disadvantages (n = 1)
			Financial and non-financial assistance and incentives (n = 6)	Non-monetary incentives/assistance (e.g. food distribution) delivered to poor or vulnerable and incentives families and communities at or conditionally to attending certain child health services. (n = 3)	Can improve child immunization coverage (n = 3)	Can have a beneficial effect on health disadvantages (n = 3)
				Monetary incentives (e.g. cash transfers or vouchers, with or without additional services) delivered to the poor or vulnerable and incentives to families and communities to attend (or conditionally attend) certain child health services. (n = 5)	Reduces morbidity risks from diarrhea and acute respiratory infections (n = 1) Has mixed effect on child immunization (n = 5)	Has mixed effect on health disadvantages (n = 5)
	Multilevel intervention	Universal	*see Table 5 -Preventing infectious diseases in children (mixed intervention)*			
		Targeted	*No review found*			
	Community, households and individual levels	Universal	Nutrition supplements (n = 6)	Zinc supplementation given weekly or daily to children, with or without other nutrition interventions (n = 3)	Has mixed results on lower respiratory tract infection morbidity (n = 2) Reduced diarrhea morbidity (n = 1) No effect of the supplements on otitis morbidity (n = 1)	Insufficient evidence on addressing health disadvantages (n = 2)
				Vitamin A to neonates, infants or children alongside other vitamin supplements or selected vaccines. (n = 3)	No effect on morbidity nor mortality from diarrheal or acute respiratory tract infections (n = 3)	*Unknown*
				Multiple micronutrient supplementation to healthy children (n = 1)	No effect on diarrheal morbidity (n = 1)	*Unknown*
				Iron or Iron/Folic Acid supplementation (n = 1)	No effect on diarrheal morbidity (n = 1)	*Unknown*
				Additional animal-source foods provided to children (n = 1)	Has mixed results on diarrhea, respiratory infections or malaria (n = 1)	*Unknown*
		Mixed targeted/ universal	Nutrition supplements (n = 4)	Oral probiotics/synbiotics supplementation mixed to milk for neonates (n = 1)	Reduces morbidity from neonatal sepsis (n = 1)	*Unknown*
				Multiple micronutrient powders given to caregivers to be mixed with infants and children's food before consumption (n = 3)	Has mixed effect on diarrheal (n = 3), respiratory infections or malaria (n = 1)	Has mixed effect on health disadvantages (n = 2)
			Health promotion education to caregivers (n = 3)	Health promotion education to caregivers of children under five, carried out by health workers at community or individual levels (n = 3)	Shows mixed results on immunization uptake and coverage (n = 2) Positive effect on morbidity from diarrhea and malaria. (n = 1)	*Unknown*

(n =): Number of reviews covering this type of intervention.

Green cell: Beneficial intervention effect on the outcome of interest.

Blue cell: Neutral intervention effect on the outcome of interest.

Orange cell: Inconclusive/mixed intervention effect on the outcome of interest.

Red cell: Detrimental intervention effect on the outcome of interest.

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Table 4. Overview of interventions protecting children from infectious diseases covered by the reviews and their impacts on child health and health inequalities.

Public health function	Level of intervention	Approaches to population and health inequalities	Intervention (n = number of reviews)	Description of the intervention covered	Impacts on child health at population level	Impacts on health inequalities in children
Protecting children from infectious diseases	Structural and policy levels	Universal	*No review found*			
		Targeted	*No review found*			
	Multilevel intervention	Universal	*No review found*			
		Targeted	*No review found*			
	Community, households and individual levels	Universal	Improved cookstoves (n = 2)	Providing improved cookstoves to households to reduce household air pollution (n = 2)	No effect on child morbidity from pneumonia or acute respiratory tract infections of any severity (n = 2)	*Unknown*
		Targeted	*No review found*			

(n =): Number of reviews covering this type of intervention.

Green cell: Beneficial intervention effect on the outcome of interest.

Blue cell: Neutral intervention effect on the outcome of interest.

Orange cell: Inconclusive/mixed intervention effect on the outcome of interest.

Red cell: Detrimental intervention effect on the outcome of interest.

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[48, 50, 55, 58–63, 66–68, 71–74, 77–81, 85–88, 90–102, 104–108, 110]. Twenty-six reviews included interventions adopting a targeted approach [48, 49, 54, 56, 57, 62–65, 67, 68, 70, 72, 75, 76, 78, 82–85, 89, 92, 97, 99, 103, 109], and ten included a mix of both approaches [48, 62, 63, 68, 72, 78, 85, 92, 97, 99]. None of the included reviews described interventions adopting a proportionate universalism approach.

Only twenty reviews reported intervention effects across different groups [48, 50, 58, 63, 68, 69, 72, 77, 80, 81, 83, 88, 93, 94, 97, 99, 102, 104, 109, 110]. Another twenty one reviews reported the interventions' effect on targeted disadvantaged groups as one population [49, 54, 56, 57, 61–64, 67, 75, 76, 82–85, 88, 89, 92, 97, 99, 103]. In terms of factors of disadvantages or variations in health covered by these studies, the most common ones found in the reviews are health-related vulnerabilities or higher needs (e.g. areas with low service coverage, HIV affected families, disease-endemic areas), the place of residence (and the rural/urban divide in particular), and the children's age group (e.g. infant versus children between 1 and 5 years old). Factors related to socio-economic status, parental education or race were far less common.

Tables 3–5 summarize the results from the reviews on the effects of the promotion, prevention and protection interventions on child health and health inequalities. A description of all included reviews is available in S9 Appendix.

Promoting child health

We found seventeen reviews that evaluated interventions promoting child health [48, 49, 60–64, 66, 67, 70, 72, 78, 83, 85, 92, 103, 107]. Seven covered interventions at the structural and policy intervention level [49, 62, 64, 72, 78, 83, 85], one included multilevel interventions and twelve looked at interventions at the community, households and individual level. [48, 60–63, 66, 67, 70, 78, 92, 103, 107], as summarized in Table 3.

Promoting child health—Structural and policy level interventions. Of the twenty-five reviews that cover interventions at the structural and policy levels, seven looked at interventions promoting child health. These covered two main types of interventions: contracting out health promotion services to non-governmental service providers, and financial and non-

Table 5. Overview of interventions preventing infectious diseases in children covered by the reviews and their impacts on child health and health inequalities.

Public health function	Level of intervention	Approaches to population and health inequalities	Intervention (n = number of reviews)	Description of the intervention covered	Impacts on child health at population level	Impacts on health inequalities in children
Preventing infectious diseases in children	Structural and policy levels	Universal	Water supply infrastructure (n = 2)	Improving water quality by improving water supply infrastructure (n = 2)	Insufficient evidence on intervention impact on childhood diarrhea morbidity (n = 2)	*Unknown*
			Introduction of new vaccines (n = 14)	Introducing Haemophilus influenzae type b vaccine into national child immunization programs, with or without catch-up doses for children over the vaccination age (n = 2)	Reduces Hib meningitis mortality or morbidity in infants (n = 2)	*Unknown*
				Introducing pneumococcal conjugate vaccines into national child immunization programs, with or without catch-up doses for children over the vaccination age (n = 6)	Reduces mortality or morbidity from pneumococcal infections in children (n = 6)	Reduce the gap between age groups in healthy children in the burden of pneumococcal diseases (n = 3)
						Risk of increased gaps between HIV positive and HIV uninfected children in the burden of pneumococcal diseases (n = 1)
				Introducing rotavirus vaccines into national child immunization programs, with or without catch-up doses for children over the vaccination age (n = 8)	Reduces child mortality or morbidity due to diarrhea or gastroenteritis (n = 8)	Reduce the gap between age groups in the burden of gastroenteritis (n = 3)
						Insufficient evidence on the effect on global health inequalities (n = 3) Has mixed results on the effect in selected disadvantaged groups (n = 1)
		Targeted	Contracting out preventive services (n = 1)	Contracting out preventive health services to non-governmental actors to improve service utilization and health outcomes in rural, under-resourced communities. (n = 1)	No effect on immunization uptake (n = 1)	Neutral effect on health disadvantages (n = 1)
	Multilevel intervention	Universal	Multilevel interventions to improve child immunization (n = 3)	Combined demand-and supply-side interventions across levels to improve child immunization (n = 3)	Improves child immunization coverage and/or uptake (n = 3)	*Unknown*
			Multilevel Water, Sanitation and Hygiene interventions (n = 1)	Combined hygiene education, water quality and water supply/sanitation infrastructure provision (n = 1)	Reduces diarrhea and dysentery morbidity	*Unknown*
		Targeted	*No review found*			
	Community, households and individual levels	Universal	Increasing child immunization (n = 12)	Increase demand for child immunization through immunization education, communication and social mobilization with or without outreach services (n = 10)	Positive effect on the coverage or uptake of one or more vaccines (n = 10)	Beneficial effect on health disadvantages (n = 3),
						except for mass communication promoting immunization (n = 2)
				Increase the supply of child immunization services through service integration, training of healthcare professionals, introduction of new technologies and improving community or outreach services (n = 5)	Mixed results on immunization uptake and coverage (n = 5)	Risk of increased rural/urban disparities with services integration (n = 2)
			Increasing bed net use (n = 1)	Mass media campaigns to promote bed net use (n = 1)	Increases bed net use for children (n = 1)	*Unknown*
			Water, Sanitation and Hygiene interventions (n = 7)	Water quality improvement at point-of-use at the community or household level (n = 3)	Reduces diarrhea morbidity (n = 3)	Insufficient evidence on the effect on global health inequalities in the diarrhea burden (n = 1)
				Sanitation and hygiene intervention at the community or household level (n = 5)	Mixed results on diarrhea morbidity (n = 4)	Insufficient evidence on their effect on the health gap between age groups (n = 1) or settings (n = 2)
					Mixed results on respiratory infections and pneumonia morbidity (n = 2)	
					Mixed results on parasitic diseases morbidity (n = 3)	
					No effect on dysentery prevalence (n = 1)	
					Reduces trachoma morbidity (n = 1)	
		Targeted	Increasing child immunization (n = 7)	Increasing demand and utilization of immunization services, including education sessions, communication and information campaigns, reminder tools with or without outreach services (n = 6)	Improves immunization coverage or uptake (n = 6)	Beneficial effect on health disadvantages (n = 6)
				Increase the supply of child immunization services through integration of immunization with other health services, the provision of tools and material to support immunization health professionals or health professional training, either on their own or as part of multi-component interventions (n = 5)	Mixed results on immunization uptake and coverage (n = 5)	Insufficient evidence on addressing health disadvantages (n = 5)
			Increasing bed net use (n = 2)	Community outreach education activities to mothers and households with children under five on the use of insecticide treated nets (n = 2)	Increases under-5 use of insecticide treated nets (n = 2)	Beneficial effect on health disadvantage faced by communities in malaria-endemic areas (n = 2)
			Preventing HIV transmission (n = 3)	Extended infant HIV prophylaxis during breastfeeding (n = 1)	Lower risks of HIV infection (n = 1)	Beneficial effect on the health disadvantage faced by infants born to HIV positive, breastfeeding mothers (n = 1)
				Home visits by community health workers for HIV exposed infants (n = 2)	Increases uptake of HIV prophylaxis in infants born to HIV positive mothers	Beneficial effect on the health disadvantage faced by infants born to HIV positive mothers
				HIV services integration into maternal and child health services (n = 2)	Mixed results on the uptake of HIV prophylaxis in infants born to HIV positive mothers (n = 2)	Mixed results on the impacts on addressing the health disadvantage faced by infants born to HIV positive mothers (n = 2)
				Peer-to-peer education, task-shifting and service quality improvement to HIV positive mothers (n = 1)	No effect on HIV prophylaxis uptake in infants born to HIV positive mothers (n = 1)	No effect on addressing the health disadvantage faced by infants born to HIV positive mothers (n = 1)
			Preventing infections in vulnerable neonates (n = 2)	Kangaroo mother care in hospital settings for low-birth-weight/premature neonates (n = 1)	Reduces the risks of severe illness, nosocomial infection/sepsis and lower respiratory tract diseases in babies (n = 1)	Neutral effect on health disadvantages (n = 1)
					No effect on mild/moderate infection and illness or diarrhea in babies (n = 1)	
				Applying topical of emollients (ointments, creams, or oils) to prevent infections in premature infants (n = 1)	No effect on the incidence of invasive infections (n = 1)	Neutral effect on health disadvantages (n = 1)

(n =): Number of reviews covering this type of intervention.

Green cell: Beneficial intervention effect on the outcome of interest.

Blue cell: Neutral intervention effect on the outcome of interest.

Orange cell: Inconclusive/mixed intervention effect on the outcome of interest.

Red cell: Detrimental intervention effect on the outcome of interest.

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financial assistance and incentives. All of these interventions had a targeted approach, focusing on the impacts on the most disadvantaged in society.

Contracting out health promotion services (1 review). One high-quality review covering two primary studies explored the effects of contracting out health services to non-governmental service providers to improve service utilization and health outcomes in rural, under-resourced communities [49]. One study covered by this review includes contracting out child health promotion services in Cambodia, which addressed two factors of disadvantages: residence (rural) and income (under-resourced communities). The review found low-quality evidence that the intervention had no effect on diarrhea incidence in children from these vulnerable groups. Therefore, it can be considered as having a neutral effect on health disadvantages.

Financial and non-financial assistance and incentives (6 reviews). Six reviews reported on the effects of financial and non-financial assistance and incentives to poor or vulnerable families and communities on child immunization coverage and uptake [62, 64, 72, 78, 83, 85]. One review by Owusu-Addo & Cross [83] also reported on the effect of conditional cash transfer on morbidity risks in children from selected infectious diseases. Two of these reviews were assessed as high methodological quality [62, 64], three as low [78, 83, 85] and one as moderate quality [72].

Among the factors of vulnerabilities addressed by these reviews, five covered interventions targeting poverty or low socio-economic status, with a particular focus on rural communities. Higher health needs were also found as factors of disadvantages in studies across all reviews.

Despite covering five of the same programs and four of the same primary studies, the findings of these reviews are mixed or even contradictory. The same trial from India—covered by three reviews [62, 72, 78]—shows moderate-quality evidence that food incentives can improve child immunization coverage. This would suggest that food incentives may be effective in addressing the health disadvantage these communities face in terms of immunization coverage. Referring to this trial, Jarrett et al. [72] pointed out that addressing the basic needs of the community as this intervention did, could be particularly relevant to building trust and expanding services in underserved and disadvantaged communities. Another study of non-monetary incentives at immunization visit covered by Johri et al. [62] also found this type of incentive effective in addressing the health disadvantage of the rural communities covered by improving immunization coverage.

Five reviews covered monetary incentives such as cash transfers or vouchers, with or without additional services [62, 64, 78, 83, 85]. Owusu-Addo & Cross [83] concluded that conditional cash transfers were effective both in improving child immunization coverage and in reducing morbidity risks from diarrhea and acute respiratory infections (ARI) in the targeted communities. Johri et al. [62] and Munk et al. [85] also concluded that selected types of incentives were effective in improving immunization coverage, although they highlighted a high risk of bias in the included studies and that there was heterogeneity in the results. In contrast, the reviews by Bright et al. [78] and Oyo-Ita et al. [64] found either mixed or no effect of monetary incentives on child immunization. The cause for these contradictions, including in the appraisal of the same evidence, is unclear. However, it should be noted that the reviews by Bright et al., Johri et al. and Oyo-Ita et al. [62, 64, 78] included a wider variety of programs, including non-conditional cash transfer and vouchers, which may partially explain the discrepancies and heterogeneity. The review by Oyo-Ita et al. [64] also noted that in three of the programs, children above two years old had no improvement in immunization coverage, thus suggesting a potential neutral or detrimental effect on inequalities between age groups. Looking specifically at the two high-quality reviews [62, 64], both highlighted the heterogeneity and uneven quality of the included studies and their findings. This may partially explain the contradictory conclusions these two reviews drew on the effect of incentive-based programs.

Therefore, we cannot conclude at this point on the effectiveness of such interventions in addressing health disadvantages.

Promoting child health—Community, household and individual level interventions. Of the forty-four reviews that cover interventions at the community, households and individual levels, twelve looked at interventions promoting child health. These covered two main types of interventions: nutrition supplements and health promotion education given to caregivers. Of the nine reviews covering nutrition supplements, six included interventions adopting a universal approach to health equity and four included interventions adopting a mixture of universal and targeted approaches. The reviews covering health promotion education to caregivers also adopted a mixture of universal and targeted approaches.

Nutrition supplements (9 reviews). Nine reviews addressed the effect of nutrition supplements on child morbidity and mortality from selected infectious diseases [48, 60, 61, 63, 66, 67, 70, 103, 107]. Seven of these reviews were assessed as high methodological quality [48, 60, 61, 63, 66, 67, 70] and two as critically low quality [103, 107].

Three of the reviews covered eighteen individual studies on zinc supplementation given in different formats and dosage to children, with or without other nutrition interventions [48, 63, 107]. Two reviews assessed the effect of this intervention on respiratory infection morbidity (including pneumonia) [63, 107], one on diarrhea incidence [107] and one on otitis morbidity [48] in the general population. Lassi et al. [63] and Tam et al. [107] reached opposite conclusions on the effect of zinc supplementation on respiratory infections in children. While Lassi et al. [63] found low-quality evidence that zinc supplementation reduced child morbidity from pneumonia, Tam et al. [107] found no significant effect of the intervention on lower respiratory tract infections (LRTI—including pneumonia, evidence quality unknown). Many factors may explain this contradiction, including the definition of the outcome observed, the quality of the reviews (high vs. critically low, respectively) or the year of the search and number of studies: Tam et al. is more recent and includes 10 new trials compared to Lassi et al. However, the lack of details on the studies included in Tam et al.'s meta-analysis makes further comparison difficult. Since Lassi et al. also highlighted the low-quality of the evidence available, we conclude that further research is needed to assess the effect of zinc supplementation on respiratory infections in children living in different contexts. Tam et al. [107] also assessed the effect of this intervention on diarrhea incidence and found a positive effect of zinc supplement on this outcome, although the meta-analysis showed high heterogeneity. Finally, Gulani and Sachdev [48] found no effect of the supplements on otitis morbidity in the general population. If we are to focus exclusively on the findings of high-quality reviews, there is low-quality evidence that zinc supplementation reduces pneumonia morbidity but has no effect on otitis [48, 63]. Assessing their impacts on health inequalities, these two reviews reported results for some vulnerable or disadvantaged populations. Lassi et al. [63] found low-quality evidence that zinc supplementation reduced child morbidity from pneumonia in specific groups such as populations living in slums, low-economic status neighborhoods or populations affected by HIV. Gulani and Sachdev [48] found studies which suggested a positive effect of the supplement for infants or malnourished children. However, Gulani and Sachdev [48] concluded that this evidence is currently insufficient to draw definitive conclusions on the benefits of zinc supplementation for specific vulnerable groups.

Three reviews [60, 61, 107] cover eleven individual randomized controlled trials (RCTs) of mixed quality giving vitamin A to neonates, infants or children alongside other vitamin supplements or selected vaccines. None of the reviews, including the two-high-quality reviews, found any effect from the interventions on either morbidity nor mortality from diarrheal infections, meningitis or respiratory infections (ARI or LRTI). The reviews did not report disaggregated effects of the interventions for different population groups, although the trials

captured by Haider et al. [60]'s review all took place in populations with high prevalence of either vitamin A deficiencies or HIV. Whether this review's finding could inform targeted nutrition interventions in these groups would require further research.

As for other micronutrient supplementation interventions in the general child population, Tam et al. [107] found no effect of multiple micronutrient (MMN) supplementation capsules or tablets, or of iron or iron/Folic acid supplementation on diarrhea morbidity. Finally, Eaton et al. [66] concluded that there was insufficient evidence to assess the effect of animal-source foods on infectious disease morbidity outcomes in infants and children across different settings. Neither reviews reported disaggregated effects of the intervention for different population groups.

Four reviews included nutrition supplementation interventions that adopted a mixture of universal and targeted approaches. Three reviews, covering two cross-sectional studies and twelve RCTs, examined the effects of point-of-use multiple micronutrient powder (POU-MNP) sachets or fortified flour provided to caregivers to be mixed with infants and children's food before consumption [67, 103, 107]. The findings of these reviews were mixed. While Carroll et al. [103] found that POU-MNP reduced diarrhea incidence amongst refugee children, Tam et al. [107] found evidence that the intervention actually increased diarrhea prevalence in healthy children. Meanwhile, Suchdev et al. [67] found no effect of POU-MNP in infants living in a variety of settings. The difference in settings and populations may explain these mixed findings. The reviews by Carroll et al. [103] and Suchdev et al. [67] included studies in vulnerable populations—such as children living in refugee camps, slums or malaria-endemic areas, while Tam et al. [107] focused on the general population. Looking at the only high-quality review, Suchdev et al. [67] concluded that the evidence was currently insufficient to conclude on the effect of POU-MNP on diarrhea morbidity or on other infectious diseases outcomes the review explored, such as malaria or upper respiratory tract infections. The fact that all three reviews acknowledge some contradictions or heterogeneity in their results further supports Suchdev et al.'s conclusions on insufficient evidence.

The last review looking at nutritional interventions is Imdad et al. [70]'s meta-analysis on neonatal oral probiotics/synbiotics supplementation added to breast milk and/or formula at various dosages and frequency. Although the review did not limit its search to specific groups of newborns, all twenty-one RCTs reporting on neonatal sepsis took place amongst low-birth-weight or preterm babies, primarily in hospital settings in middle-income countries. The authors found high-quality evidence that probiotics supplementation reduced the risk of sepsis amongst these vulnerable groups of neonates. Whether these findings could be extended to the general population or community settings requires further research. The review did not disaggregate the results further according to other factors of vulnerabilities or inequalities.

Health promotion education to caregivers (3 reviews). Three reviews covering 13 individual studies addressed the effect of health promotion education to caregivers of children under five years old by health workers at community or individual levels [62, 78, 92]. Two reviews [62, 78], assessed as low and high methodological quality respectively, show mixed results on immunization uptake and coverage. Both reviews cover the same types of delivery mechanism (such community health workers, community groups, information session). Johri et al. [62], where both the review and the studies it covers were assessed as high quality, found these interventions had a positive effect and there was low heterogeneity among the studies covered. Conversely, Bright et al. [78], where both the review and its studies were assessed as lower quality, showed mixed results. It should be noted that several of these studies combined health promotion education with other interventions, which may explain the discrepancies. Finally, two studies covered by Flórez et al. [92] showed a positive effect of the intervention on morbidity from diarrhea and one study showed a positive effect on malaria morbidity. As all three

reviews brought together both targeted and universal interventions, it is difficult to draw definitive conclusions on the effect of these interventions on health inequalities.

Protecting children from infectious diseases

We found two reviews covering a health protection intervention (Table 4). It was implemented at the household level and covered the impact of improved cookstoves to households [100, 105].

Improved cookstoves (2 reviews). Only two reviews, assessed as critically low quality, covered the effectiveness of improved cookstoves to reduce respiratory infection morbidity and mortality associated with household air pollution [100, 105]. Based on seven studies (six RCTs and a cohort study) covering almost exclusively rural communities in Latin America, Sub-Saharan Africa and one study in Nepal, this intervention had no effect on child morbidity from pneumonia or ARI of any severity. Due to the geographical and demographic specificities of the study population, the results may not be generalizable across different populations and countries. Whether the findings of these reviews may inform similar interventions with a targeted approach to population would have to be confirmed by further research. The reviews did not disaggregate the results further according to other factors of vulnerabilities or inequalities.

Preventing infectious diseases in children

We found forty-eight reviews that looked at interventions aiming to prevent infectious diseases in children (Table 5). Seventeen covered interventions at the structural and policy intervention levels [49, 55, 58, 68, 81, 86–88, 90, 91, 93, 98, 101, 102, 104, 108, 110], three included multilevel interventions [62, 69, 97] and thirty-one looked at interventions at the community, households and individual levels [50, 54–57, 59, 64, 65, 69, 71–77, 79, 80, 82, 84, 85, 89, 90, 92, 94–97, 99, 106, 109].

Preventing infectious diseases in children—Structural and policy levels. Of the twenty-five reviews that covered interventions at the structural and policy levels, seventeen looked at infectious disease prevention interventions. These covered three main types of interventions: improving the water supply infrastructure, introducing new vaccines into national immunization programs and contracting out preventive health services.

The reviews covering water supply infrastructure and new vaccine introduction adopted a universal approach to health equity while the review on contracting out preventive health services adopted a targeted approach, focusing on a disadvantaged group in the countries of intervention.

Water supply infrastructure (2 reviews). Two reviews [55, 90], assessed as high and critically low methodological quality respectively, assessed the effect of improving water supply infrastructure on childhood diarrhea morbidity. Covering a total of six different studies, both reviews concluded that there was insufficient evidence to decide on the potential effectiveness of such interventions on childhood diarrhea risk. Neither of them reported results disaggregated by sub-groups or the effect of the interventions on inequalities.

Introduction of new vaccines (14 reviews). Fourteen reviews covered the effect of new vaccines, that have been introduced into national immunization programs [58, 68, 81, 86–88, 91, 93, 98, 101, 102, 104, 108, 110]. Among those, two covered Haemophilus influenzae type b (Hib) vaccines [86, 91], six covered pneumococcal conjugate vaccines (PCV) [58, 81, 87, 91, 104, 110] and eight rotavirus vaccines [68, 88, 91, 93, 98, 101, 102, 108]. With the exception of the review by de Oliveira et al. [58] and Soares-Weiser et al. [68], all these reviews were assessed as low [81] or critically low methodological quality [86–88, 91, 93, 98, 101, 102, 104, 110].

The Hib vaccine was found effective in reducing either Hib meningitis mortality [91] or morbidity [86] in infants (the group targeted by vaccination) in fourteen studies from Bangladesh, Pakistan and Brazil. DeAntonio et al. [91] also found that another study from Uruguay

suggested a potential herd effect of the introduction of the Hib vaccine among children under three years not targeted by the vaccine. However, the evidence was currently insufficient to confirm such an effect. The quality of the primary studies covered by the reviews was unclear and the reviews themselves were assessed as critically low quality, thus calling for caution in the interpretation of these results. The potential health inequalities effect of the Hib vaccine introduction is unknown, as neither review covering this vaccine reported any health inequalities measure.

The six reviews covering various types of PCV vaccines from thirty-one primary studies also found that further to their licensing and introduction into national programs, these vaccines were effective in reducing mortality [58] or morbidity [81, 87, 91, 104, 110] from pneumococcal infections in children. Bonner et al. [87], de Oliveira et al. [58] and Ngocho et al. [81] assessed the studies as fair to high quality. However, it should be noted that half of these reviews focus exclusively on Latin America [58, 87, 91] while the other half focused on the African continent only [81, 104, 110]. Hence the generalizability of these results across all LMICs and continents cannot be confirmed. Looking at the health equity implications of PCV vaccines, five of the reviews included some measure of health inequalities. Three reviews [58, 81, 104] found a stronger decline of pneumococcal diseases in younger children, the group carrying a higher burden of the disease, suggesting that the vaccine may help reduce inequalities between age groups in the burden of these diseases. The review by Bonner et al. [87] also focuses on children above the vaccination age and concludes that the implementation of catch-up doses of PCV vaccines for children above the targeted age at the time of vaccine introduction was effective in reducing the burden of pneumococcal disease. However, the review by Vardanjani et al. [110] highlights that PCV vaccines may have a detrimental impact on health inequalities in another domain. Reviewing case-control studies from South Africa bringing together HIV infected and uninfected children, Vardanjani et al. not only found that vaccine effectiveness was lower amongst HIV positive children but that this effect may also reverse the positive effect on the gap between age groups. Whether these conclusions can be extended to settings and HIV-affected populations outside of South Africa would require further research. Looking at the only high-quality review covering PCV vaccine, findings by de Oliveira et al. [58] confirm a positive effect of the PCV vaccine on pneumococcal meningitis mortality and on the gap between younger and older children.

Finally, all eight reviews covering different types of rotavirus vaccines found the vaccine effective in reducing child mortality [88, 91, 93, 98] or morbidity [68, 88, 93, 98, 101, 102, 108] due to diarrhea or gastroenteritis, with or without confirmation of rotavirus infection. These eight reviews covered 104 individual primary studies. DeAntonio et al. [91] also found evidence suggesting a potential herd effect of the vaccine among children under five years above the vaccination age but concluded that there was currently insufficient evidence to confirm this finding. However, all but one of these reviews were assessed as critically low quality and the quality of the primary studies they covered was also mixed. Four out of six of these reviews were also exclusively focused in Latin America [88, 91, 98, 101], hence the number of overlaps in the vaccination programs and studies covered. This region is therefore over-represented in the results. Yet, Soares-Weiser et al. [68], the only high-quality review for this intervention, found moderate- to high-quality evidence that all three types of rotavirus vaccines approved by WHO were effective in reducing the burden of rotavirus or all-cause diarrheal diseases across fifteen low- and middle-income countries. However, the meta-analyses showed statistical moderate to high heterogeneity and variations in the impact of the vaccine according to the type of diarrheal disease considered. Looking at the health equity implications of these interventions, four reviews noted differences in the effectiveness of the vaccine across age groups and/or contexts and one review reported disaggregated results for selected vulnerable groups.

Three reviews noted a higher decline of gastroenteritis morbidity/mortality among infants, the age group carrying a higher disease burden, suggesting a potential reduction of disease burden inequalities between age groups [68, 88, 102]. Three reviews also highlighted both uneven efficacy and effectiveness of the vaccination between countries and regions [88, 93, 102], with Chavers et al.'s [88] results suggesting that the vaccine was most effective in countries with comparatively lower child mortality. These findings may point towards the potential increase in global inequalities. Yet, the mixed quality of evidence available and uneven geographical coverage of the reviews suggest that there is currently insufficient evidence to assess the effect of rotavirus vaccines on global health inequalities. As for the effect of rotavirus vaccination on disadvantaged groups, the review Soares-Weiser et al. [68] reveals opposite results depending on the factor of disadvantage considered. While rotavirus vaccination significantly reduced the burden of diarrheal diseases amongst malnourished children, it had no significant effect amongst HIV-exposed or -infected children. However, the number of studies supporting these findings was very small, with one RCT reporting on malnourished children and three on HIV-exposed or -infected children.

Contracting out preventive services (1 review). The review by Odendaal et al. [49] on contracting out health services to non-governmental service providers also covered the contracting out of preventive services. The authors found moderate-quality evidence that such an intervention had no effect on immunization uptake in children in neither country of intervention—Cambodia and Guatemala. This suggests that this intervention had a neutral effect on health disadvantages when it comes to immunization uptake.

Preventing infectious diseases in children—Community, households and individual levels. Of the forty-four reviews that cover interventions at the community, households and individual levels, thirty-one included infectious disease prevention interventions. The reviews looked at interventions aiming to increase the use or coverage of preventive tools (immunization, bed nets, infant HIV prophylaxis) as well as water, sanitation and hygiene (WASH) interventions, and hospital-based interventions to prevent infections in vulnerable neonates.

The reviews covering WASH interventions adopted a universal approach to health equity while the reviews on hospital-based interventions towards vulnerable neonates adopted a targeted approach. Finally, the reviews covering interventions aiming to increase the use or coverage of preventive tools synthesized together interventions with targeted and universal approaches to health equity.

Increasing child immunization (17 reviews). Seventeen reviews covered interventions at community or individual levels aiming to improve child immunization uptake and/or coverage either by increasing the demand for or the supply of immunization services [50, 59, 64, 65, 72–74, 82, 85, 89, 92, 95–97, 99, 106, 109]. These reviews synthesized 100 individual primary studies, almost all of which were from Asia and Sub-Saharan Africa, with only three studies from Latin America. Three of these reviews were assessed as high quality [59, 64, 65] and three as moderate [72–74]. The other eleven were assessed either as low [50, 82, 85] or critically low methodological quality [89, 92, 95–97, 99, 106, 109].

All fourteen reviews covering intervention aiming to increase the *demand* for child immunization -such as immunization education, communication, social mobilization and information campaigns, and reminder tools with or without outreach services—found some positive effect on the coverage or uptake of one or more vaccines [50, 64, 65, 72–74, 82, 85, 89, 92, 95–97, 106]. However, eight of them also reported at least one study or outcome where the intervention was ineffective [65, 74, 85, 89, 95–97, 106] and seven meta-analyses reported moderate to high heterogeneity in their results [64, 65, 73, 74, 95, 96, 106]. Neither the type of vaccine outcome measured nor the sub-type of intervention seem to explain alone these variations. The quality of the primary studies was also very heterogeneous. A sub-analysis of high- and

moderate-quality reviews leads to the same findings, namely, that while this type of intervention is found effective in improving childhood vaccine uptakes and coverage in most studies, all five reviews raised the issues of the quality of the evidence base and the heterogeneity of pooled results [64, 65, 72–74]. In terms of health equity, three of these reviews discussed the effect or suitability of these interventions among different groups or settings [50, 72, 97] and six reviews focused specifically on a disadvantaged group [64, 65, 72, 82, 89, 97]. The factors of disadvantage targeted by these interventions included higher health needs (especially low vaccination rates) [64, 65, 72, 82], poverty [64, 65, 72, 89], place of residence and type of dwelling (e.g., rural communities, urban slums, informal settlements or small dwellings) [50, 64, 65, 89, 97], ethnicity [97], and low literacy or education [50, 64]. Overall, the findings suggest that such interventions may be effective both at population level and in addressing the targeted populations' health disadvantage. However, the results' heterogeneity warrants further research to confirm such claim. The type of interventions covered also seems to affect their impact on health equity. For example, three reviews highlighted targeted communication or education towards pre-identified disadvantaged groups as an effective approach to raising immunization uptake in those groups [50, 72, 97]. Conversely, the evidence on the potential effect of mass communication promoting immunization on health inequalities is less clear. While Yuan et al. [50] concluded that the evidence was unclear and limited (only one study), Jarrett et al. [72] highlighted the fact that such 'top-down' approaches to communication may not be effective across all groups, depending on the level of vaccine hesitancy–thus potentially raising inequalities issues.

The eight reviews reporting on interventions targeting the *supply* of child immunization services, found mixed results, with variations in effectiveness according to the specifics of the intervention, the type of vaccine considered or even amongst a similar type of intervention [59, 64, 72, 82, 85, 97, 99, 109]. The quality of the primary studies included was also uneven [59, 64, 72, 82, 85, 97, 99]. They covered interventions such as the integration of immunization with other health services, improving community or outreach services, the introduction of new technology or strategies, the provision of tools and material to support immunization health professionals or health professional training, either on their own or as part of multi-component interventions. The findings of the three high- and moderate-quality reviews were consistent with those highlighted above. In terms of health equity, two of the eight reviews reported on the comparative effect of service integration interventions in rural versus urban areas [97, 99]. Smith et al. [99] reported on one poor-quality study showing that while the integration of HIV and immunization services had a positive effect on overall population immunization uptake in urban sites, its effect was detrimental in rural sites due to stigma and concerns over discrimination. Nelson et al. [97] also highlighted the potential risk of increased rural/urban disparities with integrated services, reporting on one low-risk-of-bias study showing that such integration could not address distance issues, thus making it more suitable and effective to urban contexts rather than rural ones. Both studies took place in Sub-Saharan African countries. While the evidence from these reviews is mixed, they do point towards a potential risk for this type of intervention to increase inequalities in service uptake between rural and urban areas. As for the impact of supply-side interventions on addressing the health disadvantage, the five reviews reporting on interventions adopting a targeted approach to health equity suggested that the effect of these interventions on addressing various health disadvantages would require further high-quality studies to be confirmed [64, 82, 97, 99, 109]. Four reviews focused on areas or communities with higher health needs (e.g., low vaccination rate or high infectious disease prevalence). The other factors of disadvantages addressed by these interventions were the place of residence (i.e., urban versus rural communities) [64, 97, 99, 109], poverty [64] or families identified as vulnerable in their individual context [99, 109].

Increasing bed net use (3 reviews). Three reviews covered interventions aiming to increase bed net use for children under five [54, 76, 96]. The review by Naugle & Hornik, assessed as critically low methodologically, reported on a single study from Cameroun covering the effect of a mass media campaign to promote consistent bed net use [96]. It concluded that the evaluation of this campaign provided strong evidence that this intervention was effective in increasing bed net use for children under five. This review only reported the overall population impact of the intervention and did not report any disaggregated effect of the invention on different groups.

Two reviews, assessed as high and moderate quality methodologically, synthesized six studies on community outreach education activities on the use of insecticide treated nets (ITNs) and community health services to mothers and households with children under five [54]. All but one study took place in Sub-Saharan African countries, in malaria-endemic areas. The reviews found low-quality evidence that such interventions may be effective in increasing under-5 use of ITNs in these communities. This suggests that this intervention may reduce the health disadvantage faced by communities in malaria-endemic areas regarding the burden of that disease.

Preventing HIV transmission (3 reviews). Three reviews assess the effects of preventive HIV services for a targeted group of infants—those exposed to HIV, with the HIV status of the mother as the main factor of disadvantage [75, 84, 99]. One review focuses on HIV prophylactic treatment given to breastfed, HIV-exposed infants [75] while the other two focus on *how* HIV prophylactic treatment is delivered to HIV-exposed infants. All but one of the twelve included studies occurred in Sub-Saharan African countries.

The moderate-quality review by White et al. [75] found that compared to standard care, extending HIV infant prophylaxis throughout the breastfeeding period reduces the rate of HIV infections amongst HIV-exposed infants, even when the mother is not receiving antiretrovirals. While these findings are based on a small number of studies in urban sites, the authors assessed the evidence as moderate to high quality, thus recommending that HIV infant prophylaxis must continue until weaning.

The two reviews by Puchalski Ritchie et al. [84] and Smith et al. [99], assessed as low and critically low methodologically respectively, show mixed results on the uptake and coverage of preventive HIV services for infants exposed to HIV [84, 99]. Both reviews suggested that home visits by community health workers may be effective in addressing the health disadvantage faced by infants born to HIV positive mothers, leading to an increase in uptake of HIV prophylaxis. However, the quality of the two primary studies reporting on this type of intervention was mixed.

As for the integration of prevention of mother-to-child transmission (PMCT) with mother and child healthcare services, the reviews drew conflicting conclusions. Puchalski Ritchie et al. [84] found this intervention had either no or even detrimental effect on HIV prophylaxis uptake at birth from two trials assessed as having a high risk of bias. Smith et al. [99] found fair to good-quality evidence that integrating PMCT into post-partum care or immunization services increased the uptake of HIV prophylaxis. It is unclear whether the setting or the study design may explain these differences. This leads us to conclude that the effectiveness of service integration in addressing some of the health risks of HIV exposed children is currently unclear.

Puchalski Ritchie et al. [84] also covered three other interventions targeting HIV positive mothers and their infants, including peer-to-peer education, task-shifting and service quality improvement, none of which showed any effect on HIV prophylaxis uptake at birth. This suggests that these interventions seem to have no effect on addressing the health disadvantage of HIV exposed infants. The authors also noted the high risk of biases of the three trials testing these interventions.

WASH interventions (7 reviews). Seven reviews covered WASH interventions at the community or household level from 90 individual studies, reporting on their impacts on the overall population [55, 69, 77, 79, 80, 90, 94]. Two reviews were assessed as high quality [55, 69], one as moderate review [77] and four reviews as low [79, 80] or critically low methodologically [90, 94].

Three reviews covered 39 individual studies on water quality improvement at point-of-use [55, 77, 90]. Despite the difference in the quality of each review (rating from critically low to high), all three reviews found very similar results for individual type of interventions (i.e., chlorination, flocculation, solar disinfection). They concluded that there was low- to moderate-quality evidence that these interventions were effective in reducing diarrhea morbidity in children under five years old at population level. However, the reviews also highlighted the high heterogeneity of the results. None of the reviews reported disaggregated results by population groups for these types of interventions, thus providing no information on the potential impact of the intervention on health inequalities. However, Soboksa et al. [77]'s analysis by world regions shows significant differences in the effect of solar disinfection between Latin American and Asian countries, thus raising questions as to the potential implications of such interventions for global health inequalities.

Five reviews covered sanitation and hygiene interventions, such as hygiene promotion and education, community mobilization and campaigns, with or without the development of a WASH infrastructure [69, 79, 80, 90, 94]. These reviews showed mixed results of these interventions on morbidity from selected infectious diseases in children under five. Of the four reviews reporting on the effect of sanitation and/or hygiene interventions on diarrhea morbidity, only one review found them effective and reported high-quality evidence supporting their conclusions [79]. The other three showed mixed results depending on the context and the details of the intervention, also highlighting the low quality and lack of conclusive evidence [69, 90, 94]. The findings of the only high-quality reviews covering these types of interventions were consistent with those highlighted here [69].

The two reviews reporting on respiratory infections and pneumonia also had mixed findings. One review by Morita et al. [94] found no conclusive evidence on the effect of hygiene interventions on this outcome while the second by McGuinness et al. [80] showed mixed results. Both reviews highlighted the low quality of evidence currently available and were assessed as low and critically low quality themselves. However, McGuinness et al. [80] highlighted the result of one high-quality cluster RCT from Pakistan that had found hygiene education and the provision of hygiene product effective in reducing pneumonia illness rate. Finally, three reviews explored the effect of these interventions on other infectious diseases [69, 79, 94]. With the exception of trachoma cases–for which Freeman et al. [79] found moderate to high quality evidence that sanitation and hygiene interventions were effective in reducing trachoma morbidity, the reviews found either no effect [69, 79] or insufficient evidence [94] that sanitation and hygiene interventions had any impact on parasitic diseases; or on dysentery prevalence [69].

While some of this heterogeneity in results may be explained by variations in intervention settings, targeted population and the quality of evidence available, these variations also offer some findings relevant to health inequalities research. McGuinness et al. [80] highlighted that the effectiveness of hygiene interventions varied according to intervention settings and characteristics (urban child care-based vs. rural home-based interventions) as well as compliance but was unable to attribute these variations to a specific factor with available evidence. Majorin et al. [69] reported on one evaluation where the education and hygiene promotion intervention showed a reduction of diarrhea prevalence in rural sites but not in urban slums. Morita et al. [94] suggested that the effect of these interventions vary according to the child's age. As

only Majorin et al. [69]'s review was assessed as high quality, a sub-analysis according to the quality of the reviews cannot provide further insights into the implications of these interventions for health inequalities. Hence, while some of these reviews suggest that hygiene and sanitation interventions may be relevant when studying health inequalities in the burden of child infectious diseases, the evidence is currently insufficient to conclude on their effect on health inequalities or the relevant factor of inequalities they affect.

Preventing infections in vulnerable neonates (2 reviews). Two reviews, for which were assessed as high quality, synthesized the effect of targeted interventions in hospital settings to reduce the risk of infections in low-birth weight or premature neonates [56, 57]. The higher health needs of low-birth weight or premature babies was the main factor of disadvantage covered in these reviews. As all the interventions took place in hospital settings, including neonatal specialized units, the generalizability of the results beyond this specific setting is not possible.

Conde-Agudelo & Diaz-Rossello [57] included seven RCTs from India, Colombia, Ecuador and Madagascar relevant to this umbrella review. The review assessed the effect of kangaroo mother care on the risk of illnesses (as defined in individual studies) or selected infectious diseases at six months follow-up as compared to routine care. Based on these trials, the authors found moderate-quality evidence that this intervention had a positive effect the risks of severe illness, nosocomial infection/sepsis and lower respiratory tract diseases but no effect on mild/moderate infection and illness or diarrhea. Thus, this intervention may be effective in addressing the higher health risks of selected infectious diseases faced by this vulnerable group of infants.

The review by Cleminson & McGuire [56] assessed the effect of topical application of moisturizing emollients (ointments, creams, or oils) to increase the protective barrier function of the skin in premature infants and so, prevent infections in this vulnerable group. Of the synthesis of six trials relevant to this review, the authors found no effect of such an intervention on the incidence of invasive infections, regardless of the type of emollient used. Therefore, this intervention does not seem effective in addressing the higher health needs of this vulnerable population.

Preventing infectious diseases in children—Multilevel interventions. We found four reviews [62, 69, 85, 97] covering preventive, multilevel interventions. All of them reported the overall population impacts of these interventions–with no equity aspects.

Combined demand-and supply-side interventions for child immunization (3 reviews). Three reviews [62, 85, 97] covering ten individual studies assessed the effect of combined demand- and supply-side interventions across levels to improve child immunization coverage and/or uptake. The quality of the reviews themselves were uneven as Johri et al. [62] was assessed as high methodological quality while Munk et al. [85] and Nelson et al. [97] were appraised as low and critically low respectively. Despite these differences, all three reviews found these interventions effective in improving child immunization but highlighted the heterogeneity of the result and issues with the quality of some of the studies.

While these interventions themselves did not all follow a targeted population approach by design, the reviews were focusing on urban populations [97], rural areas [85] or communities with lagging health or social indicators [62]. Hence the findings may only be relevant to these groups specifically. Then, these findings may inform targeted approaches addressing the health disadvantage of urban populations or communities with lagging health or social indicators regarding immunization. However, further research would be needed to confirm it. None of the reviews disaggregated their results by subgroup among the study population.

Combined hygiene education and water supply/sanitation infrastructure provision (1 review). The high-quality review by Majorin et al. [69] synthesized the results of two studies in

Bangladesh where rural populations received an intervention combining water and sanitation infrastructure development with hygiene education and water quality improvement. The review found very low-quality evidence that such a combined intervention reduced dysentery and diarrhea prevalence.

Discussion

This umbrella review explored which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases amongst children in LMICs. We found sixty systematic reviews synthesizing 453 individual primary studies. Yet, only twenty reviews provided results on intervention effectiveness across different groups while another twenty-one reported their effectiveness on the targeted disadvantaged groups. Universal approaches to health equity were found in interventions covered by forty-five (75%) of the reviews while twenty-six reviews (over 40%) included interventions adopting targeted approaches. No review covered interventions following a proportionate universalism approach. These trends are in line with those from previous global umbrella reviews [14, 16], thus highlighting once again the need for a stronger equity lens and systematic reporting of intervention effects across population groups in systematic reviews.

Reviews covering preventive interventions at community, household or individual levels were overwhelmingly represented in our review. Hence, proportionally less evidence is available regarding interventions at structural or policy levels or health promotion and protection interventions. Evidence on effective health protection interventions is particularly weak as no such interventions was identified at any policy levels. While how we defined our outcomes of interest may have contributed to this unbalance, this may also result from the difficulty to conclusively link high level or broad health interventions to changes in the burden of specific diseases.

Main findings on public health interventions reducing morbidity, mortality and health inequalities from infectious diseases amongst children in LMICs

Based on their effect, interventions can be grouped in five categories. The first one includes interventions that may be effective both at population level and in addressing health disadvantages or gaps. This includes communication, education, social mobilization and outreach interventions to increase the use of certain preventive tools such as immunization or bed nets. However, the heterogeneity of some of the results suggests that their effectiveness also depends on the intervention approach and population targeting adopted, and the specific context of implementation.

A second group covers interventions that are or seem effective at population level but requires further research, especially regarding their effect(s) on health inequalities. These include health promoting interventions (such as health promotion education to caregivers and oral probiotics/synbiotics supplementation), multilevel interventions to promote child immunization or WASH interventions and selected preventive interventions (such as the introduction of new vaccines into national programs and water quality improvement interventions at community level). These interventions would benefit from implementing a stronger equity lens during their evaluation and a more systematic reporting of their impact across different population groups.

In the third group, we find interventions for which the evidence base on their effectiveness is mixed or even contradictory both at population level and on specific groups. These include financial assistance and incentives (such as monetary incentives), selected nutrition

interventions (such as point-of-use multiple micronutrient powders), sanitation and hygiene interventions at community or household level, and interventions targeting the supply of child immunization services (such as service improvement, service integration and healthcare professional training). These interventions would require further, high-quality research to better understand their effects in different settings and the reasons behind this heterogeneity.

A fourth group includes interventions found effective in addressing the health disadvantage of infants at higher risks of infection but which the potential effect on the wider burden of infectious diseases in their community is unknown. These include community health workers home visits to HIV positive mothers after birth and kangaroo mother care for low-birth weight and premature babies in hospital settings.

Finally, the fifth group includes interventions that have been found ineffective on any of the outcomes of interest in this review. These include contracting out health services to non-governmental service providers for under-served communities, several nutrition supplementation interventions (such as Vitamin A, iron, multi-micronutrient tablets and capsules, or animal-source foods), improved cookstoves to reduce indoor air pollution, emollients to prevent infections in premature infants as well as HIV peer-to-peer education or HIV service improvement and task shifting.

Three types of preventive intervention–selected new vaccines introduced into national immunization programs, sanitation and hygiene interventions, and HIV services integration with other health services–bring to our attention on how an intervention may have a positive effect according to one factor of health inequalities (e.g., age or health risk) but may be detrimental according to another (e.g., place or country of residence). This highlights the importance for health inequalities research to report results disaggregated across several socio-demographic dimensions. Research on the introduction of rotavirus vaccines and on water quality improvement at point-of-use also points towards a risk of increasing global health inequalities, which raises the question of the multilevel nature of health inequalities.

Implication for research, policy and practice

This umbrella review contributes to fighting infectious diseases and improving child health in several ways. First, this review can inform strategic decisions about research and research funding. By identify the areas and outcomes where research is most needed, it can help prioritize research in public health and equity in LMICs.

Secondly, this review can help guide the choice of practitioners and policy makers towards interventions with proven effectiveness. Indeed, this review identifies interventions where evidence is the strongest to address either a specific condition (e.g., diarrheal morbidity) or a series of a health challenges with a single intervention (e.g., WASH or nutrition interventions). At the same time, it can help identify areas or interventions where, due to the current state of the evidence, an intervention may require further adaptations, pilots or experimentation before being implemented in a new context or scaled up. For example, the evidence behind interventions targeting HIV-exposed infants or the adoption of the Hib or PCV vaccines described in this review has been provided by studies from only a handful of countries. Meanwhile, the evidence supporting selected WASH multilevel interventions or nutrition supplementation–although promising–is still insufficient.

Finally, this review can help inform discussions in a context of competing child health priorities. By exploring the effect of individual interventions both at the population level and on health inequalities, we have further demonstrated the complex relationship between population health and health equity goals. For example, we found that interventions addressing the demand for immunization at the lower policy level can offer a double gain at population level

and amongst several disadvantaged groups. At the same time, selected interventions such as child health preventative services integration might be beneficial to one group but not another.

It should be noted again that this review was focused on specific outcomes affecting morbidity, mortality and health inequalities from infectious diseases amongst children in LMICs. Therefore, the findings presented here should be assessed and understood within the broader body of public health evidence addressing the needs of children but also other populations or affecting other causes of ill-health. Additionally, the findings of this review should be interpreted within the specific burden of infectious diseases faced by an area, country or region. To provide this broad overview of the field and identify interventions that can offer health gains on multiple diseases outcomes, we purposely refrained from a disease- or transmission mode-specific approach. Yet, these are essential components in the choice of intervention, its design and its chances of success. Hence, the findings of this review should be carefully interpreted according to the specific context and public health system in which they are to be used.

Strengths and limitations of the evidence base

The low methodological quality of the reviews available remains a major barrier to the establishment of a strong evidence base in this field. Although we adopted a strict definition of what would qualify as a systematic review, more than half of the included reviews were assessed as low- or critically low-quality. While some of the weaknesses commonly identified in these reviews may be due to resource constraints (e.g., extraction in duplicate), the two most common ones affect information reporting on excluded or included studies, thus highlighting the need for further implementation of existing good practices and checklists. For complex interventions or reviews covering a wide range of interventions, such weaknesses also limit our ability to effectively compare the findings of different reviews or explore potential reasons for contradictory findings. However, for certain types of interventions–such as interventions to increase immunization at the community, household or individual levels–the reviews themselves were limited by the low quality and heterogeneity of the primary studies they covered. While this limitation *does* call for further strengthening of the methodology and the application of existing guidelines for public health intervention research, it may also reflect the challenges inherent to assessing real world interventions and natural experiments rather than RCTs alone. An example of these challenges was the issue raised by certain reviews–such as those covering sanitation interventions or multi-level interventions for immunization–on the difficulty of assessing the effectiveness of specific components that were part of wider, complex interventions.

A second challenge comes from the public health field itself. Heterogeneity of interventions, study designs and results according to context was a recurring challenge raised by the reviews we included. This is further illustrated by the number of reviews including narrative synthesis alongside, or instead of, meta-analysis. This challenge is common in umbrella reviews covering public health interventions [111]. It has also driven our decision not to attempt a meta-analysis or compare the effectiveness of various interventions. While this difficulty does not affect the validity of our conclusions, it calls for careful consideration for the context and intervention design when applying evidence in a specific setting.

Strengths and limitations of this umbrella review

The scope of our umbrella review was broad in order to provide an exhaustive overview of available evidence on interventions able to address the burden of infectious diseases and related health inequalities amongst children in LMICs. Our umbrella review was based on a comprehensive search of both academic and grey literature on a wide range of interventions.

To address the difficulties raised by previous research in identifying systematic reviews with an equity lens, we adopted a broad definition of health inequalities as variations between groups and did not include any health inequality-related terms in our search strings. While our searches were carried out in English, we did not exclude any languages in our screening thus making sure to capture research from all regions of the global South. Finally, while our definition of systematic reviews and evidence synthesis according to the DARE criteria may have led to the exclusion of certain records covering relevant interventions, it has ensured that the present review captured the best available evidence on how to reduce child mortality, morbidity and health inequalities due to infectious diseases in LMICs.

Conclusion

Building a strong evidence base on public health intervention adapted to LMIC context is essential to inform policy and reduce health inequalities while improving child health at population level. This umbrella review aimed to respond to that need by synthesizing the best available evidence on public health interventions effective in reducing mortality, morbidity and health inequalities from infectious diseases amongst children under five years old living in LMICs. While this review identified selected interventions providing solid evidence to respond to this challenge, we also identified a number of gaps, especially regarding their implications for health equity.

We found that communication, education, social mobilization and outreach interventions are effective in improving the use of preventive tools like immunization or bed nets both at population level and in addressing the health needs of the most disadvantaged. Such approaches offer a strong avenue to reduce morbidity and mortality from infectious diseases in children under five years old.

In contrast, we identified a number of health promoting, health protecting and preventive interventions that are not effective in reducing child morbidity and mortality from infectious diseases or addressing the health of disadvantaged populations. These include contracting out health services to non-governmental service providers for under-served communities, selected nutrition supplementation to infants and children, improved cookstoves to reduce indoor air pollution, emollients to prevent infections in premature infants as well as HIV peer-to-peer education or HIV service improvement and task shifting.

Finally, while none of the interventions covered seem to be detrimental to child health at the overall population level, some raise concerns as to their potential health equity implications. These include health service integration, sanitation and hygiene intervention and rotavirus and PCV vaccine introduction. Further research is required to confirm these findings across various factors of health inequalities. These interventions also highlight the importance for health inequalities research to report results disaggregated across several socio-demographic dimensions and consider the equity implication of an intervention not only locally but across multiple levels.

Our review confirms the need for further, high-quality research in LMICs on the effects of public health interventions at both the overall population level and especially in terms of reducing health inequalities. We also found a large gap in the evidence base on the effectiveness of health protection interventions, which aim at safeguarding children from the risk of infectious diseases through legal, regulatory or enforcement mechanisms.

Supporting information

S1 Appendix. Intervention table.
(DOCX)

S2 Appendix. Published protocol.
(PDF)

S3 Appendix. PRISMA-E.
(PDF)

S4 Appendix. Pilot literature search.
(DOCX)

S5 Appendix. Full search strategy.
(DOCX)

S6 Appendix. Extraction template.
(DOCX)

S7 Appendix. List of excluded studies.
(DOCX)

S8 Appendix. Primary study citation matrix.
(XLSX)

S9 Appendix. Description of included reviews.
(DOCX)

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PAPER 2. WOMEN'S POLITICAL EMPOWERMENT AND CHILD HEALTH IN THE SUSTAINABLE DEVELOPMENT ERA: A GLOBAL EMPIRICAL ANALYSIS (1990–2016)

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Elodie Besnier

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ABSTRACT

Empowering women is presented as a key strategy to achieve several goals of the sustainable development (SDG) agenda, including child health. However, the literature on the subject shows mixed results and is limited regarding political empowerment. Responding to this gap, we explore whether women's political empowerment is associated with positive health outcomes for children under 5 years of age. We use the V-Dem project's 'Women's Political Empowerment Index' (WPEI) in combination with selected SDG indicators of child health from the Institute for Health Metrics and Evaluation's 2017 Global Burden of Disease, for 161 countries, between 1990 and 2016. We estimate fixed-effects regressions for the WPEI against child mortality, stunting and immunisation coverage, controlling for structural and socio-economic indicators from the SDGs and potential lagged effects. The WPEI is associated with improved nutrition and immunisation but its substantive effect is small. High-, low-income and least developed countries benefit more from the effect of women's political empowerment on child mortality. The effect of women's political empowerment on stunting is stronger in middle-income countries while its effect on immunisation is more relevant to low-income and least developed countries. Our study demonstrates the complexity of the relations between women's political empowerment and child health.

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Women empowerment; child health; political empowerment; sustainable development; global health

Introduction

Ensuring a healthy start in life and promoting child health are essential to the health and wellbeing of future adults and of the next generation (Britto, 2017; Center on the Developing Child, 2010; Marmot et al., 2010; Wadsworth & Butterworth, 2005; Wang et al., 2017; Watkins, 2016). Children under 5 years of age are particularly vulnerable as their health and development rely heavily on their care-givers (Black et al., 2017), a role overwhelmingly undertaken by women (Duflo, 2012; Sen & Östlin, 2008). As a result, women's status is likely to affect not only their own health and wellbeing but also their ability to fulfil their roles towards children. Hence, and aside from its own value, empowering women may improve women's own health and also that of the next generation (UNICEF, 2015).

The World Health Organization (WHO) defines empowerment in health as 'a social, cultural, psychological or political process through which individuals and social groups are able to express

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their needs, present their concerns, devise strategies for involvement in decision-making, and achieve political, social and cultural action to meet those needs' (WHO, 1998, p. 6). Empowerment is not only a strategy to improve health in the long run and reduce health disparities, but also an outcome of health intervention itself. For example, there is evidence of the health effect of empowering initiatives as public health strategy (Sen & Östlin, 2008; Wallerstein, 2006; WHO, 1998). As they help address factors of inequities, improve programmes' sensitivity to the community's specificities or build community support, empowering strategies and citizen participation have been associated with improved effectiveness for specific development programmes, health services and services or programmes influencing health (e.g. education) (Wallerstein, 2006). Additionally, studies have directly linked empowerment and community participation with improved health outcomes such as child immunisation and utilisation of selected health services (Wallerstein, 2006).

In contrast, lack of empowerment is linked to poorer health through two mechanisms. First, exclusion, a lack of control or of agency are associated with social determinants of health, such as lower education, employment and access to services (Commission on Social Determinants of Health, 2008). Both aspects mutually reinforce each other, as being disenfranchised affects one's capacity to access services and opportunities, while lower education, employment can affect one's resources, agency and participation. Secondly, psychosocial factors resulting from disempowerment (e.g. financial insecurity, isolation) affect both physical and mental health. For example, prolonged stress caused by these factors has been associated with increased risks of cardio-vascular disease and obesity (Brunner & Marmot, 2005). In young children and pregnant women, exposure to toxic stress – which these factors of disempowerment can cause – affects a child's brain development, exposing them to higher risk of poor mental and physical health later in life (Center on the Developing Child, 2010; Wadsworth & Butterworth, 2005).

There are ambitious expectations regarding the potential of empowering women to promote human development. Aside from being a desirable outcome in itself, women's empowerment is presented as key to sustainable development (Duflo, 2012; Mason & King, 2001; United Nations, 2017). According to Sen and Östlin (2008), gender power relations 'are among the most influential social determinants of health' as they determine one's control over their health, the acknowledgement of their health needs and the realisation of their right to health. The 2030 Agenda for Sustainable Development, which all UN members have committed to, includes a goal (SDG) dedicated to achieving gender equality, with one target aiming to 'ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life'. The 2030 Agenda also highlights the contribution of women's empowerment to achieve progress in and across the other goals (United Nations, 2017).

In this study, we explore whether a specific type of women's empowerment – political empowerment – is associated with improving the health of children under the age of 5 years, a goal reflected in several targets of SDG 3. We address the following question: Is women's political empowerment associated with positive child health outcomes?

First, in order to develop a conceptual framework that can guide our analysis, we review the potential mechanisms of action linking women's empowerment – and political empowerment in particular – with health outcomes found in the empirical and theoretical literature. Then we detail the data and method used in this study. After presenting the results of our analysis, we further discuss these findings in relation to the wider context of the SDGs before highlighting key take-away messages from this empirical study.

Women's political empowerment and child health: a review of empirical evidence

The concept of women's empowerment

Women's political empowerment is part of the wider concept of women's empowerment, the complexity of which has led to inconsistencies in the way it has been defined and measured in the literature (Cunningham et al., 2015; Pratley, 2016; Sundström et al., 2017; Wallerstein, 2006). Some of

the literature, such as the World Bank's report on Engendering Development (Mason & King, 2001), focuses on the enablers and barriers of equality between men and women. In their report analysing women's contribution to human development, the World Bank highlights gender inequalities in 'rights, resources and voices' (Mason & King, 2001, p. 2). Other organisations and researchers have acknowledged the political dimension more directly when exploring the link between women's empowerment and health. In their analysis of power inequalities, the WHO Commission on Social Determinants of health (CSDH) (2008) identifies the political dimension as one of the four major fields where inequalities manifest themselves, alongside economic, social and cultural dimensions. In his systematic review, Pratley (2016) identifies the political dimension as one of the five main dimensions of women's empowerment, noting that the economic and social/cultural dimensions tend to be over-represented in the literature compared to the political, psychological and legal dimensions. Wallerstein's (2006) evidence review notes that most of the literature focuses on psychological empowerment, which encompasses political efficacy alongside collective efficacy, outcome efficacy, critical thinking ability and participatory behaviour. These differences in definitions affect the comparability and meta-analysis of studies exploring the impact of women's empowerment on health (Cunningham et al., 2015; Pratley, 2016; Sundström et al., 2017; Wallerstein, 2006). They also make it harder to draw general conclusions as to the impact of women's empowerment on specific outcomes, such as child health.

Limitations of the current evidence base on political empowerment and child health, and opportunities for research

Review of evidence. There is a growing body of literature looking at links between women's empowerment and child health outcomes. Their findings are often mixed, with variations according to contexts or countries, aspects of child health and measures of women's empowerment. Overall, markers of women's social and economic empowerment such as women's education or literacy, decision-making power and to a lesser extent, economic power or control over economic resources and assets are associated with improved child health outcomes (Carlson et al., 2015; Cunningham et al., 2015; Duflo, 2012; Hosseinpoor et al., 2018; Kuruvilla et al., 2014; Richards et al., 2013; Sen, 1999; Taukobong et al., 2016; Thorpe et al., 2016). The effect of political empowerment and participation has been far less studied (Pratley, 2016), also reflecting the wider lack of studies linking empowerment and citizens participation to health and healthcare outcomes (Wallerstein, 2006). This also reflects the proportionally fewer studies measuring the effect of women's empowerment beyond the individual level (Pratley, 2016). However, the Success Factors for Women's and Children's Health studies on the Millennium Development Goals related to maternal and child health have highlighted the contribution of women's political participation (a component of women's political empowerment) as one of the structural factors linked to improved child and maternal heath in low- and middle-income countries (Kuruvilla et al., 2014).

Limitations and gaps in current research. As previously mentioned, the effect of women's political empowerment remains under-researched as compared to the other dimensions of women's empowerment. Secondly, most studies focus on the empowerment of mothers rather than women when exploring the link between empowerment and child health, thus ignoring the role of other female members in the family in child welfare or the broader role of women and girls in the community. Thirdly, the vast majority of the literature covers only selected low- and middle-income countries and has found significant variations in results from one context to the other (Carlson et al., 2015; Pratley, 2016; Richards et al., 2013; Taukobong et al., 2016; Thorpe et al., 2016). These studies also mainly study correlation, not causality, between women's empowerment and child health or service utilisation outcomes (Taukobong et al., 2016). Finally, while several studies find promising results linking components of women's empowerment, they also highlight the need for further research (Pratley, 2016; Richards et al., 2013; Taukobong et al., 2016; Wallerstein, 2006).

Contribution of the present study. The present study responds to that need both conceptually and empirically. Conceptually, the framework presented below describes the potential pathways through which women's political empowerment, acting as a meta-determinant of health, may impact child health through the improvement of women's status at different levels. Empirically, our analysis aims to fill several of the gaps identified in the literature. We focus on the link between women's political empowerment and child health at the global level. Thus, our approach addresses the geographical gap previously observed and the comparative lack of research focusing specifically on political empowerment, beyond simple political participation. As described in the method section, our analysis also controls for and compare the actual effect size of structural determinants of child health, including markers of women's social and economic empowerment, that have been associated with child health in previous research. While this approach does not allow us to conclusively prove or disprove causal relations between women's political empowerment and child health, it enables us to isolate the specific effect of women's political empowerment while controlling for other mechanisms at play.

Women's political empowerment and child health: a conceptual framework

This section presents the theoretical and conceptual literature relevant to political empowerment and health, which has informed the development of our conceptual framework.

The political determinants of health: a review of theoretical and conceptual literature

The second half of the twentieth century has seen a growing number of epidemiological theories and frameworks highlighting the importance of political systems and politics as structural determinants of population health (Krieger, 2011). In their report on the determinants of health, the WHO CSDH highlights the pivotal role of political empowerment as 'aspects of empowerment that underpin social well-being and equitable health' (CSDH, 2008, p. 155). As a result, the CSDH considers interventions addressing the social determinants of health as intrinsically political, with changing power relations (and the shifting of powers in favour of disadvantaged groups) as a fundamental component in addressing health inequities. To operationalise its recommendations, the CSDH developed a framework (see Figure 1) based on three main epidemiological theories: social production of disease and political economy of health; psychosocial approaches; and ecosocial theory (Solar & Irwin, 2010). All of these theories consider health and diseases distribution as societally contextualised and health outcomes are socially patterned. Social production of disease and political economy of health theories emphasise the role of political and economic institutions in shaping society and the distribution of health within it. Psychosocial theories highlight the individual's perception of social condition, status and interaction and how that perception, especially the psychosocial stress resulting from the social environment and hierarchy, can trigger biological response harming physical and mental health. Finally, while recognising the role of biological and social pathways in health, ecosocial theory focuses and the interaction between organisms, populations and their environment, highlighting the dynamic relationship between a person's biology, society and environment over time, and how this relationship can affect their health (Krieger, 2011). While they emphasise different pathways and factors affecting one's health, all these theories insist on the multiple layers of determinants affecting health (as the CSDH framework shows) and the crucial role of power and power relations between different groups in these processes (CSDH, 2008).

While not exclusively focused on political determinants, this framework *does* highlight the structural role that the political context and political decisions are likely to have on other determinants of health. Indeed, according to Amartya Sen (1999), political rights (including political and social participation) are not only instrumental in making people's voices heard and having political leaders address people's needs, but also contribute to shaping a society's values and priorities as well as

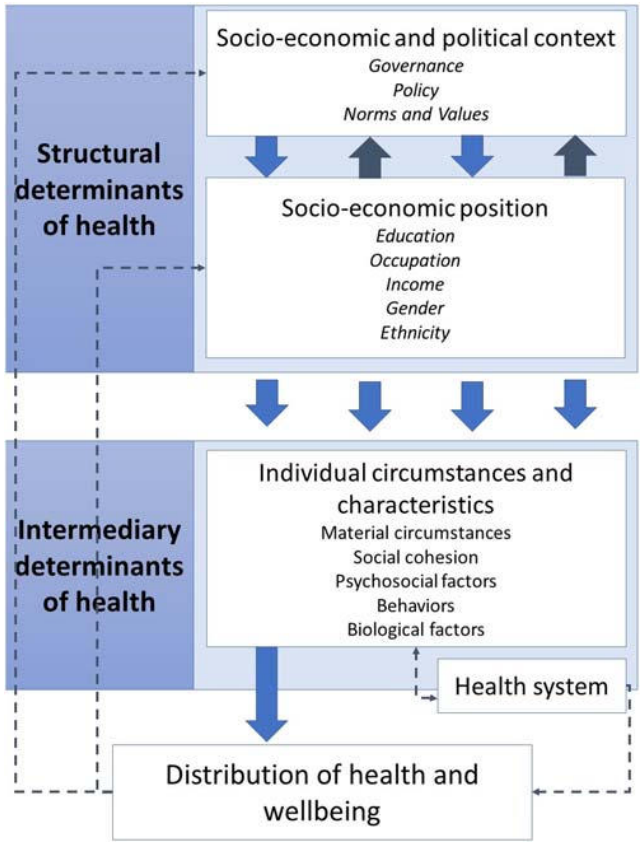

Figure 1. The CSDH conceptual framework (adapted from CSDH, 2008).

making informed political choices. Based on this 'constructive role' of political rights, the political empowerment of women would allow the development of values and priorities that are beneficial to women's agency, which Sen associates both with improved women's wellbeing and improved child survival (Sen, 1999).

The role of political empowerment and participation in shaping health is also addressed by theories exploring the role of voters or supporters in influencing public policy. These theories look at survival strategies of political leaders, arguing that leaders stay in power by rewarding their supporters either financially or with policies that benefit or match the expectations and needs of this group (Bueno de Mesquita, 2011; Wigley & Akkoyunlu-Wigley, 2017). From this point of view, empowering women and making their voices more influential would encourage leaders to design and invest in policies that respond to women's preferences, needs and concerns. These are seen as more family-friendly or oriented towards improving the status of women in the community and in the household (thus indirectly impacting the status of women as caregivers) (Duflo, 2012; Sen, 1999). Empowering women in political life and encouraging their participation may also impact leaders' decision and policies through another pathway. Political leaders who rely on wider groups of supporters to stay in power are more likely to invest in public goods, including those influencing or improving health (Bueno de Mesquita, 2011; Wigley & Akkoyunlu-Wigley, 2017). As women make up half of the world population, empowering them and supporting their political participation increases the size of political leaders' supporter group, thus making them more likely to invest in public goods.

Women's political empowerment as a meta-structural determinant of child health: our conceptual framework

Building on these theories and the CSDH framework, we hypothesise that the political empowerment of women leads to empowerment in other dimensions (e.g. social, economic, psychological), thus allowing women to better fulfil roles critical to child health. As such, political empowerment would act as a meta-structural determinant of child health mediated through the status and roles of women. Our framework (Figure 2) illustrates how women's political empowerment could lead to better child health. The left side reflects the determinants identified in the CSDH framework as applied to women. By acting on these different levels of determinants, the process of political empowerment would increase women's choice (the ability to make decisions for themselves and their family), agency (the ability to define goals for themselves or their community) and participation (the ability to take part in political decision making and influence policy decision) (Sundström et al., 2017). Hence, this process would modify women's status at the individual, community and structural levels, thus impacting their abilities to carry out key roles for ensuring children's health: roles of mothers, care-givers, role models in their community and agents of change within society. Building on the three theories used by the CSDH framework, our framework highlights the biological, nurturing, social, societal/political pathways through which these key roles would affect child health. The biological pathway refers to how the health and well-being of the mother affect that of her child. The nurturing pathway reflects how a child's environment and care as provided by care-givers, affect the child's development and health. The social pathway covers the processes that shape the distribution of social factors (e.g. mother's education and literacy, participation in the labour market, access to resources) through which women as role-models can set a path that promotes child health. Finally, the societal/political pathways reflect how women can lead to change in the priorities and political choices that shape not only health services and programme

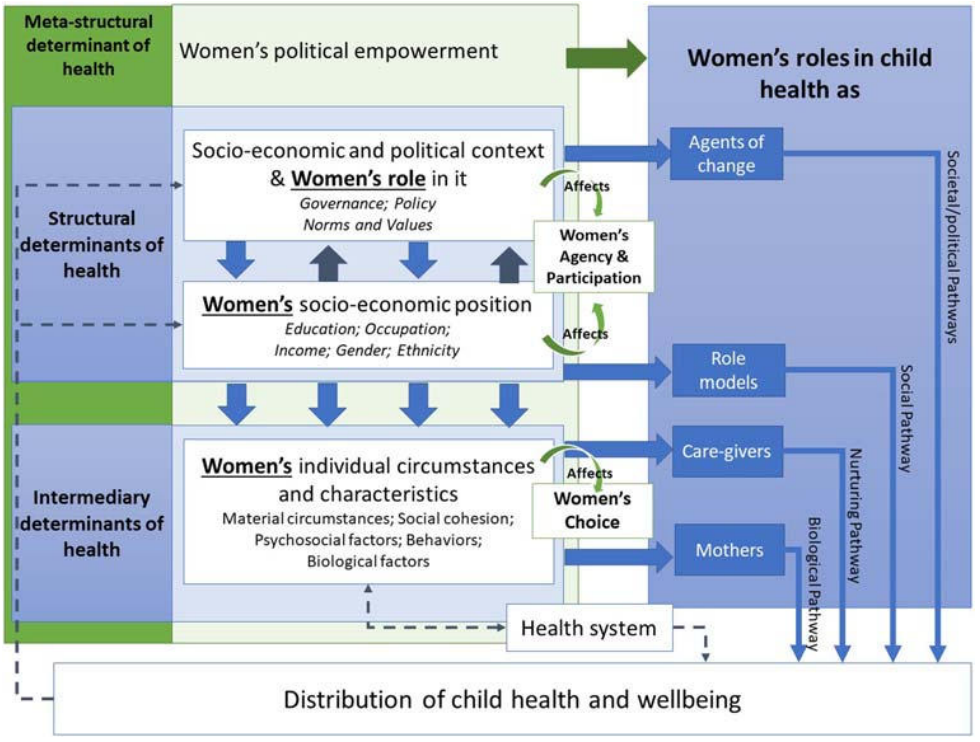

Figure 2. Women's political empowerment as meta-structural determinant of child health: a conceptual framework.

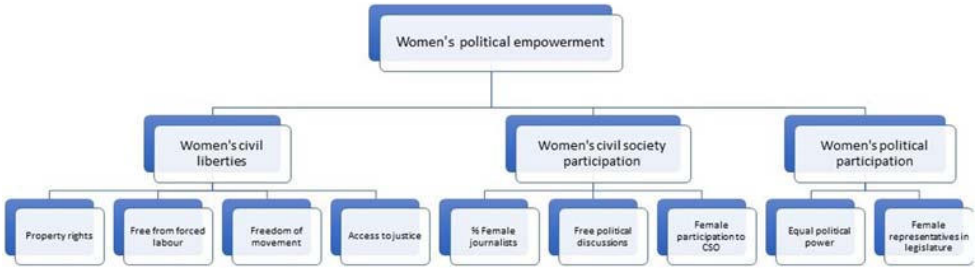

Figure 3. The components of the WPEI.

but also societal values and decisions (Wadsworth & Butterworth, 2005; World Health Organization, 2018). While these elements depend on more than women alone, the literature previously described illustrates how women's unique roles in these different arenas could lead to improving child health, should women's status be improved through political empowerment.

To test this hypothesis, we use the Women's Political Empowerment Index (WPEI) developed by the Varieties of Democracy (V-Dem) project (Sundström et al., 2017) in combination with selected child health indicators from the Institute for Health Metrics and Evaluation's (IHME) 2017 Global Burden of Disease (GBD) (Global Burden of Disease Collaborative Network, 2018a, 2018b) for 161 countries, covering the period from 1990 until 2016. We follow the definition of political empowerment given by the WPEI as 'a process of increasing capacity for women, leading to greater choice, agency, and participation in societal decision-making' (Sundström et al., 2017, p. 232). This index covers various components of women's empowerment affecting structural determinants of health (Figure 3): rights and liberties, participation in society and political participation and representation.

Material and method

Choice of variables and data sources

Child health outcomes

The dependent variables used to measure child health in this study – child mortality, stunting and immunisation (Global Burden of Disease Collaborative Network, 2018a, 2018b) (see Supplemental online material – Annex 1, Table S1) – cover various aspects of this concept and have been informed by current indicators included in the SDGs (United Nations, 2017). All the dependent variables were logged to reduce skewness. Covering a critical yet vulnerable period for child health and survival, the under-5 mortality rate is a widely used indicator of the state of child health in a country or globally. It is one of the indicators for SDG target 3.2 on ending preventable child deaths by 2030 (United Nations, 2017). Stunting is an indicator of poor nutrition, repeated infections and psychosocial risk factors (e.g. poverty or neglect), as well as a predictor of child development and future health (Onyango, 2014). It has been a major factor of the under-5 mortality reduction since 2000 and is one of the indicators for SDG target 2.2 on ending malnutrition by 2030 (United Nations, 2017; Watkins, 2016). The immunisation indicator used in this study – immunisation against diphtheria, pertussis and tetanus (DPT3) – not only reflects health service utilisation but also children's protection from common infectious diseases, which has been a major factor in the decrease of under-5 mortality since 2000 (Watkins, 2016). Vaccine coverage is an indicator for SDG target 3.8 on universal health coverage (United Nations, 2017).

The choice for the IHME database was motivated by the quality and availability of data for all country-years covered in this study. As IHME generates and updates its health estimates on a yearly basis, the GBD 2017 provides cohesive panel data with annual estimates for each of the 195

countries and territories it includes, from 1990 to 2017 (Kyu et al., 2018; Lozano et al., 2018). As a result, it offers a more complete, balanced dataset than other international institutions like the World Bank, which rely on individual country's reporting. However, the estimates used in this study remain highly consistent with those provided by international organisations such as the World Bank's World Development Indicators (WDI) (2018), with correlations coefficients over 0.95 for under-5 stunting and mortality rates and over 0.88 for DPT coverage between the IHME and WDI indicators.

Women's political empowerment

The main independent variable, the WPEI, covers indices reflecting three key components of empowerment (see Figure 3 and Supplemental online material – Annex 1, Table S1): choice (reflected by the civil liberties index); agency (reflected by the civil society participation index) and participation (reflected by the political participation index) (Sundström et al., 2017). Unlike other indicators measuring women's empowerment, the WPEI goes beyond political participation while focusing specifically on *political* empowerment as a *process*, both in terms of legal and effective rights. Its wide spatial and temporal coverage (Sundström et al., 2017) opens new opportunities for analysing the contribution of this process to sustainable development at the global level, as it offers a cohesive, complete and balanced dataset for a wide range of countries. Additionally, the V-Dem methodology allows us to capture the actual situation in a country rather than a government's official position, while controlling for risks of individual or country biases from the expert respondents (Coppedge et al., 2018; Sundström et al., 2017). The WPEI has not yet been used to test the association of women's political empowerment with child health outcomes within the context of global sustainable development.

Controlling for structural determinants of health

The effects of WPEI on child health was compared against a set of control variables related to specific SDGs and components of our framework (see Supplemental online material – Annex 1, Table S1). Our model was built in two steps, reflecting the two building blocks of structural determinants of health present in our framework. In our first step, we controlled for variables reflecting the socio-economic and political context. In our second step, we controlled for variables reflecting women's socio-economic position, which are also markers of women's socio-economic empowerment. Given our global focus and the causal relationship between structural and intermediary determinants of health in our framework (Solar & Irwin, 2010), we chose not to add individual-level variables representing intermediary determinants of health to our model.

Step 1: socio-economic and political context. Our first step included indicators covering structural, socio-economic and political contextual factors that may affect child health: countries' economic growth, level of democratisation, population density and stability (Coppedge et al., 2018; Gleditsch et al., 2002; The World Bank, 2018b). To reduce skewness, two of these variables, economic growth and population density, were logged, since the broad level of these indicators for individual country-year mattered more than their actual individual value. Economic growth, a target of SDG 8 (United Nations, 2017), is associated with several health outcomes, including improved life expectancy and reduced infant mortality. This positive effect is particularly strong in poorer countries (CSDH, 2008; Wilkinson, 2005). Electoral democracy is thought to be beneficial to health by allowing citizens' participation in decisions, which affects the allocation of resources and makes politicians more likely to invest in public goods and policies favourable to their population (Pieters et al., 2016; Sen, 1999; Welander et al., 2015). It is also thought to promote economic growth, thus indirectly benefiting health (Pieters et al., 2016). Democracy has been associated with child health outcomes such as improved nutrition and lower infant mortality (Welander et al., 2015). However, some studies have shown mixed results and great variation depending on the health outcome and regime considered (Pieters et al., 2016; Ross, 2006). Democratisation is not directly addressed by the

SDGs, but several of its components are relevant to SDG 16 on inclusive institutions (United Nations, 2017). Population density has been associated with several health outcomes, although the relation between them is complex. At community level, high population density – and urban residence specifically – is associated with increased rates of violent deaths and injuries, selected chronic diseases, poor mental health and, when coupled with overcrowding and inadequate infrastructure, increased risks of infectious diseases. At country level, population density also seems to affect the population-level effect of selective preventative measures (Balk et al., 2004; Florey et al., 2007). On the other hand, living in urban areas is associated with increased access to information, infrastructure and health services. However, these benefits may be compromised when the population density exceeds service and infrastructure capacities (e.g. in slums) (Balk et al., 2004). Population density is not explicitly mentioned in the SDG targets but is directly related to a number of those included in SDG 11 on sustainable communities, including the targets on housing and equitable access to services (United Nations, 2017). Finally, countries' stability indicators account for violence and wars' long-lasting effect on young children's physical and mental health (Calam, 2017; Wexler et al., 2006). These indicators are directly related to SDG 16 on peace, justice and strong institutions (United Nations, 2017). Children are disproportionally affected not only by the violence but also the long-term impact of conflicts such as malnutrition, epidemics, the destruction of health services, the increased vulnerability to abuse and the presence of unexploded devices like landmines (Pearn, 2003; Rieder & Choonara, 2012; Wexler et al., 2006). Controlling for these four elements allows us to assess the effect of women's political empowerment on child health against key structural, socio-economic and political determinants over time.

Step two – women's socio-economic position and empowerment. In the second step, we added non-political factors of women's empowerment that have shown strong correlation with improved child health in the literature. They account for women's socio-economic position determinants from our framework: maternal education and women's labour participation (Global Burden of Disease Collaborative Network, 2018a; United Nations Development Programme, 2018). These indicators are also covered by SDG 4 on education and SDG 8 on decent work and economic growth (United Nations, 2017). As some countries rely on periodical national surveys to estimate female labour participation, the missing years for these countries have been linearly interpolated.

Comparing regression p values from both steps confirmed the relevance of the women's socio-economic empowerment variables for the final model (see Supplemental online material – Annex 2, Tables S2a-c). As women's political empowerment, women's education and labour participation may be linked, we ran correlation tests between these three variables. The low correlations coefficients (all under 0.40) confirmed that these three elements of women's empowerment remain, to a large extent, independent from one another (see the pairwise correlation matrix in Supplemental online material – Annex 3, Table S3).

Finally, to ensure that our model was sound, we tested for multicollinearity by calculating the variance inflation factors (VIF), which showed low to moderate multicollinearity (mean VIF of 2.48, VIF between 1.04 and 3.9),

Analysis

The analysis was performed using Stata 15.1. As the different datasets used do not necessarily cover the same number of countries and territories, we excluded countries and territories that are not currently members of the United Nations. To test for heteroskedasticity and address the complex correlation patterns associated with the use of cross-section, time series dataset, we performed a Wooldridge test for first order serial correlation and a Breusch–Pagan/Cook–Weisberg test for heteroskedasticity (Breusch & Pagan, 1979; Cook & Weisberg, 1983). As these tests failed to reject the null hypothesis, we used the Driscoll and Kraay method for estimating the standard errors to account for temporal and spatial correlations in our ordinary least squares regression analysis

(Hoechle, 2007). Our initial regressions compared both the Newey-West and the Driscoll and Kraay methods (Supplemental online material – Annex 2, Tables S2a-c). We found that both methods returned very similar coefficients, although the results generated by the Driscoll and Kraay method tended to have slightly lower p values. Previous simulations reported that while the Driscoll and Kraay standard errors may be slightly optimistic with certain datasets, this method is more accurate when spatial dependence occurred (Hoechle, 2007). Hence, and following Sundström et al.'s (2017) empirical analysis demonstrating the utility of the WPEI, only the regressions using the Driscoll and Kraay standard errors are reported in this article.

We first ran both random and country fixed-effects regressions. However, in line with the Hausman Test results, only the fixed-effects regressions were used for the subsequent regressions (initial random effect regressions are available from the author). As women's empowerment is a long-term process and the impact of political changes may not be immediately reflected in health outcomes, we tested the hypothesis of a delayed effect of women's political empowerment on child health outcomes. Thus, we tested the sensitivity of our findings to 2-year, 5-year and 10-year lags. Finally, we assessed whether our results were affected by outliers using Cook's distance (Cook, 1977).

Calculating the substantive effects of women's political empowerment on child health outcomes

When a correlation was found statistically significant and robust, we calculated its substantive effect to estimate the actual impact of the unlogged variable of interest. Substantive effect is obtained by multiplying the coefficient of the independent variable of interest by a standard deviation of the within variation of this variable, before dividing the product by a standard deviation of the within variation of the dependent variable studied in the model. This is then expressed as a percentage.

Assessing the women's political empowerment – child health links by countries' income and development levels

We wanted to further assess the effect difference of how various human and economic development thresholds at the global level shape the effect of women's political empowerment on child health outcome. Hence, we added variables reflecting countries' income and development categorisation. First, we ran our model with an interaction between the WPEI and a variable reflecting the World Bank's historical classification of countries in three groups: high-, middle- and low-income (HIC, MIC and LIC respectively, see Supplemental online material – Annex 1, Table S1 for definitions). We used the historical classification at the beginning of our study period, 1990, or when countries first entered the World Bank's classification (for countries founded after 1990) (The World Bank, 2018a). Then, we ran our initial model interacting the WPEI with a variable reflecting whether countries were ever defined by the United Nations as Least Developed Countries (LDC, see Supplemental online material – Annex 1, Table S1 for definitions) (United Nations Department of Economic and Social Affairs, 2010).

Robustness tests

To confirm the initial findings of our model, we added two control variables as part of a robustness test: governance and access to healthcare (Coppedge et al., 2018) (see Supplemental online material – Annex 1, Table S1). These indicators were chosen from the literature (Kuruvilla et al., 2014) to take into account how further structural and intermediary determinants of child health from our framework – the political context and health system governance – may affect the model or interfere with the effect of women's political empowerment. We tested again for multicollinearity and outliers using the VIF and Cook's distance tests, to assess how the additional variables affected the model in these regards.

Finally, in order to further explore potential causal relations between women's political empowerment and child health outcomes, we ran Granger causality tests between the WPEI and each of the child health outcome variables (Granger, 1969). Besides providing further indications of a potential

causal link between these phenomena, the Granger test also allows us to explore the risk of reverse-causality, where an improvement of child health could lead to women's political empowerment. Indeed, reducing the burden and time women dedicate to child-bearing and child-rearing can reduce some of the constraints placed on them and open opportunities for active participation (Collins et al., 1993; Duflo, 2012). Hence, the Granger causality test allowed us to explore whether improved child health is driving women's political empowerment.

Understanding the effects of WPEI components

The final stage of our analysis aimed to explore the mechanisms of actions of women's political empowerment. To do so, we replaced the WPEI with each of its components: women's civil liberties, civil society participation and political participation (see Supplemental online material – Annex 1, Table S1 for the definitions). This final step allowed us to test whether one dimension of women's political empowerment (namely, choice, agency and participation) may be more influential than another on child health outcomes as compared to the process as a whole (as reflected by the WPEI).

A summary table of descriptive statistics covering the unlogged variables included in our models is included in Supplemental online material – Annex 4 (Table S4).

Results

Women's political empowerment and child health outcomes at the global level

As Table 1 shows, women's political empowerment is associated with an improvement of two of the child health indicators: stunting and immunisation. The WPEI is negatively corelated with stunting prevalence and positively corelated with DPT3 coverage, both correlations being highly statistically significant. In this model, the association between WPEI and child mortality is not statistically significant.

With regards to the structural factors reflecting the socio-economic and political context, our model confirms the positive association between child health and GDP per capita and the negative

Table 1. WPEI and child health outcomes, fixed effect regressions.

	Child Mortality	Stunting	DPT3 coverage
WPEI	−0.070	−0.163***	0.219***
	[−0.189,0.049]	[−0.271,−0.055]	[0.114,0.324]
GDP per capita in constant 2010US$	−0.225***	−0.146***	0.051**
	[−0.266,−0.183]	[−0.178,−0.115]	[0.013,0.089]
Electoral democracy index	−0.054*	0.075**	−0.029
	[−0.112,0.004]	[0.016,0.134]	[−0.078,0.020]
Civil wars with over 25 deaths per year	0.038***	−0.011**	−0.073***
	[0.024,0.053]	[−0.021,−0.000]	[−0.104,−0.043]
Years since last civil war	−0.001***	−0.001***	−0.002***
	[−0.001,−0.000]	[−0.001,−0.000]	[−0.003,−0.001]
Population density	0.174***	0.087**	0.436***
	[0.091,0.256]	[0.008,0.165]	[0.381,0.491]
Mean maternal education attainment	−0.069***	−0.084***	−0.049***
	[−0.081,−0.057]	[−0.089,−0.079]	[−0.068,−0.030]
Female labour force participation rate	−0.000	−0.001	−0.004***
	[−0.001,0.001]	[−0.002,0.000]	[−0.005,−0.003]
Observations	**4032**	**4032**	**4032**
Number of countries	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

effect of civil war. It also confirms the complex links between child health and population density, which are associated with worsening mortality and stunting rates but improved immunisation coverage. Finally, the effect of democratisation is less clear.

As for women's socio-economic empowerment markers, our model confirms the role of female education in child health. An increase in the mean level of maternal education is associated with a decrease in child mortality and stunting but also a decrease in immunisation coverage. In contrast, our model does not support an association between child health and women's labour participation, as the associations are either not statistically significant (e.g. with child mortality or stunting) or the coefficient extremely small (with DPT3 coverage).

Substantive effect of women's political empowerment on child health outcomes

The substantive effect of these variables shows a different picture. Increasing women's political empowerment by one standard deviation would reduce stunting prevalence by 25.1% of a standard deviation but only increase DPT3 immunisation coverage by less than 1% of a standard deviation. As a comparison, the substantive effects of maternal education attainment and GDP per capita on stunting prevalence reduction are, respectively, over eight and three times superior to that of women's political empowerment. However, their substantive effects on DPT3 immunisation are also very small.

Lagged effects of women's political empowerment on child health outcomes

As women's empowerment is a long-term process and the impact of political changes may not be immediately reflected in health outcomes, we tested the hypothesis of a lagged effect of women's political empowerment on child health outcomes in the following 2, 5, and 10 years (see Table 2). Most of the correlations remain unchanged compared to the previous regressions, confirming that the associations and effects previously described are unimpacted by the introduction of such time lags. However, a noticeable exception is child mortality; its negative correlation with women's political empowerment becomes statistically significant when a 10-year lag is introduced. Substantively, an increase of women's political empowerment by a standard deviation is associated with 2.6 fewer deaths per 1000 livebirths within 10 years. However, the substantive effect of women's political empowerment on child mortality would still remain fairly small: over 15 times smaller than the one resulting from an increase of maternal education attainment and 13 times smaller than the one resulting from an increase in GDP per capita.

As these results support a delayed effect of women's political empowerment on at least one of the dependent variables, we continued to apply a 10-year lag alongside our main model in the subsequent regressions.

Women's political empowerment and child health outcomes by countries' income and development level

We tested how various human and economic development thresholds may shape the association between women's political empowerment and child health outcomes.

Looking at these correlations by income groups (Table 3), we observe that high- and low-income countries benefit most from the effect of women's political empowerment on child mortality. However, it is in middle-income countries where the effect of women's political empowerment on reduced stunting is stronger, while its effect on DPT3 coverage is comparatively more important to low-income countries.

When considering the case of LDCs (Table 4), we observe that women's political empowerment in these countries has a comparatively strong effect on child mortality and immunisation coverage but not necessarily on stunting.

Table 2. WPEI and child health outcomes, fixed effect lagged regression.

	Child mortality			Stunting			DPT3 coverage		
	2-year lag	5-year lag	10-year lag	2-year lag	5-year lag	10-year lag	2-year lag	5-year lag	10-year lag
WPEI	−0.070 [−0.190,0.050]	−0.070 [−0.175,0.035]	−0.070** [−0.139, −0.001]	−0.163** [−0.285, −0.041]	−0.163** [−0.297, −0.028]	−0.163** [−0.286, −0.040]	0.219*** [0.106,0.332]	0.219*** [0.107,0.331]	0.219*** [0.146,0.292]
GDP per capita in constant 2010US$	−0.225*** [−0.271, −0.178]	−0.225*** [−0.275, −0.175]	−0.225*** [−0.270, −0.179]	−0.146*** [−0.183, −0.109]	−0.146*** [−0.190, −0.102]	−0.146*** [−0.191, −0.101]	0.051** [0.010,0.093]	0.051** [0.008,0.094]	0.051** [0.006,0.097]
Electoral democracy index	−0.054* [−0.115,0.006]	−0.054 [−0.123,0.014]	−0.054* [−0.119,0.011]	0.075** [0.012,0.137]	0.075** [0.017,0.133]	0.075*** [0.028,0.121]	−0.029 [−0.082,0.024]	−0.029 [−0.086,0.028]	−0.029 [−0.084,0.026]
Civil wars with over 25 deaths per year	0.038*** [0.023,0.054]	0.038*** [0.022,0.054]	0.038*** [0.024,0.053]	−0.011* [−0.022,0.001]	−0.011* [−0.022,0.001]	−0.011** [−0.019, −0.003]	−0.073*** [−0.104, −0.043]	−0.073*** [−0.104, −0.042]	−0.073*** [−0.105, −0.042]
Years since last civil war	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.002*** [−0.003, −0.001]	−0.002*** [−0.003, −0.001]	−0.002*** [−0.003, −0.001]
Population density	0.174*** [0.081,0.266]	0.174*** [0.069,0.279]	0.174*** [0.073,0.274]	0.087* [−0.003,0.177]	0.087 [−0.022,0.195]	0.087 [−0.026,0.200]	0.436*** [0.374,0.497]	0.436*** [0.374,0.497]	0.436*** [0.395,0.476]
Mean maternal education attainment	−0.069*** [−0.082, −0.056]	−0.069*** [−0.083, −0.055]	−0.069*** [−0.082, −0.057]	−0.084*** [−0.089, −0.078]	−0.084*** [−0.090, −0.077]	−0.084*** [−0.091, −0.077]	−0.049*** [−0.071, −0.028]	−0.049*** [−0.073, −0.025]	−0.049*** [−0.072, −0.027]
Female labour force participation rate	−0.000 [−0.001,0.001]	−0.000 [−0.001,0.001]	−0.000 [−0.001,0.001]	−0.001 [−0.002,0.000]	−0.001 [−0.002,0.001]	−0.001 [−0.002,0.001]	−0.004*** [−0.005, −0.003]	−0.004*** [−0.005, −0.003]	−0.004*** [−0.005, −0.003]
Observations	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**
Number of countries	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3. WPEI and child health outcomes, fixed effect regressions by World Bank's income groups.

	Child mortality		Stunting		DPT3 coverage	
	Main model	Main model, 10-year lag	Main model	Main model, 10-year lag	Main model	Main model, 10-year lag
HIC#WPEI	−1.192*** [−1.600, −0.784]	−1.192*** [−1.539, −0.845]	−0.043 [−0.427,0.341]	−0.043 [−0.434,0.348]	−0.697*** [−0.850, −0.545]	−0.697*** [−0.853, −0.542]
MIC#WPEI	0.060 [−0.043,0.163]	0.060 [−0.029,0.149]	−0.360*** [−0.508, −0.212]	−0.360*** [−0.547, −0.173]	0.042 [−0.080,0.163]	0.042 [−0.088,0.171]
LIC#WPEI	−0.228*** [−0.395, −0.062]	−0.228*** [−0.317, −0.139]	0.114** [0.016,0.211]	0.114* [−0.017,0.244]	0.492*** [0.302,0.681]	0.492*** [0.288,0.695]
GDP per capita in constant 2010US$	−0.227*** [−0.269, −0.184]	−0.227*** [−0.274, −0.179]	−0.148*** [−0.180, −0.116]	−0.148*** [−0.194, −0.102]	0.046** [0.011,0.082]	0.046** [0.004,0.088]
Electoral democracy index	−0.058** [−0.114, −0.003]	−0.058* [−0.122,0.005]	0.069** [0.012,0.125]	0.069*** [0.027,0.111]	−0.042* [−0.085,0.001]	−0.042* [−0.093,0.008]
Civil wars with over 25 deaths per year	0.038*** [0.023,0.053]	0.038*** [0.022,0.054]	−0.008 [−0.019,0.003]	−0.008* [−0.016,0.000]	−0.069*** [−0.100, −0.038]	−0.069*** [−0.102, −0.036]
Years since last civil war	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.002*** [−0.003, −0.001]	−0.002*** [−0.003, −0.001]
Population density	0.199*** [0.108,0.289]	0.199*** [0.088,0.309]	0.037 [−0.040,0.115]	0.037 [−0.074,0.148]	0.384*** [0.328,0.439]	0.384*** [0.343,0.424]
Mean maternal education attainment	−0.076*** [−0.085, −0.067]	−0.076*** [−0.085, −0.066]	−0.076*** [−0.082, −0.070]	−0.076*** [−0.085, −0.067]	−0.043*** [−0.065, −0.021]	−0.043*** [−0.070, −0.016]
Female labour force participation rate	−0.000 [−0.001,0.001]	−0.000 [−0.001,0.001]	0.000 [−0.001,0.001]	0.000 [−0.001,0.001]	−0.003*** [−0.004, −0.001]	−0.003*** [−0.004, −0.002]
Observations	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**
Number of countries	**161**	**161**	**161**	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Robustness tests

To confirm these findings, we added two control variables as part of a robustness test, to take into account how governance and access to healthcare may affect the model (Table 5, see also Supplemental online material – Annex 5, Tables S5a-b for robustness tests' results by countries' income and development levels). Adding these elements to the model reduces the correlation coefficients for most of the independent variables and thus, their substantive effect. However, this robustness test confirms the findings previously observed regarding women's political empowerment being associated with reduced malnutrition and improved immunisation coverage. It also confirms that women's social empowerment factors such as education have a larger substantive effect on these outcomes than political empowerment.

We *do* note that under this model, the association between women's political empowerment on child mortality is not statistically significant, even when accounting for a potential lagged effect of the empowerment process. This would suggest that other hidden factors may have been at play in the lagged association previously observed.

Table 4. WPEI and child health outcomes, fixed effect regressions for LDC and non-LDC countries.

	Child mortality		Stunting		DPT3 coverage	
	Main model	Main model, 10-year lag	Main model	Main model, 10-year lag	Main model	Main model, 10-year lag
Non-LDC countries#WPEI	0.065* [−0.008,0.137]	0.065*** [0.028,0.101]	−0.326*** [−0.483, −0.170]	−0.326*** [−0.508, −0.144]	−0.019 [−0.132,0.094]	−0.019 [−0.138,0.100]
LDC countries#WPEI	−0.317*** [−0.548, −0.087]	−0.317*** [−0.461, −0.173]	0.137** [0.029,0.245]	0.137* [−0.002,0.276]	0.656*** [0.453,0.859]	0.656*** [0.419,0.893]
GDP per capita in constant 2010US$	−0.222*** [−0.261, −0.183]	−0.222*** [−0.266, −0.178]	−0.150*** [−0.183, −0.117]	−0.150*** [−0.197, −0.102]	0.046** [0.012,0.080]	0.046** [0.004,0.088]
Electoral democracy index	−0.056* [−0.115,0.003]	−0.056* [−0.121,0.009]	0.077*** [0.022,0.132]	0.077*** [0.031,0.122]	−0.026 [−0.068,0.016]	−0.026 [−0.078,0.027]
Civil wars with over 25 deaths per year	0.033*** [0.018,0.048]	0.033*** [0.018,0.048]	−0.004 [−0.017,0.008]	−0.004 [−0.015,0.006]	−0.064*** [−0.096, −0.031]	−0.064*** [−0.099, −0.028]
Years since last civil war	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.001]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001, −0.000]	−0.002*** [−0.003, −0.001]	−0.002*** [−0.003, −0.001]
Population density	0.219*** [0.127,0.312]	0.219*** [0.111,0.328]	0.031 [−0.051,0.113]	0.031 [−0.084,0.147]	0.355*** [0.301,0.408]	0.355*** [0.310,0.399]
Mean maternal education attainment	−0.075*** [−0.086, −0.063]	−0.075*** [−0.087, −0.062]	−0.077*** [−0.084, −0.071]	−0.077*** [−0.087, −0.068]	−0.039*** [−0.059, −0.020]	−0.039*** [−0.064, −0.015]
Female labour force participation rate	−0.001 [−0.002,0.000]	−0.001 [−0.002,0.000]	−0.000 [−0.001,0.001]	−0.000 [−0.001,0.001]	−0.003*** [−0.004, −0.001]	−0.003*** [−0.004, −0.002]
Observations	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**
Number of countries	**161**	**161**	**161**	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The Cook's distance test allows to better understand the association between women's political empowerment and child mortality, as it reveals that this association may be affected by outliers. Removing these outliers, we see that women's political empowerment is associated with a statistically significant reduction of child mortality, with a slightly larger substantive effect (see Table 6). Removing outliers do not affect the results of our model regarding stunting and immunisation coverage (results available from the author). The VIF for each independent variable in this latest model showed low to moderate multicollinearity (mean VIF of 2.81, VIF between 1.06 and 4.5), confirming the robustness of our initial findings.

Granger-causality

While the Granger tests' coefficients between the WPEI and stunting or child mortality are statistically significant, the F values are too low to conclude that these phenomena Granger-cause each other. Hence, this test does not allow us to support a causal relation between women's political empowerment and any of the child health outcomes covered in our study. However, these tests do not indicate reverse causality between child health and women's political empowerment either.

Understanding the effects of WPEI components

In line with the literature which suggests that child health may be affected differently by various components of empowerment, we tested whether one dimension of the WPEI (choice, agency

Table 5. WPEI and child health outcomes: robustness test with additional variables, fixed effect regressions.

	Child mortality		Stunting		DPT3 coverage	
	Robustness test model	Robustness test model, 10-year lag	Robustness test model	Robustness test model, 10-year lag	Robustness test model	Robustness test model, 10-year lag
WPEI	−0.055 [−0.166,0.056]	−0.055 [−0.123,0.013]	−0.154*** [−0.256, −0.052]	−0.154** [−0.268,−0.039]	0.207*** [0.100,0.314]	0.207*** [0.123,0.291]
GDP per capita in constant 2010US $	−0.219*** [−0.259, −0.179]	−0.219*** [−0.264,−0.173]	−0.143*** [−0.174, −0.113]	−0.143*** [−0.188,−0.099]	0.050** [0.011,0.088]	0.050* [−0.000,0.099]
Electoral democracy index	−0.015 [−0.062,0.032]	−0.015 [−0.055,0.025]	0.089*** [0.042,0.137]	0.089*** [0.055,0.124]	−0.028 [−0.083,0.027]	−0.028 [−0.076,0.020]
Civil wars with over 25 deaths per year	0.039*** [0.026,0.052]	0.039*** [0.026,0.052]	−0.010* [−0.021,0.000]	−0.010** [−0.019,−0.002]	−0.073*** [−0.103, −0.043]	−0.073*** [−0.105,−0.041]
Years since last civil war	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001,−0.000]	−0.001*** [−0.001, −0.000]	−0.001*** [−0.001,−0.000]	−0.002*** [−0.003, −0.001]	−0.002*** [−0.003,−0.001]
Population density	0.163*** [0.072,0.253]	0.163*** [0.052,0.274]	0.083** [0.003,0.164]	0.083 [−0.029,0.196]	0.433*** [0.376,0.489]	0.433*** [0.393,0.473]
Mean maternal education attainment	−0.067*** [−0.078, −0.056]	−0.067*** [−0.079,−0.055]	−0.083*** [−0.088, −0.078]	−0.083*** [−0.090,−0.076]	−0.049*** [−0.069, −0.030]	−0.049*** [−0.073,−0.025]
Female labour force participation rate	0.000 [−0.001,0.001]	0.000 [−0.001,0.001]	−0.001 [−0.002,0.000]	−0.001 [−0.002,0.001]	−0.004*** [−0.005, −0.003]	−0.004*** [−0.005,−0.003]
Healthcare equality	−0.012 [−0.029,0.004]	−0.012** [−0.022,−0.002]	−0.007 [−0.016,0.002]	−0.007* [−0.014,0.001]	0.008 [−0.009,0.024]	0.008 [−0.006,0.021]
Political corruption index	0.103** [0.005,0.200]	0.103** [0.014,0.191]	0.037* [−0.007,0.082]	0.037 [−0.009,0.084]	0.008 [−0.076,0.093]	0.008 [−0.073,0.089]
Observations	**4032**	**4032**	**4032**	**4032**	**4032**	**4032**
Number of countries	**161**	**161**	**161**	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

and participation) was more relevant than another to improve child health outcomes. We used the same augmented list of control variables as in the robustness tests. Due to high correlation between the three indices, each regression was run separately. Table 7 presents a summary of the correlation for each of the WPEI components, while the full tables are available in Supplemental online material – Annex 6 (Tables S6a-b).

These models show that improving women's choice and participation is associated with reduced mortality and improved immunisation coverage, especially in the long term (within 10 years). However, their substantive effect remains small and similar to those observed for the WPEI as a whole.

Under this model, improving women's civil society participation – or agency – is not associated with improved child health outcomes.

Discussion

Contribution of this work to the field

Previous studies tended to focus on exploring the effect of women's empowerment on child health at the individual level, with a particular emphasis on socio-economic empowerment. Our analysis complements these findings by studying women's political empowerment as a structural

Table 6. WPEI and child mortality, fixed effect lagged regression after removing outliers (Cook's distance <4/N).

	Child mortality			
	Main model	Main model 10-year lag	Robustness test model	Robustness test model, 10-year lag
WPEI	−0.110** [−0.200,−0.020]	−0.110*** [−0.179,−0.041]	−0.099** [−0.190,−0.008]	−0.099*** [−0.158,−0.041]
GDP per capita in constant 2010US$	−0.265*** [−0.308,−0.222]	−0.265*** [−0.315,−0.215]	−0.258*** [−0.303,−0.214]	−0.258*** [−0.310,−0.207]
Electoral democracy index	−0.081** [−0.145,−0.017]	−0.081** [−0.141,−0.020]	−0.045 [−0.099,0.010]	−0.045** [−0.078,−0.011]
Civil wars with over 25 deaths per year	0.032*** [0.018,0.046]	0.032*** [0.019,0.045]	0.032*** [0.019,0.045]	0.032*** [0.021,0.043]
Years since last civil war	−0.001*** [−0.002,−0.001]	−0.001*** [−0.002,−0.001]	−0.001*** [−0.002,−0.001]	−0.001*** [−0.002,−0.001]
Population density	0.152*** [0.074,0.230]	0.152*** [0.051,0.253]	0.143*** [0.054,0.233]	0.143** [0.029,0.258]
Mean maternal education attainment	−0.070*** [−0.080,−0.060]	−0.070*** [−0.079,−0.061]	−0.068*** [−0.078,−0.058]	−0.068*** [−0.077,−0.060]
Female labour force participation rate	−0.001** [−0.002,−0.000]	−0.001* [−0.002,0.000]	−0.001 [−0.001,0.000]	−0.001 [−0.002,0.000]
Healthcare equality			−0.011 [−0.025,0.003]	−0.011 [−0.026,0.003]
Political corruption index			0.093* [−0.005,0.191]	0.093** [0.006,0.179]
Observations	**3762**	**3762**	**3762**	**3762**
Number of countries	**158**	**158**	**158**	**158**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

determinant of child health, both conceptually and empirically. Therefore, our results respond to a critical gap in the literature, addressing the role of women's political empowerment beyond simple representation. The Success Factors studies had already identified 'good governance and women's

Table 7. WPEI components and child health outcomes summary table: robustness test with additional variables, fixed effect regressions.

	Child mortality		Stunting		DPT3 coverage	
	Robustness test model	Robustness test model, 10-year lag	Robustness test model	Robustness test model, 10-year lag	Robustness test model, Main model	Robustness test model, 10-year lag
Model 1						
Women's civil liberties index	−0.066* [−0.142,0.010]	−0.066** [−0.120,−0.012]	−0.060 [−0.163,0.042]	−0.060* [−0.127,0.006]	0.179*** [0.118,0.240]	0.179*** [0.144,0.214]
Model 2						
Women's civil society participation index	0.008 [−0.076,0.093]	0.008 [−0.040,0.057]	0.041** [0.002,0.080]	0.041* [−0.002,0.084]	−0.004 [−0.135,0.127]	−0.004 [−0.166,0.159]
Model 3						
Women's political participation	−0.031 [−0.074,0.012]	−0.031*** [−0.053,−0.008]	−0.062*** [−0.097, −0.027]	−0.062*** [−0.105,−0.020]	0.096** [0.011,0.182]	0.096** [0.003,0.190]
Observations	**4121**	**4121**	**4121**	**4121**	**4121**	**4121**
Number of countries	**161**	**161**	**161**	**161**	**161**	**161**

95% confidence intervals in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

political and socioeconomic participation' as 'key enablers' of the progress achieved in maternal and child health in low- and middle-income countries (Kuruvilla et al., 2014, p. 536). Building on these findings, we conclude that despite the variations observed, women's political empowerment as a whole is relevant to improving child health across the globe, independently from markers of women's socio-economic position.

Our results find a robust, positive association between progress in women's political empowerment and two child health outcomes covered by the SDG targets: nutrition and DPT3 coverage. The association between women's political empowerment and a reduction of child mortality is more complex. The correlation weakens once further factors such as governance and access to healthcare are added to the model, even when accounting for a possible lagged effect of empowerment. Yet, some of our tests suggest that such a robust link *does* exist once outliers have been removed from the model. Given the number of factors impacting child survival, our findings may reflect the role of other country-specific factors affecting the relation between women's political empowerment and child mortality.

While the Granger tests does not allow us to further support the potential causal link between women's political empowerment and child health outcomes described in our framework, it also does not indicate reverse causality. However, the use of fixed effect models controlling for several structural determinants of health in our study limits some of the risk of endogeneity. Hence, this study supports the opportunity for further research to explore potential causality between the women's political empowerment process and improving child health.

As regards to structural determinants of health, our study confirms the findings from both the empirical literature on women's empowerment at the individual level and the theoretical literature on political determinants of health. Indeed, our models have highlighted the positive association between child health and several structural determinants of child health from our framework – such as maternal education or GDP per capita, while confirming the complex relations between these health outcomes and population density. One marker of instability – the occurrence of civil war – is also strongly associated with worsening child health.

Looking at regional or national variations, we found that women's political empowerment may have had more impact in LDCs or low-income countries when it came to improving immunisation coverage and child survival. Additionally, our results also suggest that even in high-income countries, which tend to have better child health outcomes and higher WPEI scores, women's political empowerment remains relevant for improving child survival. As for middle-income countries, women's political empowerment seems to be particularly relevant for the improvement of child nutritional status. These results complement the findings from previous empirical studies on women's socio-economic empowerment, which pointed out that its effect on child health differed according to contexts and the outcome of interest. As a result, future research should further consider the regional or country-specific factors that may or may not make women's political empowerment a suitable strategy for improving child health in their specific context.

Finally, our analysis found that components of women's political empowerment may not all be relevant to improving child health. Our final test shows that rights and processes improving women's choice or freedoms (e.g. intermediary determinants of child health in our framework) and women's political participation into societal decision-making may have more impact than those improving women's agency. Along with our findings regarding the role of women's socio-economic empowerment, these findings call for further exploring if and how empowering women in different fields or investing in women's different abilities and freedoms may offer a viable strategy for improving child health.

Women's political empowerment and structural determinants of health: analysis of the substantive effects

A unique contribution of our work to this field is the comparison of actual effect sizes of different determinants of child health. We find that while the correlations between women's political

empowerment and selected child health outcomes are robust, the substantive effect of women's political empowerment on child health outcomes is actually fairly small in comparison to other structural determinants of child health.

For stunting prevalence, the substantive effect is much smaller than those offered by other structural determinants, including markers of women's socio-economic empowerment. This suggests that while women's political empowerment may contribute to improving child health, women's socio-economic position or the political and economic context determinants in our framework may offer stronger avenues to better health for young children. Future research should further explore the potential of these factors to improve child health, as well as their potential interactions.

As for improving immunisation coverage, while women's political empowerment, education and other structural factors are strongly correlated with this outcome, all of them return a very small substantive effect. This suggests that other factors may offer better leverage to improve the coverage of these essential child health services. Looking back at our theoretical framework, the mediation of health systems in particular should be further researched when looking at the pathway through which structural determinants of health may affect child health services outcomes.

Strength and limitations

Our approach attempts to isolate the effect of women's political empowerment on child health by controlling for other structural determinants of child health identified in the literature and by adopting fixed-effect models while also testing for a possible lagged effect of the process of interest. Our approach does not allow us to conclusively prove or disprove causal relations between women's political empowerment and child health. However, the strong theoretical base supporting our hypothesis, the robust correlations observed and the steps taken to control for potential interfering phenomena warrant for causal relations between women's political empowerment and child health to be explored further in future work. Additionally, to further inform policy and identify the most impactful level of intervention, future research should consider exploring the causal pathways through which these meta-structural processes may be mediated by, or directly impact, the individual level's markers of empowerments that previous research has linked to child health outcomes.

Our analysis was constrained by data availability over time and globally. As a result, some of the transgenerational effects of women's empowerment on child health or the dynamics in territories not internationally recognised as nations, could not be captured. Although our regressions were designed to control for both time and spatial dependence as well as country fixed effects, the global lens adopted in this analysis may also fail to fully capture the role of context in the child health outcomes covered. These elements may affect the relevance of our findings for individual countries and should therefore be considered alongside the literature previously highlighted, which explored the effect of women's choice and agency at the individual level. Nevertheless, our results highlight general trends on the role of women's political empowerment on child health, which could be of interest at the regional level, especially in the global South.

Our results do not dispute the value of women's political empowerment in its own right, nor do they challenge its potential effect on other important elements of sustainable development – both of which being beyond the scope of this study. They rather point out the complexity of the relation and the need for careful evaluation of the role of different empowerment processes and structural factors when trying to improve child health. By adopting an inclusive definition of women's political empowerment and focusing on the political condition of women as a whole, our study contributes to a better understanding of the societal impact of different dimensions of women's status on specific child health outcomes. Therefore, unlike previous literature that focused exclusively on mothers, our findings provide a more inclusive overview of the complex interactions between women's status and role in society and child health outcomes within the broader context of the SDGs.

Conclusion

While showing encouraging results, our study demonstrates the complexity of the relations between women's political empowerment and child health. Our findings highlight the positive link between women's political empowerment and selected child health outcomes such as nutrition and immunisation. However, they also show that their effect is rather small, especially in comparison to other structural determinants of child health. Secondly, our findings point out the differentiated effects of women's political empowerment according to the WPEI components, the countries' income and development level, and the individual child health outcomes considered.

Further research is needed to disentangle potential causal pathways in the associations found in our models. However, these findings suggest that women's political empowerment can be an interesting process to explore at the global and regional levels to improve child health. Yet, they also suggest that women's socio-economic empowerment or structural political or economic changes, may offer stronger leverage as structural determinants of child. With regards to the SDGs, these findings would further support integrating women's empowerment into the goals on education, economic growth or strong institutions to achieve the SDGs' child health and nutrition targets.

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PAPER 3. EXPLORING ECONOMIC EMPOWERMENT AND GENDER IN LESOTHO'S CHILD GRANTS PROGRAM. A QUALITATIVE STUDY.

Exploring economic empowerment and gender in Lesotho's Child Grants Program. A qualitative study.

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Author's contribution:

- Conception or design of the work: EB; VK; CS; KM
- Data collection: EB; TH; KB
- Data analysis and interpretation: EB; VK; TH;
- Drafting the article: EB
- Critical revision of the article: VK; TH; KB; CS; KM
- Final approval of the version to be submitted: EB; VK; TH; KB; CS; KM

Keywords cash transfer; Lesotho; economic empowerment; social protection; gender; women's empowerment

Abbreviated running title: Economic empowerment and gender in Lesotho's CGP

Key messages

1. The majority of sources and informants identified more than one dimensions in their definitions of economic empowerment and women's empowerment, thus illustrating the complexity of these concepts as applied to the CGP.
2. Economic empowerment as access to economic resources and opportunities (for beneficiaries as a whole or for women in particular) was the most prominent and integrated dimension of economic empowerment across the program.
3. There were discrepancies and disagreements in the operationalization of these different concepts, affecting the least agreed upon definitions in particular.
4. The operationalization gaps identified in this study highlight how different empowerment processes may conflict with one another (affecting the impacts of the program) as well as systematic divisions, particularly between the strategic and operational levels of the program.

Word count: 8 513

Ethical approval

Notification regarding the project was given to the Norwegian Centre for Research Data (NSD Notification Form 828582) to ensure adequate management of personal data. As no health or sensitive data was collected, a clearance from the Norwegian Regional Committees for Medical and Health Research Ethics was not necessary, and no further authorization was necessary in Lesotho. Consent for the interviews was obtained in writing, using the NSD template letter and form.

The desk review primarily relied on publicly available documents. For those that were not publicly available, prior authorization was requested from the authors/editors or the organizations that generated or published them.

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Competing interests:

The authors have declared that no competing interests exist.

Abstract

Cash transfers have been increasingly used in low- and middle-income countries as a poverty reduction and social protection tool. Despite their potential for empowering vulnerable groups (especially women), the evidence on such outcomes remains unclear. Additionally, little is known about how this broad concept fits into and is perceived in such programs. Lesotho's Child Grants Program (CGP) is an unconditional cash transfer targeting poor and vulnerable households with children. As one of the longest government cash transfer programs in Sub-Saharan Africa, the CGP has been presented as one of Lesotho's flagship programs in developing the country's social safety net system.

Using the CGP's early phases as a case study, this research aims to capture how program stakeholders understood and operationalized the concept of economic empowerment (especially women's) in Lesotho's CGP.

The qualitative analysis relied on the triangulation of information from a review of program documents and semi-structured key informant interviews with program stakeholders. The program documents were coded deductively while the interview transcripts were coded inductively, then both materials were analyzed thematically. Differences or disagreements found within each theme were explored individually according to the program's chronology, the stakeholders' affiliation and their role in the CGP.

The complexity of economic empowerment was reflected in the diversity of definitions found in the desk review and interviews. Economic empowerment was primarily understood as improving access to economic resources and opportunities, and to a lesser extent, as agency and social and economic inclusion. There were stronger disagreements on other dimensions as they seemed to be a terminology primarily used by specific stakeholders. This diversity of definitions impacted how these concepts were integrated into the program, with particular gaps between the strategic vision and operational units as well as between the role this concept was perceived to play, and the effects evaluated so far.

Background

Cash transfers (CT), or non-contributory monetary transfers to individuals or households, have been increasingly used in low- and middle-income countries (LMICs) as a poverty reduction and social protection tool (UNICEF-ESARO and Transfer Project, 2015; Bastagli *et al.*, 2016). CTs have been associated with a number of human development outcomes, including empowerment and especially women's and girls' empowerment (Bastagli *et al.*, 2016). However, while there is some evidence that such programs positively affect selected women's empowerment outcomes (e.g. violence, reproductive health, bargaining power), their impact remains unclear and varies according to the empowerment outcome considered, the specificities of the program or the context in which it is implemented (Bastagli *et al.*, 2016; Bonilla *et al.*, 2017; Peterman *et al.*, 2021). At the same time, CT programs themselves can be considered as an economic empowerment intervention. By providing additional financial resources, CTs can improve households' access and control over such resources, and their ability to make investment choices, while reducing the effect of shocks or other constraints. As a result, households can invest in social and human capital that will improve their agency (UNICEF-ESARO and Transfer Project, 2015). Providing resources to women in particular is thought to benefit children's health and wellbeing (Yoong *et al.*, 2012; Richards *et al.*, 2013).

Lesotho's Child Grants Program (CGP) is an unconditional CT targeting poor and vulnerable households with children. Its primary objective is to improve the living standards of orphans and vulnerable children (OVC) to reduce malnutrition, improve health status and increase school enrollment (Pellerano *et al.*, 2014). Started in 2009, the CGP is one of the longest government cash transfer programs in Sub-Saharan Africa. From about 1,250 households in three Community Councils in the districts of Qacha's Nek, Mafeteng and Maseru when the program started, the CGP reached 2,300 households in ten Community Councils in the five districts of Qacha's Nek, Maseru, Leribe, Berea and Mafeteng at the time of the first evaluation in 2013. Beneficiaries mainly live in rural communities in the lowlands and foothills, with limited access to services and markets. The 2014 evaluation found promising effects of the CGP amongst beneficiaries regarding selected economic outcomes, child health outcomes and determinants of health. However, the effects of the program and implications of these changes on the community as a whole

haven't been studied. Additionally, while the CGP's theory of change[1] highlighted how the program could affect the distribution of power and influence (especially within the households) (Pellerano *et al.*, 2014), the definition and integration of empowerment (especially women's) into the program remains unclear.

To inform the study of health inequalities and power issues in CTs like the CGP, the Empowerment for Health Equity – Lesotho (E4HE Lesotho) project used a mixed method approach to understand the effect of the CGP on the health gap or gradient among young children in the targeted communities, particularly in regard to various economic empowerment pathways. As a result, the E4HE Lesotho project will help inform other CT programs and future phases of the CGP from a health equity and economic empowerment perspective. This article is the first of the E4HE Lesotho series and focuses on how the concept of economic empowerment was perceived by CGP stakeholders in the early phases of the program.

Aim and research questions

In order to address the evidence gaps regarding the role of economic empowerment in CT programs and its potential contribution to reducing inequalities in targeted communities, this study aims to capture how program stakeholders understood and operationalized the concept of "economic empowerment" - especially women's - in the early phases of Lesotho's CGP, prior to the introduction of complementary or Cash Plus pilots. More specifically, this study will answer the following questions:

- How do program stakeholders define the concept of economic empowerment?
- What role do they see this concept play in the program?
- Did these roles and definitions evolve over time?
- How do the program stakeholders perceive the CGP affected economic empowerment in the treatment communities?

[1] Theory of change is a methodology designed to support strategic planning and evaluation in development programs. It can be used as a tool to lay out the logical sequence of a program to describe how individual activities might lead to the desired change or outcomes, and the different pathways though which this change may occur (Vogel, 2012).

Theoretical background: economic empowerment and health

Defining empowerment

Empowerment is defined as the process by which people gain greater access to and control over resources, decisions and actions that benefit their lives (WHO, 1998; Laszlo *et al.*, 2017). Empowerment can be used as an intervention strategy to improve health in the long run and reduce health disparities, or as an outcome of the intervention itself (WHO, 1998; Wallerstein, 2006; Sen and Östlin, 2008). Indeed, according to the WHO Commission on the Social Determinants Health (CSDH), power and power relations in society are a key structuring factor in the health gradient, where people's health reflect the socioeconomic structure of a population. Hence, the CSDH considers changing power relations (and the shifting of powers in favor of disadvantaged groups) as a fundamental component of interventions addressing health inequalities (Commission on Social Determinants of Health, 2008).

Women's economic empowerment and child health

Laszlo et al. (2017) defines women's economic empowerment (WEE) as "the process by which women acquire access to and control over economic resources, opportunities and markets, enabling them to exercise agency and decision-making power to benefit all areas of their lives". In their categorization of WEE indicators, Laszlo et al. build on Kabeer's paper (1999) on how to measure WEE. Kabeer identifies four key dimensions of WEE: context (e.g. rights, gender norms or economic opportunities), resources, agency (including bargaining power and self-esteem) and achievements (Including choices, social status and social/political participation). Kabeer also highlights the transformative potential of WEE itself and how it can lead to contextual changes such as equal rights and opportunities or new gender norms (Kabeer, 1999).

Previous systematic reviews have found that certain markers of women's social and economic empowerment such as women's decision-making power and to a lesser extent, economic power or control over economic resources and assets are associated with improved child health outcomes (Duflo, 2012; Richards *et al.*, 2013; Kuruvilla *et al.*, 2014; Carlson *et al.*, 2015; Cunningham *et al.*, 2015; Taukobong *et al.*, 2016; Thorpe *et al.*, 2016). Therefore, if CT programs were to empower women, these programs may provide a double win for both the female members of the households and their children.

Cash transfers and empowerment: a theoretical framework

CTs can be described as an economic empowerment intervention because of their impact at several levels. At the individual level, they can improve recipients' access to and control over economic resources, their agency and their investment in human development (Barca *et al.*, 2015; UNICEF-ESARO and Transfer Project, 2015; Owusu-Addo *et al.*, 2018). At the household level, CTs can affect the household's socioeconomic conditions as well as individual members' power and roles, which can also affect their emotional wellbeing and intra-household violence or conflicts (Slater and Mphale, 2008; Bastagli *et al.*, 2016; Natali *et al.*, 2018; Barrington *et al.*, 2022). At the community level, CTs can support the economic, social and political participation of recipients and strengthen social cohesion (Barca *et al.*, 2015; Molyneux *et al.*, 2016; Owusu-Addo *et al.*, 2018; de Milliano *et al.*, 2021). Finally, as part of the social protection system, CTs can strengthen the social contract between the State and its citizens and have a transformative impact on power hierarchy and gender norms (Kabeer, 1999; Sabates-Wheeler *et al.*, 2017).

Empowerment has been mainly studied as an outcome of CT programs for female recipients or members of the households. However, the evidence remains mixed and seems to be highly context-, program- and outcome-dependent (Bastagli *et al.*, 2016; Bonilla *et al.*, 2017, 2017; de Milliano *et al.*, 2021). Hence, to understand the potential impact of the CGP on the empowerment of vulnerable groups (especially women), this study explores the meaning and role this concept plays in the program from the point of view of those who designed, implemented, funded and evaluated the CGP.

Method

Study design

This qualitative case study relied on the triangulation of information from two different sources: a desk review - a review of program documents (e.g. briefs, analyses and reports generated by program stakeholders) and semi-structured interviews with program stakeholders.

This study primarily focuses on the early phases of the program (2009-2013), prior to the implementation of complementary interventions (Cash Plus). However, elements and considerations from the pilot phase (pre-2009) and the post-evaluation phase (post-2014) were also considered to better understand the evolution of the concepts overtime.

Study setting

Lesotho has been classified as a least developed country by the United Nations Conference on Trade and Development (UNCTAD) since the establishment of the category (UNCTAD, 2021). When the CGP started in 2009, more than half of Lesotho's children lived in absolute poverty (i.e. they were deprived in two or more essential dimensions), with rates ranging from 31% in the lowlands to more than 80% in the mountain areas.(UNICEF, 2011) The HIV prevalence rate amongst adult was 23%, the third highest rate globally, contributing to rising trends in maternal and child mortality between 2004 and 2009 (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; UNICEF, 2011; UNFPA, 2012). The HIV burden has disproportionally affected women (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010). Despite progress in promoting gender equality in national legislation, customary laws and patriarchal norms had continued to marginalize women and girls and erect barriers to their access to economic resources and opportunities (UNFPA, 2012; *SADC gender protocol 2015 Barometer - Lesotho*, 2015). Although Basotho women tend to be better educated than their male counterparts, they continued to face lower levels of employment and lower wages (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; OECD, 2019). Domestic and gender-based violence have remained widespread (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; UN Lesotho, 2021). Lesotho had suffered from recurring political instability, fueled by tensions between political parties, a struggling economy and persistent social and gender inequalities (Shale, 2021). For example, since the CGP started, Lesotho faced a series of three elections between 2012 and 2017, and in 2014, violent incidents broke out between the army and the policy further to an alleged attempted coup (Shale, 2021). Economically, Lesotho and its workforce had remained heavily dependent on South Africa. Hence, South Africa's economic crisis in the 1990s and the retrenchment of thousands of Basotho mine workers had long term impacts on households' incomes, especially in rural areas (UNICEF, 2011; Granvik and UNU-WIDER, 2016; Ministry of Labour and Employment and IOM, 2017). Finally, Lesotho has suffered from regular extreme weather events, leading to food insecurity (Shale, 2021). For example, flooding in 2010-2011 followed by a prolonged drought the following year heavily impacted food security in rural Lesotho, including the areas where the CGP was rolled out (Pellerano *et al.*, 2014).

Cash transfers programs are a key tool in Lesotho's social protection policy (Granvik and UNU-WIDER, 2016). When the Ministry of Social Development (MoSD) was created in 2012, over 400 million maloti (LSL) (about 2.5% of Lesotho's GDP) were spent on the three main governmental CT programs (Table 1), one of the highest spending level in the region (Smith *et al.*, 2013).

Table 1. Overview of CT programs in Lesotho (as of 2012) (Smith et al., 2013)

CT program	Target population	Benefits	Number of beneficiaries	Annual expenditure	Started in	Leading governmental institution
Public assistance	"Destitute" (extremely poor individual)	In-kind or cash transfers of an average of LSL 100 /month /person	9 500 individuals	LSL 13 million Source: Government funding	1970's	MoSD*
Old Age Pension	All Basotho over 70 years old (excluding civil servant pensioners)	Cash transfers of LSL 350 /month /person	84 000 individuals	LSL 371 million Source: Government funding	2004	Ministry of Finance
Child Grants Program	Poor and vulnerable households with children	Cash transfers of LSL 360 /quarter /household (later modulated from LSL 300 to 750 according to the number of children)	10 000 households	LSL 16,5 million Source: European Commission	2009	MoSD*

*Previously under the Department of Social Welfare in the Ministry of Health and Social Welfare

Unlike other CTs in Lesotho, the CGP was distributed quarterly and targeted households rather than individuals (Smith *et al.*, 2013). Households were selected based on a community census through Proxy Means Testing[2], which identified ultra-poor and very poor households. Local communities were also involved in the identification and selection of poor and vulnerable households eligible for the CGP through a process of community validation, carried out alongside the census-based selection.[3]

[2] The Proxy Means Testing is a method designed assess the household's level of poverty. In Lesotho, this assessment was based on dwelling conditions, households characteristics and the ownership of selective assets (Pellerano *et al.*, 2014).

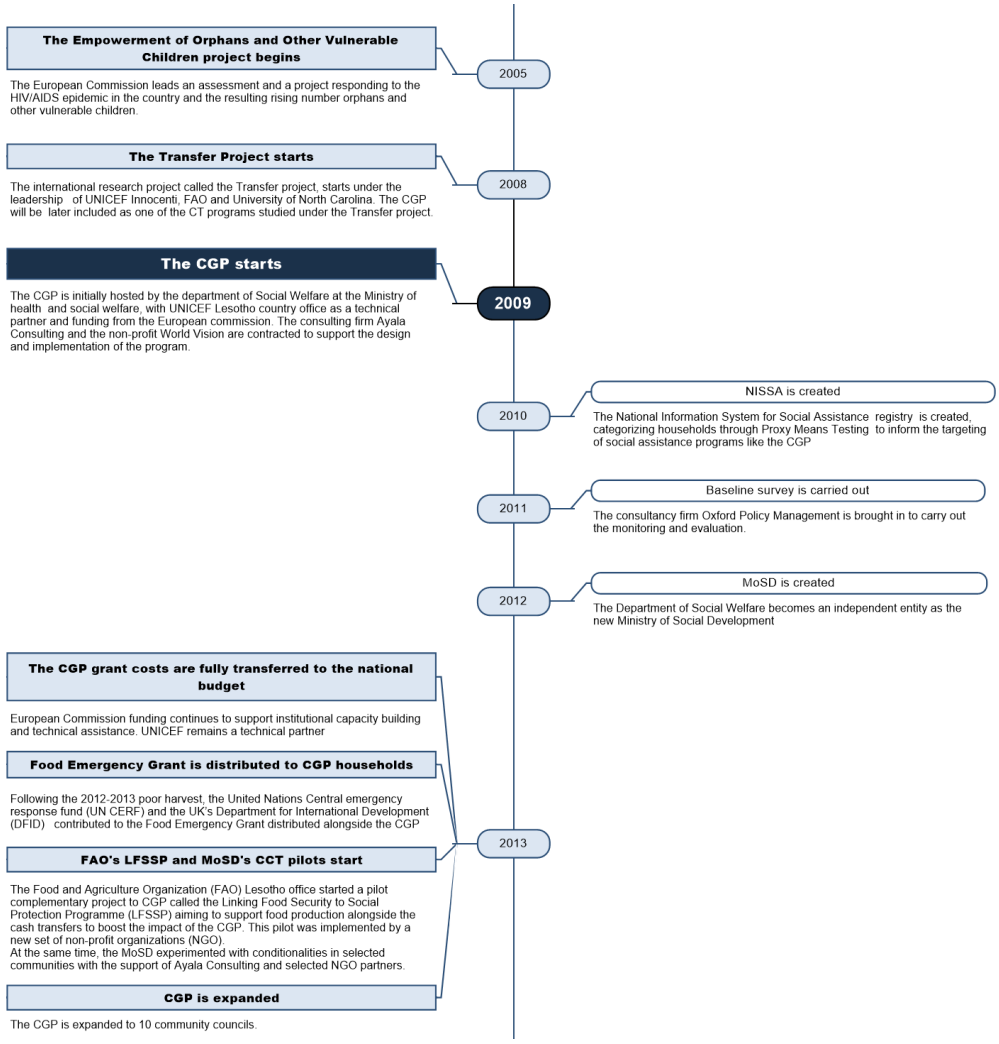
[3] The role and importance of communities in the CGP beneficiary selection process as well as the methodology used evolved over time.

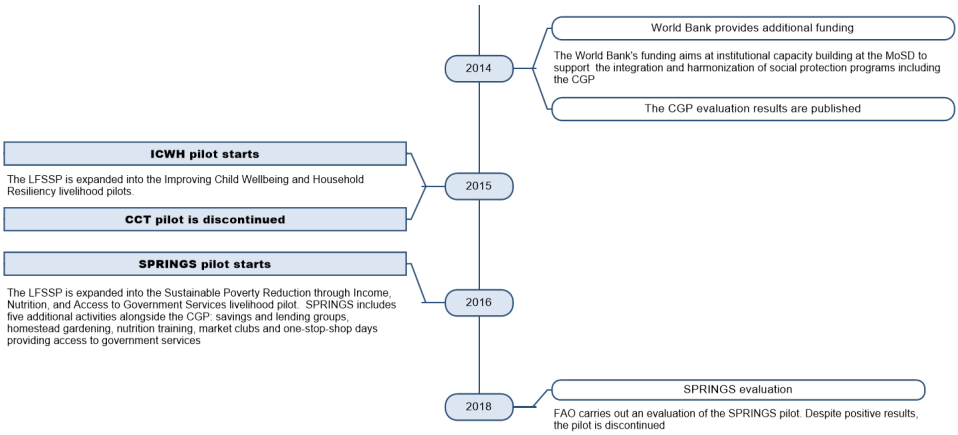
The CGP was initiated following an assessment from the European Commission (2005-2009), in response to the HIV/AIDS epidemic in the country and the resulting rising number of OVCs (Pellerano *et al.*, 2016). In the early phases, the program was designed as a randomized controlled trial, where electoral divisions in the Community Councils part of the CGP were randomly assigned to a treatment group (where the CGP was implemented) and a control group (where eligible households were identified but the implementation was postponed until after the evaluation). Although designed as an unconditional[4] CT, strong messaging or soft conditionality were implemented: CGP beneficiaries were instructed at pay points and in their community that the transfer was to be used for the children (Pellerano *et al.*, 2014).

Figure 1 provides an overview of the CGP's timeline and the organizations involved.

[4] Unlike conditional CTs, **un**conditional CTs do not require that beneficiaries meet specific milestones or adopt specific behavior (e.g. child vaccination, school enrollment, training sessions) to keep receiving the transfers.

Figure 1. Overview of the CGP between 2005 and 2018 (Pellerano *et al.*, 2014, 2016; UNC Carolina Population Center *et al.*, 2019; Bhalla, 2021)





Data collection

To inform our data collection, we carried out an initial mapping of CGP stakeholders using program evaluation documents. This initial mapping was updated iteratively according to the findings of the desk review and contacts provided by key informants.

To help contextualize the study, the research team consulted UN agencies in Lesotho involved in the fields of economics, politics, gender, human rights, child health and nutrition at the beginning of the data collection phase.

For the desk review, program documents were primarily obtained through a manual search of stakeholder websites (as identified in the stakeholder mapping) and associated program's pages. These included the Transfer project, UNICEF, UNICEF Innocenti, FAO and its "From Protection to Production" project pages, the Government of Lesotho's Ministry of Social Development, the University of North Carolina at Chapel Hill's Carolina Population Center, the European Commission and its Delegation to Lesotho, the UK's Department for International Development (DFID), United Nations Central Emergency Response Fund (UN CERF), Ayala Consulting, World Vision, Oxford Policy Management, Sechaba Consultants, and Economic Policy Research Institute (see Annex 1 for links to webpages). This search was carried out between November 2020 and January 2021. Of the 60 documents screened, 51 were included in the analysis. These include 19 monitoring and evaluation (M&E) reports, 12 academic papers produced by program stakeholders, 10 manuals designed to guide the different stage of the program cycle (e.g. operational manuals, M&E guides), three program instruments (e.g. survey questionnaires), three stakeholder reports

describing their contribution and activities in the CGP (e.g. annual reports), three internal briefing and one press release.

For the key informant interviews, the sampling strategy used both purposive and snowballing sampling. A list of stakeholders and potential contacts was developed by the lead researcher using the initial stakeholder mapping and reviewed by UNICEF Lesotho. Informants were either professionals directly involved in the CGP (even if that person had moved on to a new post) and/or could speak on behalf of the organization involved in the program (referred to as "Organizational Point of View"). As the interviews progressed, the stakeholder list was reviewed and when relevant, updated with the contacts provided by the key informants themselves. Potential informants were contacted by email or phone with facilitation from UNICEF Lesotho and the research liaison at the National University of Lesotho.

Twenty-five interviews were conducted between July and August 2021 with informants from UNICEF entities, the MoSD, the European Commission Delegation in Lesotho, Oxford Policy Management, FAO, World Vision, Ayala consulting and the World Bank Lesotho. To ensure a good coverage of the different points of view, informants were further categorized according to the program cycle (strategy development and program planning, resource mobilization, implementation, monitoring and evaluation (M&E) and/or research), the informants' role(s) in the CGP (manager, operational staff, analyst/researcher or informant representing the organizational point of view) and whether informants belonged to an international, national or local team or entity.

Due to period covered and staff turnover in some of the targeted organizations, certain roles were covered by two different informants. Nine informants also changed roles and/or organizations while continuing to work on the CGP. When a target informant was unavailable, or unwilling to take part in this research, the team attempted to secure the participation of an alternate. However, we were unable to reach or secure interviews with five of our target informants.

An interview guide was developed by the project leader and method specialist with the support of UNICEF Lesotho for each type of stakeholder according to their role in the program. The interviews were conducted online by the project leader and the research assistant or the research liaison, and audio recorded. Each interview was transcribed and anonymized by the project leader and the research assistant. A code was assigned to each interviewee to ensure anonymity.

To help explore potential conflicts or new themes, the interviewers wrote short memos after each interview and as they reviewed program documents. These memos informed the evolution of the interview guide and the prioritization of questions with individual stakeholders.

Data coding and analysis

The documents collected through desk review and the transcripts from the interviews were coded using NVivo 12. For the desk review material, the coding was developed deductively, based on an initial coding framework developed according to the conceptual literature (Kabeer, 1999; Graham, 2004; Laszlo *et al.*, 2020), the source, and the program cycle's phase covered. This coding system was piloted with a first batch of five documents, coded in parallel by the lead researcher and the research assistant to test the suitability of the coding book and inter-rater reliability between coders. The coding system was adapted accordingly. Discrepancies in coding were discussed between coders and solved by consensus. The rest of the documents were coded by one coder, with a sample cross-checked by the other coder. Regular meetings between coders were held to discuss and solve differences and challenges in document coding. Throughout coding, team members kept a memo on their questions, thoughts and reflections to inform the interviews and the analysis.

Interview transcripts were coded inductively. All the transcripts were coded by one coder, with periodic quality check by the method specialist, to ensure consistent information capture and coding application. Codes were grouped into pre-defined categories similar to those used for the document coding. However, the framework was kept flexible to allow new categories arising from interviews. During coding, team members wrote notes and memos to start identifying patterns and themes.

To analyze the data, the documents and interview transcripts were initially categorized by organization and type of stakeholders (according to role and program cycle). However, as initial data exploration and the memos written throughout the data collection showed, this categorization was found inadequate to explore the different understanding and operationalization revealed by the data. Instead, a thematic analysis was used. To help identify emerging themes, the team used the memos developed during data collection and coding, as well as the NVivo word frequency function on individual transcripts or coded sections in the reviewed documents. To ensure an adequate contextualization of the data, potential interactions between context codes and each code category (e.g. definitions, roles or effects) were explored using a two-way matrix. Differences or disagreements found within each theme were explored individually, to find if a determining factor for these variations could be identified. To do so, the team used two-way matrices to explore the distribution of points of views across organizations; type of stakeholders (according to role and program cycle); whether informants belonged to an international, national or local team or entity; and the period of the CGP the informants or documents covered. The documents and interview transcripts were analyzed separately, then the findings were compared for each theme.

Validation

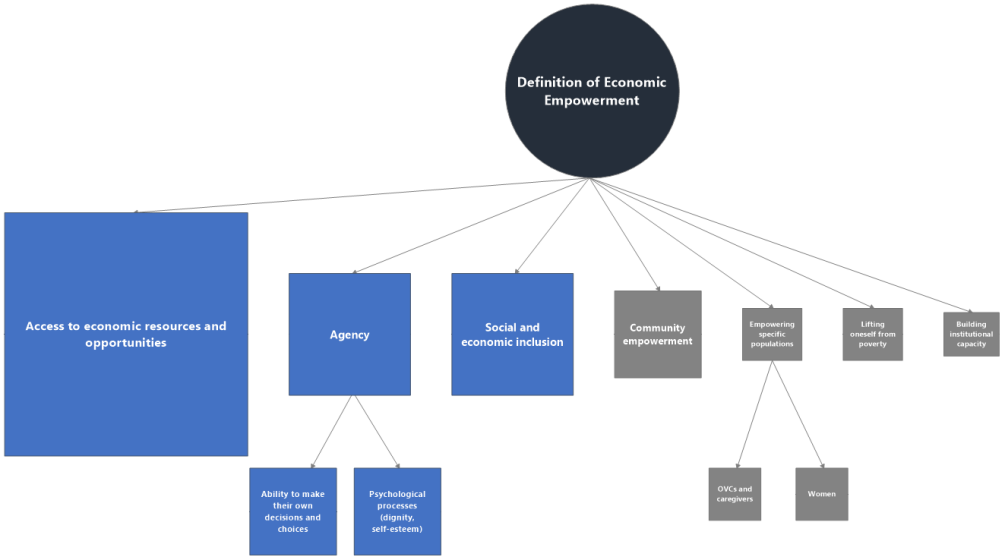
Early findings were presented and discussed with UNICEF Lesotho and the focal point of the MoSD for review and validation.

Results

Defining Economic Empowerment

Economic empowerment was defined as a multi-dimensional concept across both the interviews and the desk reviews (Figure 2). Access to economic resources and opportunities, agency, and social and economic inclusion were the most common – yet not universal - dimensions found in the definition of this concept. In contrast, economic empowerment understood as community empowerment or as lifting families out of poverty (or graduation) was more specific to selected program managers and local implementers, being seldomly found in the desk review. In this section, we first explore the complexity of this concept across informants, before comparing these findings with those of the desk review. Then, we explore the gendered aspects of empowerment separately.

Figure 2. Mapping the definitions of economic empowerment in the CGP



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

In the interviews, the complexity of economic empowerment's definition and the lack of a unified understanding of this concept was reflected in that almost all informants identified several different dimensions in their definition of this term regardless of informants' role in the program or affiliation. Of the 21 informants that provided a definition of economic empowerment, 17 identified more than one dimension in their definition (Box 1).

Box 1

> "We never gave a proper definition of economic empowerment, so several papers look at the different components of economic empowerment. (…) There was no attempt of defining, in a proper way, the concept of economic empowerment."
>
> (Researcher/Evaluator, International)

The most common dimension of economic empowerment found regardless of the stakeholder role considered in the program, is households' *access to economic resources and opportunities*. This dimension was highlighted by two-third of the informants who provided a definition of this concept. This dimension of economic empowerment included access to income, assets and markets in order to generate income and/or improve access to food. Household's capacity to consume, invest or save were also occasionally mentioned (Box 2).

Box 2

> "I was talking about the dignity, about the fact that families started to be able to save money and to lend money. Some of the families also were able to put up some micro businesses and improve their lives. We realized that poor families sometimes save more than others, because they are used to harsh days and so whenever possible, they put aside some money in order to have income generating activity. Some families produced honey, others were cooking and selling marmalades, or extra veggies. I think that was one aspect [of economic empowerment]."
>
> (Resource mobilization, International)
>
> "The way I understand it, is that our clients are able to produce food for themselves. They've got left-over [funds] that can assist them on a daily basis. They've got a sustainable income, which is monthly or weekly. They are able to pay for the children's fees. They are able to pay for their

medical fees. Thus, when you have preferences in terms of purchases, you are not determined by someone else but you can choose. That's my understanding of economic empowerment."

(Implementer, Local)

As the quote in Box 2 illustrates, the second most important dimension of economic empowerment revolved around households' and individuals' *agency* or their ability to make their own decisions and choices. Of the 21 informants that provided a definition of economic empowerment, a third associated this dimension with this concept. Although not spontaneously identified as dimensions of economic empowerment, when probed further, nine stakeholders also associated certain psychological processes with the CGP, such as a sense of dignity, self-esteem and confidence, as the earlier quote illustrates.

A third dimension of economic empowerment referred to *social and economic inclusion* in their community. This dimension was as prevalent as the agency dimension in stakeholders' unprobed definitions (Box 3).

Box 3

"Remember, we're talking about poor people here, who are not able to make any decisions because of their financial status. But if they have something, it also makes them feel like they are part of whatever decisions [that] are being made. They fully participate in the decisions and are able to come up with ideas, economic ideas, that can help them better their lives, make more money and generate income, like participating in this income generating project that we talked about. For instance, around the councils of [locality], we have, a project that was started by beneficiaries and non-beneficiaries. Because of that, people were able to participate in making sound economic decisions for the betterment of their households"

(Implementer, Local)

The fourth dimension of economic empowerment mentioned by stakeholders covered the program's contribution to households' and individuals' *lifting themselves from their situation of poverty* and vulnerability (Box 4). While only three managers spontaneously mentioned this dimension when defining economic empowerment, almost 90% of stakeholders recognized that this dimension was or had been part of the discussions in the CGP when probed specifically about it (See Role of economic empowerment).

Box 4

> "When [people involved in strategic discussions] talked about empowerment, ideally you would want people to be lifted out of poverty; people to feel like they can make their own decisions."
>
> (Implementer, International)

Finally, while most of the definitions involved the economic empowerment of individuals or households, five stakeholders – primarily implementers at the local level and international managers – also applied this concept to communities from the early phases of the CGP (Box 5). Another three stakeholders also referred to empowerment as *community empowerment* when discussing Cash Plus pilots. In the context of the CGP, community empowerment referred to building the community's skills, capacity, inclusivity and ability to generate economic opportunities.

Box 5

> "I think, within [our organization], we were very strong on building skills and working with the community, to empower the community to make their own decisions. […] It was a lot of community-based trainings and developments, working with the community so that, the community becomes their own answer and their own solution."
>
> (Implementer, Local)

Finally, one stakeholder associated the concept of empowerment to building capacity in the Government of Lesotho. While several international stakeholders also mentioned building institutional capacity as part of their work in the CGP, they didn't associate this with the concept of empowerment.

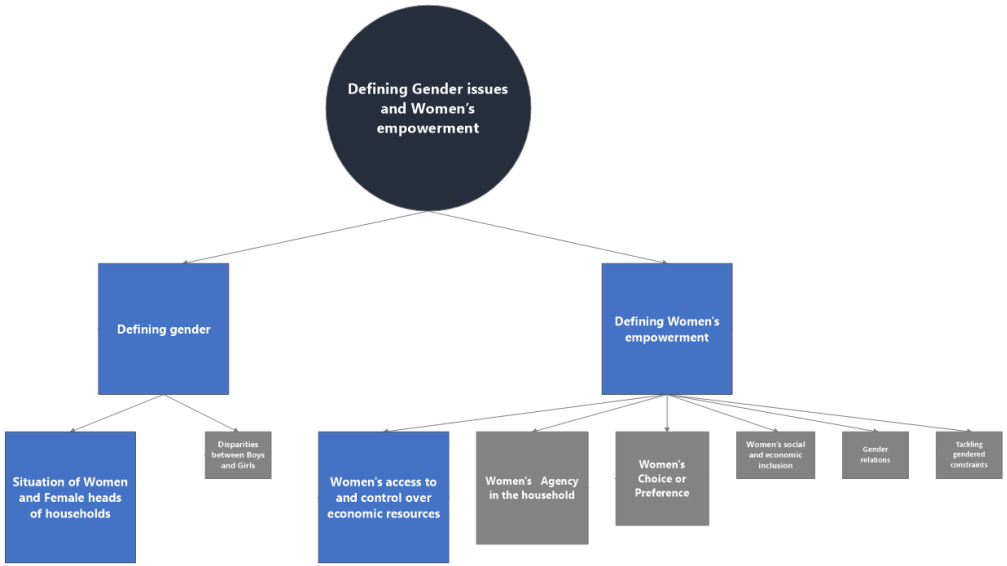
Access to economic resources and opportunities, agency, and social and economic inclusion were also associated with the concept of empowerment in the desk review (Duynhouwer, 2009; Hurrell *et al.*, 2011; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015a; Attah *et al.*, 2016; Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016; Pace *et al.*, 2021). The dimension related to lifting people out of poverty, while present in some of the documents (Barca *et al.*, 2015; Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016), was not directly associated with this concept. The documents also highlighted specific populations that

the cash transfers like the CGP can or aim to empower (Cerritelli and EU, 2009; Duynhouwer, 2009; Ayala consulting, 2010; Thomson and Kardan, 2012; World Vision, 2012; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015a). Aside from communities, empowerment was specifically defined in relation to OVCs, their caregivers and women (see below 'Defining gender issues and women's empowerment'). Empowering communities was mainly covered in documents covering the more recent phases of the CGP (Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016; Pace *et al.*, 2021).

Defining Gender issues and Women's empowerment

The analysis of gender issues and the concept of women's empowerment shows that these issues are primarily driven by international organizations (Figure 3). The definitions of gender found across both interviews and the desk reviews tended to equate gender to the situation of women. As for women's empowerment, while the definitions found in the interviews and the desk review overlapped over certain dimensions (economic resources, agency and choice or preferences), their importance varied across sources. The reviewed documents also identified further dimensions of women's empowerment that were widely absent from the interviews, thus reflecting the complexity and highly debated nature of this concept. First we explore the definition of gender in the interviews and the desk review, before discussing the definition of women's empowerment.

*Figure 3. Mapping the definitions of gender issues and women's empowerment in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

170

All stakeholders were probed about gender issues in the CGP. Looking at how they generally approached gender issues or gender unbalances in the CGP, all but two stakeholders focused on the disadvantage or vulnerability faced by *women* as compared to men, especially *female heads of households* (Box 6).

Box 6

> "Gender was key in Lesotho, because everything we did was around the mother"
>
> (Implementation Manager, International)

Only three stakeholders in leadership positions discussed the issue of gender disparities in children, highlighting the disadvantage faced by herd boys in rural areas (Box 7).

Box 7

> "One thing which was special in Lesotho is that education is in favor of women because boys are mainly used for herding. They are those who are working with cattle. So many, many boys are missing school."
>
> (Program Manager, International)

The desk review also revealed a general focus on women and especially female headed-households when discussing gender issues in the CGP (Kardan *et al.*, 2011; Hershey, 2012; Pellerano *et al.*, 2012; World Vision, 2012; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014; Food and Agriculture Organization of the United Nations, 2015; O Campos, 2015; Gavrilovic *et al.*, 2018a; Pace *et al.*, 2019). However, the focus on gender inequalities amongst children was more present, especially in evaluation reports (UNICEF Lesotho, 2010; Kardan *et al.*, 2011; Pellerano *et al.*, 2012, 2016; Oxford Policy Management *et al.*, 2014; Pace *et al.*, 2019).

Looking at women's empowerment, five stakeholders spontaneously used this term, either when discussing economic empowerment or gender issues in the CGP. Of note is that all of these stakeholders represented the views of international organizations, even though national and local stakeholders were equally asked about economic empowerment and gender issues (see Gender and Women's empowerment in the CGP). International stakeholders' definitions of women's empowerment were linked to evolutions and policies on the global agenda (Box 8).

Box 8

> "Economic empowerment post-Beijing [conference] and gender dynamics gives an opportunity for women to own assets that were culturally seen as only for men (goats, chicken and cows). That's the main difference with economic empowerment in the African and Lesotho context, that you must empower women and remove the cultural gap and barrier that does not allow the equal participation in economic and livelihood ownership."
>
> (Organizational point of view, International)

The dimensions that occur most frequently amongst these five stakeholders' understanding of women's empowerment were the *economic resource dimension* (giving women access to and control over economic resources and livelihood), *agency* (related to decision making and bargaining power) and *choice or preference* (particularly related to women's choices for the household seen as beneficial to children). Amongst these dimensions, the resource aspects were the most prominent, with four stakeholders referring to this dimension. However, these five stakeholders almost systematically linked at least two of these dimensions in their definition, illustrating the multi-dimensional nature of this concept (Box 9).

Box 9

> "When I say economic empowerment, [I mean that] when women have money in their hands, then they can decide."
>
> (Program Manager, International)
>
> "The empowerment of the mother [is about] making sure that the mother, especially in rural areas, understands that in the long term, the wellbeing of the children is very important. [So they should] not only think that children are there to help them in the field, but also for children to develop themselves, and be able to have a better life in the future."
>
> (Implementation Manager, International)

Similar dimensions of women's empowerment were found in the desk review, although the agency dimension was more pronounced (Hurrell *et al.*, 2011; Kardan *et al.*, 2011; Pellerano *et al.*, 2012; Oxford Policy Management *et al.*, 2014; FAO, 2015; O Campos, 2015; Pavanello and Pozarny, 2015). The desk

review also highlighted further dimensions of women's empowerment related to CTs like the CGP, namely women's social and economic inclusion in their communities, gender relations as well as tackling gendered constraints driving women's disadvantage (e.g. gender norms, access to services or legal rights) (Oxford Policy Management *et al.*, 2014; O Campos, 2015; Fisher *et al.*, 2017a; Gavrilovic *et al.*, 2018a). Although stakeholders did discuss these additional dimensions and their role in the CGP (see, role of economic empowerment), those were not necessarily associated to the concept of women's empowerment. This diversity of definitions and dimensions also reflects the wider debate on women's empowerment in social protection (Box 10).

Box 10

> "We've been saying for time and time again, that gender-sensitive social protection is very important, high on the priority [list]. However, it's really difficult to actually define what that actually means."
>
> (Manager/ Organizational point of view, International)

From theory to practice: role of economic empowerment in the CGP

The role and importance of the concept of economic empowerment in the CGP was affected by the various definitions used by stakeholders and different program documents. While it seemed that the role of economic empowerment in the CGP became more prominent over time (especially with the introduction of the Cash Plus pilots), the various dimensions of the concept have had different importance and function in the program's objectives, design and effects. For example, economic empowerment understood as access to economic resources and opportunities seems to have played a more prominent role than other dimensions of the concepts and was present to some extent across the program's objectives, mechanisms of action and effects. In contrast, economic empowerment as agency or as community empowerment were primarily discussed in the context of the program's design and mechanisms of action. Some dimensions, such as women's empowerment, seem to have been driven by a specific group of program stakeholders, as the discrepancies between the findings of the desk review and interviews or between stakeholders' roles in the program and levels (international, national or local) may illustrate.

After discussing the role of economic empowerment as a whole, we explore each dimension identified in the definitions separately, including their role in the CGP's objectives and mechanisms of action as well as the program's effect on these dimensions. We first explore the findings of the interviews before comparing them with those of the desk review. The role of gender issues and women's empowerment is discussed separately.

Fifteen stakeholders addressed the role of "economic empowerment" in its entirety. A clear divide appeared amongst them as to whether this was an objective of the program. While the national program planners and both national and international evaluation managers saw it as part of the CGP's focus, implementers – whether international, national or local – generally agreed that it wasn't a program objective in the early phases. Perhaps this division can be partially explained by the type of objective empowerment was. Five stakeholders comprised of implementers and researchers, explained that while this concept was part of strategic discussions and objectives at the national level, it was not translated into operational objectives (Box 11). Another potential explanation for this difference is the evolution of the program. As three managers and two evaluators explained, empowerment was amongst the objectives of the various Cash Plus pilots linking CTs and productive or livelihood activities (Box 11).

Box 11

> "[Economic empowerment] only appears in the policies of the ministry, as a strategic plan of the ministry. But in the operations of this program or social assistance, no, it doesn't really come up."
>
> (Implementer, Local)
>
> "Economic empowerment was not used [in the CGP] but, in the latter phases of the program, when we added the Cash Plus component. Then you will find that terminology of economic empowerment."
>
> (Implementer, International)

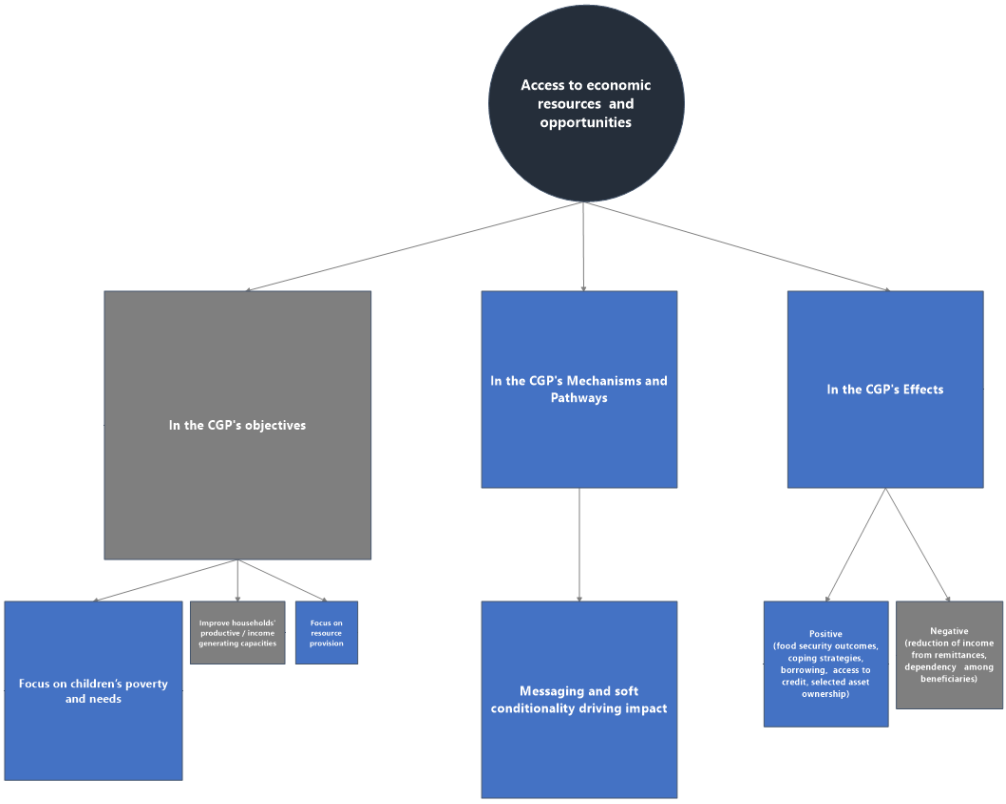
We explore these differences further according to the different dimensions of economic empowerment previously identified in the definition. For each section dimension, we present the findings of the

interviews before comparing them to those of the desk review. The perceived effect of the CGP on these dimensions of economic empowerment are presented in separate subsections.

Economic empowerment as access to economic resources and opportunities

The role of economic empowerment as *access to economic resources and opportunities* may further illustrate the discrepancy between the strategic vision of the CGP and its operationalization (Figure 4). While the program's theory of change identified access to economic resources and opportunities both as intermediary objectives (or "first order outcomes") and pathways to broader CGP objectives, interviews suggested a much more limited role for this dimension of economic empowerment, especially in the early phases of the program. Despite this gap, both the documents and the interviews highlighted the positive impact of the CGP on various aspects of this dimension. However, stakeholders were less likely to report the negative effects of the CGP on this dimension, which were presented in the program' evaluation documents.

*Figure 4. Mapping the role(s) of economic empowerment as access to economic resources and opportunities in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

All but two stakeholders discussed the role of economic empowerment as access to economic resources and opportunities in the CGP, confirming the prominence of this dimension of economic empowerment over the other definitions of the concept. Although evaluators cited several evaluation questions related to access to economic resources and opportunities as focus areas of the CGP, ten stakeholders from across the other phases of the program cycle mainly emphasized the focus on children's (rather than households') poverty and needs (Box 12). This suggests a limited importance of economic empowerment as access to economic resources and opportunities in the program's objectives.

Box 12

> "The main purpose of CGP program is to address the poverty of children, not even the poverty of families"
>
> (Program Manager, International)

Looking at the program's design and mechanisms, this focus on children was further reflected by the messaging or soft conditionality communicated to beneficiary families and their community. Eleven stakeholders across the program cycle highlighted the importance of soft conditionality in driving the impact of the CGP. However, three stakeholders also mentioned that, already in the early days of the program, beneficiaries were told to use the transfer to improve their productive and income generating capacities. This contradicts statements from other stakeholders as well as findings from the desk review (see below). In fact, of the program M&E indicators found in the documents, food security was the most common one cited by stakeholders, further suggesting that in the initial phases, the priority was on resource provision rather than economic empowerment objectives. One implementer illustrated this gap between the ambitious objectives and the reality of the program (Box 13).

Box 13

> "It was a wonderful idea to try a holistic approach to all the needs of the family (…) I don't think they really thought through the process (…) Some households, instead of using the seed [they had received] to plant so that, they have food for the coming seasons, ate the seeds. When there's poverty, when there's hunger, when there's famine, I'm obviously going to meet my immediate needs, I'm not thinking about long term effects or the future."

(Implementer, Local)

Economic empowerment as access to economic resources and opportunities became more pronounced as an objective in the subsequent Cash Plus pilots like SPRINGS, which included livelihood and production activities alongside the cash intervention (Box 14).

Box 14

"CGP is a Cash Plus program, meaning the people who have the CGP-type of program, have also access to basic social services or to livelihood means"

(Program Manager, International)

This gap between the CGP's ambitions and its operationalization was also found in the desk review. When describing the objectives and anticipated effects of the CGP, the reviewed documents and theory of change identified a number of terms related to economic empowerment as access to economic resources and opportunities (Barca *et al.*, 2015; Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016). The CGP was expected to improve beneficiary households' access to food by affecting their spending and consumption and improving food security. The transfers would trigger further changes leading to income generation by improving households' productive capacity and changing employment choices or labor decisions. Finally, the program might facilitate access to income, assets and markets through improving saving and investment capacity, access to credit, sharing arrangement and risk coping strategies. Yet, according to findings from the program evaluation, beneficiaries and communities reported being told that investing CGP funds in productive activities wasn't allowed (Oxford Policy Management *et al.*, 2014).

CGP affecting access to economic resources and opportunities

Overall, the stakeholders' perception of the CGP's impact on economic empowerment as access to economic resources and opportunities during the early phases of the CGP matched the findings of the evaluations and subsequent research found in the desk review. Both sources reflected the focus on food

security mentioned previously. However, stakeholders reported different negative effects associated with this dimension of economic empowerment than those found in the desk review.

Two-thirds of stakeholders highlighted the positive impacts of the CGP, primarily on improved consumption and food security outcomes, with some more marginal positive effects on coping strategies, borrowing, access to credit or selected asset ownership (Box 15).

Box 15

> "I think CGP definitely translated into improving the food security for not only for the children but also for the adults." (Resource mobilization, International)
>
> "Now [beneficiaries] can actually go out to their neighbor and borrow money. Before then nobody would dare lend you money because they knew you don't have any." (Implementer, International)
>
> "Most of [the beneficiary households] rely on farming for survival. Some were able to buy farming inputs."(Implementer, Local)

In contrast, only six stakeholders described negative impacts. Two international stakeholders mentioned the size of the transfer being insufficient to trigger the type of empowerment processes and effects described in the theory of change while two others described how delays in CGP payment were affecting beneficiaries' capacity to improve their livelihood and adapt their labor decisions (Box 16). Two implementers also relayed the concerns found in some communities that some beneficiaries may not be prepared or willing to make the necessary efforts leading to economic empowerment (Box 16).

Box 16

> "Even in terms savings and any investments that may be generated from the transfer, the amount is limited. When they get it, 60% of the transfer amount is spent on food. And you remain with very little amount to spend, probably on school shoes, and then to take the child for immunization and then it is done. So it didn't have a really meaningful contribution to economic activity.
>
> (Implementer, International)

"People were meant to be able to rely on this steady source of income and make decisions around that. That certainly wasn't the case, given these delays and unpredictability. From the beneficiaries' point of view, it was quite unpredictable when they'd get the money or how much they'd get."

(Evaluator, International)

"Since this [the scale-up] of the pilots has not happened, it somehow created a dependency to some of our beneficiaries. Even though they were sensitized to be self-sufficient, to do extra things for the benefit of children or to graduate out of poverty, but the amount is small. So, every time you, you assess that household, you don't see a real change. Somehow it just created dependencies like "as long as we will be getting money to buy the school uniforms for these children, I think that is fine."

(Implementation Manager, Local and national)

The productive impact of the subsequent livelihood pilots (Cash Plus) was more pronounced. However, five stakeholders also mentioned these were not scaled up, thus constraining the empowerment potential of the transfers alone (Box 17).

Box 17

"The plan was that if we add the "plus" [interventions] then it would actually complement the cash transfer and would help households improve its economic situation. This program has been closed now. I think the reason was funding. The government until now does not have funds to implement the program"

(Implementer, International)

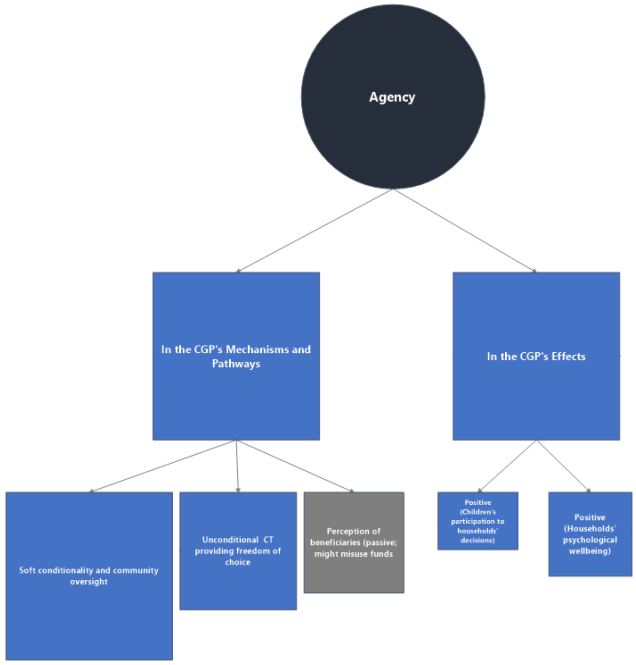
The positive effects of the CGP documented in the program's evaluation and subsequent research on this dimension of economic empowerment matched those reported by the stakeholders (Ayala consulting, 2010; Kardan *et al.*, 2011; Thomson and Kardan, 2012; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015b; Dewbre *et al.*, 2015; UNICEF-ESARO and Transfer Project, 2015). This is not surprising, as stakeholders tended to refer to these evaluations when discussing the impact of the CGP on these outcomes.

The desk review showed slightly different findings regarding the negative effects of the CGP on this dimension of economic empowerment. Evaluation documents supported stakeholders' statements as to the size of the transfer and the delays in CGP payment negatively affecting economic empowerment outcomes (Kardan *et al.*, 2011; Oxford Policy Management *et al.*, 2014). However, most of the negative effects described in the evaluation, such as the reduction of income from remittances, were not mentioned by the stakeholders (Oxford Policy Management *et al.*, 2014; UNICEF-ESARO and Transfer Project, 2015; Daidone *et al.*, 2017). The desk review also tended to reject the concerns relayed by selected stakeholders that the CGP was creating dependency amongst recipients (UNICEF-ESARO and Transfer Project, 2015; Daidone *et al.*, 2017).

Economic empowerment as agency

Empowerment as *agency* appears to be a rather minor theme in the CGP's design (Figure 5). Both the interviews and the desk review show that economic empowerment as agency was mainly understood as a pathway or a mechanism of the CGP. Stakeholders and program and evaluation documents all reflected how the empowering potential of the CGP on beneficiaries' choice and capacity to decide might be affected by other program features like soft conditionality and community oversight. Finally, almost half of the stakeholders as well as program evaluations and research highlighted selected positive effects of the CGP on agency, namely children's participation to households' decisions and households' psychological wellbeing.

*Figure 5. Mapping the role(s) of economic empowerment as agency in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

Amongst the 20 stakeholders that discussed beneficiaries' *agency* in the program, all but three of them mentioned it primarily as part of the CGP's mechanism or effects. Based on the definition presented earlier, the most prominent aspects of empowerment as agency in the mechanisms of the CGP were regarding conditionality and messaging. While seven planners and evaluators highlighted issues of feasibility behind making the CGP unconditional (unconditional CT being seen as less expensive and easier to implement in Lesotho's context), six managers – from the local to the international level – highlighted the empowering potential of an unconditional CT. From this point of view, the CGP, as an unconditional CT, would offer more freedom to make their own decisions regarding the funds (Box 18).

Box 18

> "I think that is some of the reasons that [the CGP] was unconditional. The grants were meant to give liberty to the parents or the guardians of the children to do anything that, at the end of the day, can benefit the health and welfare of the children, even though there were those objectives which were clearly outlined."
>
> (Implementation Manager, Local and national)

Yet, as this previous quote illustrates (Box 17), this freedom to choose was also balanced with other features and mechanisms of the CGP, such as the strong community oversight mechanisms set up alongside soft conditionality and messaging. Three quarters of informants highlighted how communities ensure that CGP funds are spent on children, thus steering the spending decisions of the beneficiary households (Box 19).

Box 19

> "The community would not see any significant improvements in terms of consumption, cleanliness and just how the children are still not well taken care of, and some parents would actually be gathering at the chief's after the collection of the grants. (…) The chief and the [village] committee would try to intervene but if the behavior of the recipient did not change, transfers would now be collected by someone else deemed more responsible."
>
> (Program manager, Local and national)

The limited empowering capacity of the program on beneficiaries' agency was further reflected in how they and their role were perceived. Six implementers and managers at the national and local level explained how, in these early phases, beneficiaries were not involved in the program beyond having to comply with the program's procedure and objectives (Box 20). A third of stakeholders from across the program cycle also highlighted how prominent the risk of beneficiaries' misusing the fund was amongst some of their peers (Box 20). Finally, as previously discussed, two implementers expressed concerns over the program's potential to create dependency and limit the beneficiaries' ability or willingness to make changes.

Box 20

> "Some of [the beneficiaries'] were part of these [community] committees. But the great majority of beneficiaries, their role basically was to take care of the children."
>
> (Implementer, International)
>
> "The big political question at the time was - which we got repeatedly in different countries: they're just going to waste their money, right? So there was quite a big emphasis on trying to rigorously evaluate, to show that the money wasn't [wasted]. There was a belief among the protagonists that people knew how to spend the money, and it would benefit them and would go on the kids. But there was a belief among politicians in these countries, and among some of the donors that you're just wasting money".
>
> (Evaluator, International)

Intra-household decision-making and relations was an object of interest in the evaluation of the CGP and subsequent research, as interviews with the international evaluators and researchers attest (Box 21). However, this focus didn't seem reflected in the wider program.

Box 21

> "We had to measure who using the cash, who was making the decision around the cash, so that was definitely a big [part of the discussion]."
>
> (Evaluator, International)

In the later phases, stakeholders tested two additional mechanisms. The conditional cash transfer pilot implemented hard conditions with different degrees of control mechanisms to boost health and education outcomes. This approach was abandoned primarily due to challenges in effectively implementing and monitoring these conditionalities (Box 22).

Box 22

> "With time we decided to close the conditional cash transfer, because when you implement a conditional cash transfer, you need to ensure that the supply side is well equipped to manage and

monitor those conditions. We felt that the government did not have the capacity to manage and to monitor the conditions."

(Implementer, International)

The SPRINGS pilot included education and training activities to support beneficiaries' ability to use their funds effectively. Although these additional activities were seen by the four international managers and evaluators involved as having a positive impact, one of the evaluators also described how these additional activities might have placed additional time and resource burdens onto beneficiaries (Box 23).

Box 23

"While beneficiary households found [the health and nutrition training] to be useful, they were very intense. These households are living not just in monetary poverty, but also time poverty. They do not have a lot of time. To take that time out was challenging because they have to tend to various other tasks as well."

(Researcher/Evaluator, International)

As for the desk review, while the program's theory of change recognizes that the program may affect intra-household structure and bargaining power, or time preferences, these elements were presented as mechanisms and pathways rather than outcomes the CGP aims to change or influence (Hurrell *et al.*, 2011; Pellerano *et al.*, 2012, 2014). Like stakeholders, program documents highlighted both the CGP's empowering potential regarding households' freedom and decision-making as well as the constraints linked to soft conditionality and community oversight (Hurrell *et al.*, 2011; Pellerano *et al.*, 2012, 2014; UNICEF-ESARO and Transfer Project, 2015; Pace *et al.*, 2019). However, how beneficiaries were perceived and the potentially disempowering impact of these perceptions were less present in the reviewed documents, with the exception of the perceived risk of misusing funds. While this risk was monitored by the program and appeared as a concern amongst non-beneficiaries (as did the concern over dependency), program evaluations did not report this widely taking place (Cerritelli and EU, 2009; Ayala consulting, 2014a; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014). Finally, the focus on intra-household decision-making and relations was primarily highlighted in the terms of reference (the scope of work document) for the CGP evaluation (UNICEF Lesotho, 2010).

CGP affecting agency

In terms of effects on households' agency, both the desk review and the interviews agree on the beneficial effect of the CGP in two areas: children's participation in households' decisions and households' psychological wellbeing.

Box 24

> "I know that even in terms of governance and involving children in the [household's] decisions, that impacted them."
>
> (Implementer, Local)
>
> "There was a certain level of dignity restored in terms of not only the parents being able to participate in the community as well as the kids being able to participate in all the normal activities that any kid would want to be part of"
>
> (Program Manager, Local and national)

The previous qualitative evaluation and one of the implementers highlighted how the CGP had improved children's role in households' decision making (Box 24) (Oxford Policy Management *et al.*, 2014).

The second area of improvement concerned beneficiaries' self-esteem and confidence (Box 23). The beneficial effects of the CGP in this area was described in the program's documents and confirmed by 11 stakeholders involved in the planning, implementation and financing of the program (Pellerano *et al.*, 2014; UNICEF-ESARO and Transfer Project, 2015; Daidone *et al.*, 2017).

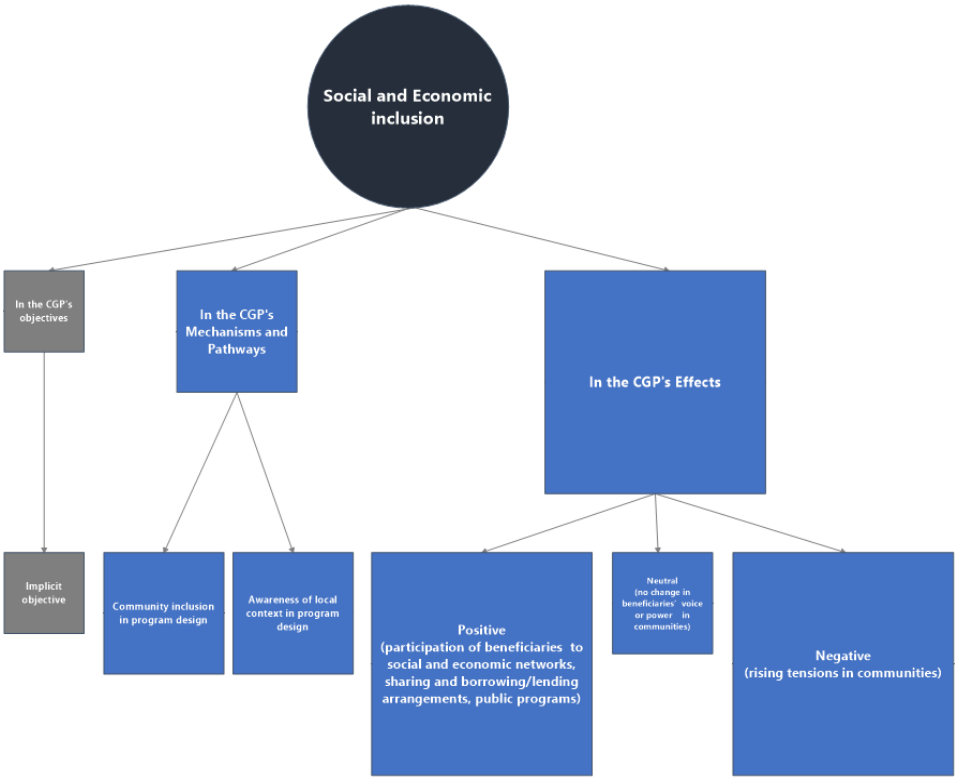
The effect of the CGP on intra-household relations and decision-making amongst members of recipient households was rather nuanced and is described in the section "CGP affecting gender and women's empowerment".

Economic empowerment as social and economic inclusion

In both the desk review and the interviews, economic empowerment as *social and economic inclusion* was primarily considered as an effect of the CGP (Figure 6). As an example, of the 20 stakeholders that covered the role of this empowerment dimension in the CGP, all but three discussed it in the context of the CGP's

effects while barely half of them addressed this dimension when talking about the CGP's goals or the mechanisms. However, both the documents and the interviews showed an awareness of the social and economic context and the importance of community inclusion in the design of the CGP. Interviews in particular provided valuable insights into how social and economic inclusion was taken into account in the different phases of the program.

*Figure 6. Mapping the role(s) of economic empowerment as social and economic inclusion in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

As the interviews showed, the re-entry or participation of CGP beneficiaries into the social and economic life and networks of their communities was not a stated objective of the program in the early phases, although four managers mentioned this as an implicit objective of the CGP and of social protection in general (Box 25). Under this assumption, by reducing the vulnerability of CGP beneficiaries, they would be able to become more actively involved in their communities.

Box 25

> "Even though it was not explicit in the documents, the program was also meant to facilitate more cohesion in the communities. When you get to a certain community and you find that there are some vulnerable households by nature, they don't participate in the larger community objectives, they cannot participate like everybody else. If there is poverty, it somehow discriminates or divides the community. When we helped these vulnerable households, we are somehow bringing them closer."
>
> (Implementation Manager, Local and national)

As for the wider transformative potential of CTs like the CGP – structural changes that would challenge the socioeconomic or power structure of a community – stakeholders did not see it as an objective of the program. However, two of them reported certain phases of the program would take into account the communities' structure and hierarchies (Box 26).

Box 26

> "I don't think the program was expected to affect those hierarchies, but I think we were trying to be mindful of those hierarchies when we're doing an evaluation as part of our explanation of what we see"
>
> (Evaluator, International)

Economic empowerment as social and economic inclusion was more present when discussing the CGP's design. Six stakeholders involved in the operational side of the project described how community engagement, beneficiary targeting, case management and the program evaluation were designed to give

a voice to the different members of the community (starting with the beneficiaries) and/or safeguard social cohesion (Box 27).

Box 27

> "The fact that we had this combination of the proxy means testing with a community validation was for us, a way to ensure that the community felt respected"
>
> (Resource mobilization, International)
>
> "As part of the program itself, having those various focus groups, I think that gave them a voice, because we tried to reach as many different levels and groups as possible and have representation."
>
> (Implementer, Local)
>
> "We always framed the evaluation as trying to learn about the program and make sure that we could improve it going forward, so I guess, to that extent, the evaluation did provide some channel for the voice of the recipients to get their views across and there were some, there were some problems which definitely came through."
>
> (Evaluator, International)

Inclusion became a clearer objective of the CGP with the Cash Plus pilot focused on livelihood, where specific community-wide activities were integrated, aiming to empower both beneficiaries and non-beneficiaries (Box 28).

Box 28

> "With the CGP Plus program, the idea was [to include] not only the people those who are in [the] CGP program but also the other people. It had one component [called] the one-stop-shop, where we tried to make sure that everyone had fair access to public services, including health, and then also it has a component of financial inclusion."
>
> (Program Manager, International)

As for the desk review, social and economic inclusion or the modification of power structures were not stated as objectives of the CGP. However, the community context was taken into account. In the theory of change, local context and social or economic networks were presented as factors that might boost or hamper some of the CGP's outcomes and particularly potential spillover effect (Hurrell *et al.*, 2011; Pellerano *et al.*, 2012).

CGP affecting social and economic inclusion

The findings from 17 interviews with stakeholders reflected those from the desk review as to the effect of the CGP on economic empowerment as *social and economic inclusion*. This isn't surprising, as stakeholders often referred to program evaluations when discussing the CGP's effects. They highlighted the positive impact of the CGP on beneficiaries' participation in social and economic networks as well as public programs. However, they also showed that these changes didn't lead to more structural changes in the beneficiaries' voice or influence in their communities. These findings also illustrated the great concerns program stakeholders had over the negative effects of the program on social cohesion and local politics, as this section illustrates.

Thirteen stakeholders from across the program cycle reported the same positive effects of the CGP as in the program's documents: increased participation of CGP beneficiaries to social and economic networks, sharing and borrowing/lending arrangements and public programs (Box 29) (Kardan *et al.*, 2011; Oxford Policy Management *et al.*, 2014; Barca *et al.*, 2015; UNICEF-ESARO and Transfer Project, 2015; Attah *et al.*, 2016; Davis *et al.*, 2016). Two managers also highlighted greater general acceptance of beneficiaries by their community.

Box 29

> "One of the key outcomes coming from the community is that the CGP has improved [beneficiaries'] status and their profile in the community. Here you can borrow money and tell your neighbor "I will bring it when coming from my collection of the CGP beneficiary funds". So it is has improved interaction in the community and the community trusts one another in terms of loan."
>
> (Implementer, International)
>
> "Before, it was very difficult for them to [attend public gatherings]. [Beneficiaries] were saying "we were not taken care of, we are not entitled to anything. Therefore, we may as well not attend any

public gatherings or any activity within the community". But since they are part of [the CGP], they really **do** participate. For instance, there are these community workers who are dealing with health issues. They make sure that their children will be vaccinated and so forth. The beneficiary of these programs do participate."

(Implementer, Local)

"There were other effects we were not expecting such as [improving] the dignity of families, and the acceptance in a given community"

(Resource mobilization, International)

However, implementers working at the community level reported that this increased participation didn't necessarily translate into beneficiaries' having a stronger voice or power in their communities, or challenging the structure in the community. This is in line with the findings from qualitative evaluations across CT programs in the region (Box 30) (Barca *et al.*, 2015; Food and Agriculture Organization of the United Nations, 2015).

Box 30

"I remember reviewing their minutes [of community councils] and looking at who [sits on the council], their decisions and their positionality, because the council is meant to have some community members as part of it. But I remember coming to a conclusion that the more powerful would have had stronger voices and that even if you had a wider participation, their voices wouldn't have been strong."

(Evaluator, International)

"On the other hand, the program brought some conflict or tensions, which were unintended, because there is this element of status quo in different communities, that "if I am rich, I should remain rich. If you are poor, you should remain poor". So, whenever I see some changes in closing the gap — the poverty gap — sometimes it doesn't sit well with me and increases some elements of conflict because you want to maintain the status quo."

(Implementation Manager, Local and national)

One of the stakeholders involved in program planning also acknowledged that the reaction of the community varied from one area to the other (Box 31).

Box 31

> "Communities are different. In some cases, they would just ignore our beneficiaries because "oh, those ones are social welfare beneficiaries, so they don't have anything to add to anything, because the government is taking care of them". That might be the perspective of the community members. That's why I'm saying it would depend on the communities, but in some areas, you find they blend very well. This especially happens in areas where a lot of people think they were left out, whereas they were, they **are** still poor and ultra-poor. They might marginalize our recipients."
>
> (Planner, National)

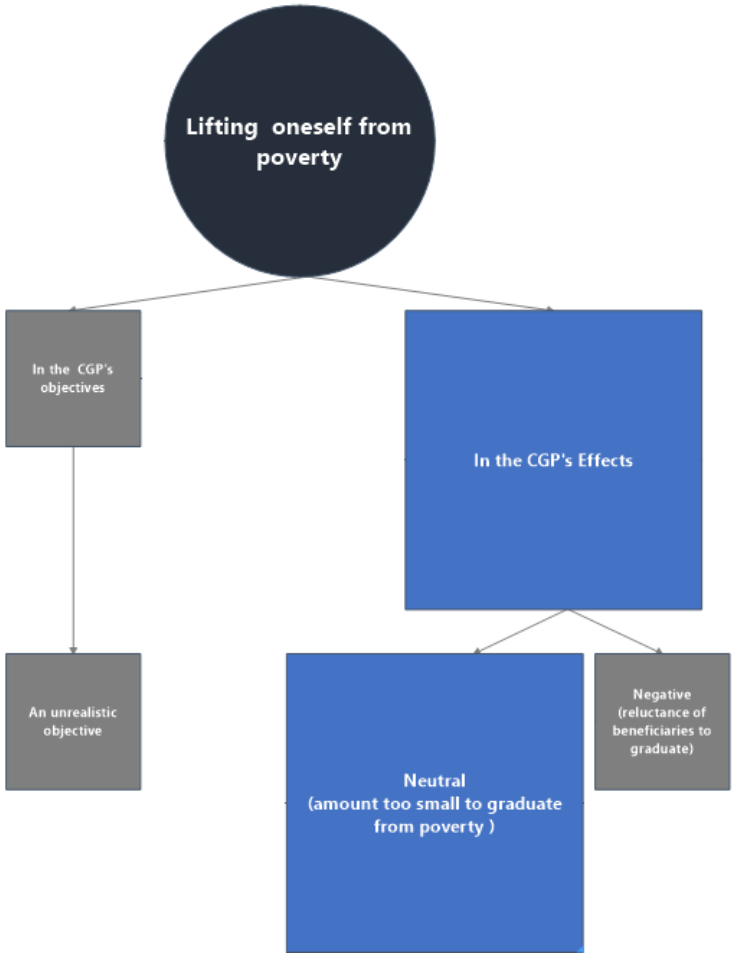
These also point to a key negative effect of the CGP – and concerns amongst stakeholders – rising tensions in communities. The desk review showed that tensions in the communities as a result of the program have been an issue since the very first phase of the CGP (Cerritelli and EU, 2009; Kardan *et al.*, 2011; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014; Attah *et al.*, 2016), which was also pointed out by 10 stakeholders from across the program cycles. As illustrated by the previous quote (Box 29), these tensions may affect social cohesion. Similar findings apply to the accusations of, or concerns over, political appropriation of the program by the community's leaders. This was pointed out by program documents as well as four implementers and an evaluator spreading across different phases of the program, including later phases (Cerritelli and EU, 2009; Oxford Policy Management *et al.*, 2014; Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016). When it comes to empowerment, social and economic inclusion, these tensions and accusation may counteract other otherwise positive effects of the CGP on empowering vulnerable populations.

Economic empowerment as lifting oneself from poverty

The desk reviews and the interviews with stakeholders tend to disagree as to the role of economic empowerment as *lifting oneself from poverty* (also referred to as *graduation* from poverty) (Figure 7). The findings of the desk review suggest that allowing beneficiaries to lift themselves from poverty did not become part of the discussion on the CGP until much later, nor did the program lead to beneficiaries graduating from poverty. In contrast, stakeholders were more nuanced and divided as to the role of this

empowerment dimension or the effect of the CGP in this area. However, stakeholders overwhelmingly saw graduating from poverty as an unlikely scenario in the early phases of the CGP.

*Figure 7. Mapping the role(s) of economic empowerment as lifting oneself from poverty in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

Eighteen stakeholders discussed the role of this economic empowerment dimension. First, five stakeholders working across the program cycle considered that empowerment as households' graduation from poverty was an objective of the program. However, these stakeholders immediately highlighted the inadequacy of the amount to achieve such an objective (Box 32).

Box 32

> "At the beginning yes, we were thinking that, to some extent, there was graduation from poverty, but we realized also that by giving only cash, we would not have these results being achieved very quickly."
>
> (Program Manager, International)
>
> "I can say the objectives were mainly to get people out of poverty, but considering the amount of money that they were receiving, really it couldn't help them at all - it was basically meant to meet their basic needs"
>
> (Implementation Manager, Local and national)

When discussing graduation from the program in CGP's processes, six planners, implementers and evaluators showed that the age of the child or leaving the area were the main reasons for graduating (understood as exiting the program) (Box 33).

Box 33

> "It's not very common [for beneficiary to graduate from poverty]. Some graduate because there are no longer kids or because they left the country mostly." (Implementer, Local)

In the later phases and following the Cash Plus pilots, a graduation model was integrated to the Community Development Model alongside CT programs like the CGP (Box 34).

Box 34

> "We have discussed what we call the graduation model. It's part of the Community Development Department at the ministry. Community Development was instituted, in complement to social assistance, trying to empower households that are benefiting from social assistance, to enable them to graduate."
>
> (Evaluator, National)

On the contrary, none of the program document mention the graduation objective until the creation of the Community Development Model (Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016). Actually, some of the early evaluation and assessment documents stated that there was no graduation or exit strategy in place in the early phases of the CGP (Ayala consulting, 2012; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015a, 2015b). Operational documents also confirmed that children turning 18 or the households leaving the intervention area were the main reasons for exiting the program (Ayala consulting, 2014b; UNICEF Lesotho, 2017).

CGP affecting poverty

Aside from anecdotal cases, the consensus amongst the 18 stakeholders who addressed economic empowerment as graduation from poverty, was that the CGP was too small or insufficient to on its own lead families to graduate from poverty or change their socio-economic status significantly (Box 35).

Box 35

> "Where the program did not perform well was as far as nutrition outcomes were concerned, and also as far as contribution to poverty was concerned. Of course, then that was understandable because if you look at the size of the transfer, and the needs in the household, contribution to poverty, of course, would be limited."
>
> (Implementer, International)

This is in line with the findings from a wider regional review of evidence on CTs, which found that these transfers were often not enough to allow beneficiaries to graduate from poverty. (Barca *et al.*, 2015)

Two implementers at the local level also described how some beneficiaries might fear or be reluctant to graduate from the program, as this might leave them without much needed relief. This concern was also echoed at the national level where three managers expressed concerns over the lack of linkage or continuum for the families or the children that had recently left the CGP (Box 36).

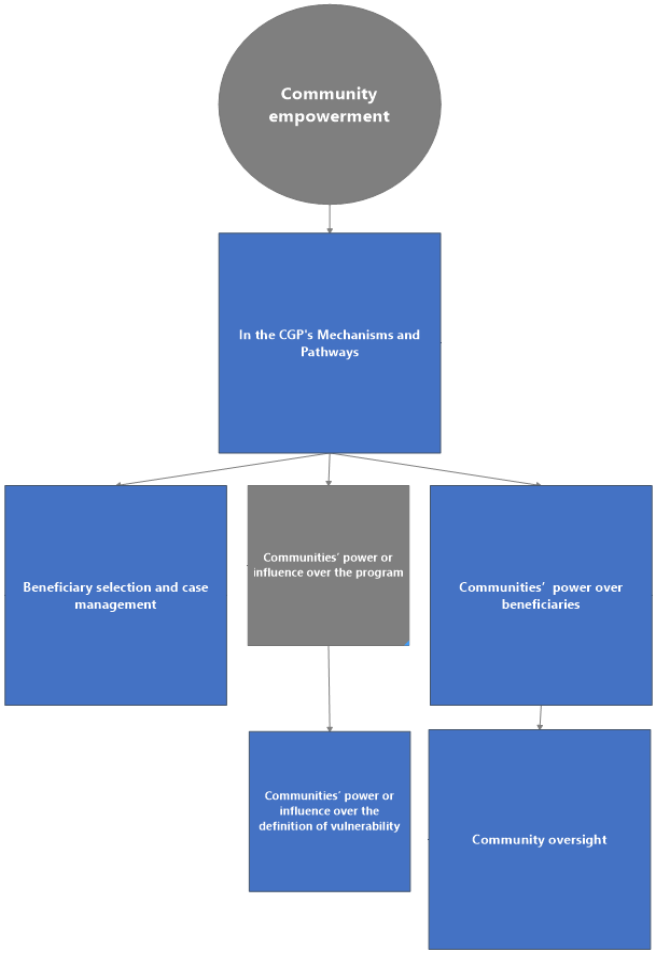
Box 36

> "The main objective was also to allow them graduate from the program, but what we realized was that most of them don't want to graduate. We did a recertification after 5-6 years and most of [the beneficiaries] were left out because people felt their lives had improved. Not realizing that yes, they have improved, but it was because of the grants that they are getting. And the moment you take them out of the program, it means you are taking them back to where they were before."
>
> (Implementer, Local)

Economic empowerment as community empowerment

Sources disagreed as to the role of community empowerment in the CGP (Figure 8). These differences affected various aspects of that role, from the definition of who the "community" refers to, to whether and how the community's role in the CGP may be (dis)empowering. However, both the interviews and the desk review suggested that community empowerment was not a program objective in the early phases. As a result, the effect of the CGP on this empowerment dimension remains understudied.

*Figure 8. Mapping the role(s) of economic empowerment as community empowerment in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review

Empowerment understood as *community empowerment* was spontaneously highlighted by eight stakeholders, primarily implementers at the local level and international stakeholders. As a result, to understand community empowerment in the program, stakeholders were probed about their definition of and the role they assign to communities.

Understanding the concept of community in the CGP

How the community was understood in the early phases of the CGP differed in the interviews and the desk review. While stakeholders tended to refer to the CGP's community committee (the Village Assistance Committee - VAC), the documents covered in the desk review often made a strong distinction between the communities and the VAC. However, both sources shared concerns over the VAC's inclusiveness and representativeness, as well as the risk of political appropriation of the VAC.

Of the 11 stakeholders who provided a definition of "the community" in the context of the CGP, eight referred to the VAC. It is unclear whether any member of the community effectively had a chance to be part of the VAC, as four stakeholders primarily highlighted people having official roles as VAC members (Box 37). Furthermore, the involvement of beneficiaries themselves into these committees was mentioned by only two stakeholders.

BOX 37

> "VACs were composed of health workers and sometimes the teacher or the chief... like, eminent people in the village."
>
> (Resource mobilization, International)

International stakeholders also highlighted how the VACs were sometimes used to exercise political influence (Box 38).

Box 38

> "The committee was hijacked, by few influential people who were part of the committee, like the chief and or the counselor. And therefore, the VAC, to some extent, would bring their people, people who are politically inclined to them. So the communities really complained."
>
> (Implementer, International)

Over time, the CGP moved away from this approach to better involve the community at large (Box 39).

Box 39

> "In the current methodology, the community is everybody who is an adult. It's open community-based targeting [of CGP recipients]. In the previous methodology, it used to be a selected committee that would do that, but we had challenges with that kind of approach and now we have moved to this one, that is open for all community members"
>
> (Implementer, International)

The desk review suggests a wider definition of community than the stakeholders' but also, a distinction between the VAC and the "community" at large – the VAC being primarily described as an operational entity of the CGP (Pellerano *et al.*, 2012, 2014). Some of the evaluation documents highlighted that VACs were not well integrated into local community and government processes, and raised questions as to whether the VAC was truly representative of the community (Thomson and Kardan, 2012; Oxford Policy Management *et al.*, 2014; Bhalla, 2021). As for its composition, program documents describe the VAC as including both community officials and "respected members of the community" (Pellerano *et al.*, 2012), although the concerns over the VAC being used for political influence was also found in the program's evaluation (Pellerano *et al.*, 2012).

Community empowerment in the CGP

From the interviews and the desk review, it is clear that *community empowerment* didn't become an objective of the CGP until the later phases. However, the role communities were expected or seen to play

in the program had (dis)empowerment implications, even though these were not necessarily framed as such, especially in the program documents.

Although they didn't necessarily present community empowerment as an objective or effect of the CGP, the majority of stakeholders described how the community's role had implications for community empowerment or that of the beneficiary households. In total, 22 stakeholders provided information on various aspects of this issue.

While community empowerment was mentioned as a CGP objectives from the early phases by only five implementers and international stakeholders, this objective became more prominent in the later phases and pilots (Box 40).

Box 40

> "[An objective of the] Cash Plus program was, of course, community empowerment but with the CGP program, our main objective was to reduce child poverty and deprivation."
>
> (Program Manager, International)

The CGP's design and implementation was also seen as having (dis)empowerment implications for communities, particularly regarding the level of involvement the communities had in different aspects of the project (Box 41).

Box 41

> "The second [empowerment dimension in the CGP] was the empowerment of the communities around the aspects of this program: participating and making sure that [the communities] selected the needy, making sure that they verify attendance, that the families comply with the conditions, that they provide case management and monitoring. So that was the second part, in terms of empowerment"
>
> (Implementation Manager, International)

There was disagreement amongst the eight implementers that discussed the evolution of the communities' role over time as to when communities were first involved in the program. However, it seems that their involvement and mandate in the program had broadened over time (Box 42).

Box 42

> "Phase one was "we need to get this project done". The urgency was so high at that not a lot of time was spent having conversations and engaging with the community."
>
> (Implementer, Local)
>
> "[Community participation] changed with time, but as we are implementing our programs now, we have taken a lot of lessons from how we started, in terms of implementing the CGP and involving the community towards categorizing people and determining their poverty-ranking statuses."
>
> (Program manager, National)

Beneficiary selection and case management were the roles a majority of stakeholders identified for local communities, as earlier quotes illustrate. Twenty-two stakeholders identified either one or both of these communities' roles. Three of the implementers at the local level also highlighted the liaison role communities played between the program and the beneficiaries, and between the beneficiaries and the institutions (Box 43).

Box 43

> "The committees are linking with the ministry or the auxiliary social worker at the community level, who will be addressing certain issues arising from the recipients." (Implementer, Local)

However, communities' power or influence over the program and its components was more unequal. Three stakeholders explained that selected members of the communities were consulted in the initial design of the program. However, as earlier quotes show (Box 40), those consultations and engagement efforts were not necessarily extensive initially, due to time constraints. Yet, according to five

implementers and evaluators, it seems that the grievance mechanisms and the consultations organized as part of the evaluation might have offered further opportunities for communities to influence the evaluation of the program (Box 44).

Box 44

> "Through the qualitative work they would have opportunities to go and ask what the communities perceived about the program."
>
> (Evaluator, International)

Communities' autonomy and influence was more pronounced over the definition not only of who was vulnerable but also what vulnerability meant, as almost a third of stakeholders across the program cycle highlighted (Box 45).

Box 45

> "When we engaged the communities, they also helped us with the local meaning of or local definition of vulnerability, and that is where we also incorporated local knowledge in trying to shape, make or strengthen the targeting mechanism or targeting methods up to this far."
>
> (Implementation Manager, National and local)

Two of the implementers challenged whether these flexibilities in defining vulnerability adequately accounted for the discrepancies across districts and ecological areas of Lesotho. As the program is extended to urban areas, the influence of local communities over beneficiary selection may be further redefined. For example, one stakeholder explained community-based targeting was not feasible in urban areas (Box 46).

Box 46

> "Our beneficiaries come from [locality] and other urban districts. And if you look at how we target these households, it also differs a bit. Here in [locality], although the households look poor, they

can still afford most of their basic needs as compared to those who are in the rural areas for who it is very hard to access services and take their children to school and to help facilities and the like."

(Implementer, Local)

Compared to communities' power over the program, their power over beneficiaries was depicted as greater. As previously mentioned, more than two-thirds of stakeholders described communities as the key actor in implementing the soft conditionality mechanisms. Indeed, they were in charge of addressing or reporting potential misuse of funds by beneficiaries and might also relay or emphasize the messages on how the funds were to be used (Box 47).

Box 47

"For example, issues like misuse of funds, providing false or fraudulent information were tackled at the community level. If a recipient misuses the funds, their community members would know where to report them and how to handle the cases."

(Program manager, Local and national)

"In those situations [of misusing CGP funds], the community had to get involved. Community leaders would get involved and address the situation - whether it's finding somebody else to be an intermediary between the child and the grants, or assigning a different guardian per se to receive the grant for the child instead of their actual parent."

(Implementer, Local)

This emphasis on overseeing beneficiaries also reflects the wider concerns from a third of stakeholders that recipients might waste the transfers (Box 48).

Box 48

> "There was a lot of preconceived ideas initially, not just from the government, but also from donors in general that cash grants would be used by, especially the man in the family, to smoke or to drink or to use for other purposes."
>
> (Resource mobilization, International)

The findings of the desk review reflected several of the terms highlighted in the interviews. However, these were not framed in the context of empowerment. Indeed, the notion of community empowerment was widely absent from the CGP, until the development of the Community Development Model in the later phases of the CGP and further to the SPINGS pilot (Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016). Instead, in the documents, the role of communities primarily aimed either at community participation or at program support in the CGP's implementation (especially when discussing VAC's roles), particularly around beneficiary selection, case management and oversight (Hurrell *et al.*, 2011; Pellerano *et al.*, 2012, 2014; Oxford Policy Management *et al.*, 2014; Ayala consulting, 2015). These main roles are similar to those highlighted in the stakeholder interviews. In contrast, the role of communities in the development and planning of the program was widely absent for the reviewed documents.

Secondly, evaluation documents raised questions as to whether communities' roles in the program were effectively implemented – an issue that was widely absent from the informants' perspective. First, the qualitative evaluation found a gap between the role of the VAC as it was planned in program documents and their actual role on the ground, which appeared more limited (Oxford Policy Management *et al.*, 2014). Secondly, several evaluation documents found that the role of the VAC in beneficiary selection, while effectively implemented, wasn't initially visible to communities, to avoid tensions and retaliations against VAC members (see CGP affecting social and economic inclusion) (Pellerano *et al.*, 2012, 2014; Thomson and Kardan, 2012).

CGP affecting community empowerment

Although communities were actively involved in the program and community empowerment was highlighted by some stakeholders (as previously described), it is unclear whether the program's effect on this dimension of empowerment was actually explored in the CGP evaluation and research, as none of the stakeholders interviewed reported it. To some extent, it seems that community involvement was used to achieve other aims, especially when it came to reducing tensions (Box 49).

Box 49

> "This combination of the proxy means testing with a community validation was a way for us to ensure that the community felt respected."
>
> (Resource mobilization, International)

This is further confirmed by the desk review, since – as previously explained - the notion of community empowerment was widely absent in the early phases of the program. The only community-wide effect reported in the program documents was the CGP's economic spillover effect (Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014, 2016; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015b; Davis *et al.*, 2016).

Gender issues and Women's empowerment in the CGP

Both the interviews and the desk review suggested that gender issues and women's empowerment were not part of the CGP's formal objectives and design in its early phases, although these may have been part of the strategic discussion. Instead, these issues were first formally integrated into the program as part of the CGP's evaluation – an evolution that seemed to have been primarily driven by international stakeholders and their organizations. Additionally, Basotho women's role in the household and the vulnerability of female-headed households seems to have contributed to a greater interest or awareness of gender issues in Lesotho (Figure 9).

The lack of focus on these issues is also reflected in the lack of knowledge we have on the effect of the CGP on different aspects of women's empowerment. Based on the few documents and interviews

reporting on this issue, the CGP may have improved women's access to resources, particularly food. Its impact on other aspects of the concept is either neutral or debated.

*Figure 9. Mapping the role(s) of gender issues and women's economic empowerment in the CGP**

*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review

All stakeholders were probed about gender issues and women's empowerment in the CGP. All but one stakeholder were able to provide information about the role these notions played in the program.

While gender issues and women's empowerment were discussed at the strategic level, stakeholders generally reported that these issues were not amongst the objectives of the CGP (Box 50). Of the nine stakeholders that discussed these issues, only one suggested empowering women was a stated objective from the early phases. It should be noted that all but one of these stakeholders were part of international organizations.

Box 50

> "The underlying goal is to empower people, empower women and close gaps. But it wasn't in the day-to-day, in the rooms I was sitting in. This wasn't discussed on a day-to-day basis."
>
> (Implementer, International)

As for the CGP's mechanisms and processes, with two exceptions, all stakeholders reported that gender was not a criterion for targeting CGP beneficiaries nor were there gender-specific features in the implementation of CGP's early phases. However, these issues became relevant to the CGP as the program was rolled out due to specificities of the Lesotho context (Box 51). Ten stakeholders across the program cycle highlighted how the HIV/AIDS epidemic and Basotho men's labor migration to South Africa had left many women as heads of the household, also increasing the vulnerability of the children in these households. Another contextual factor raised by three national implementers was how gender norms and women's responsibility for children made women the de facto recipient of CGP transfers.

Box 51

> "Although there was no specific targeting of women-headed households, I think [it was] because women in themselves are more vulnerable. A lot of men died due to HIV and AIDS, maybe they worked in the mines, they didn't come back. So, in Lesotho, I think even without going out to say, 'we are prioritizing women,' it was evident that women are more in need"

(Planner, National)

"It was never mentioned in any program guidelines that the mothers should be the ones collecting the grants, but in our in our local communities, this time of the day men are out, taking care of their animals, men are out plowing their fields or harvesting. In general men are out trying to find ways to provide for their families. So in gatherings where the government would come and introduce their programs, it's sort of a communal norm, [that] a majority of the people who attend those gatherings are the females."

(Program manager, Local and national)

Later on, the SPRINGS pilot included activities targeting women's groups specifically to improve their access to economic resources (Box 52).

Box 52

"Later on, when we introduce the Cash Plus and the Community development components, we also added some gender activities targeting women empowerment. For example, saving groups [for women]."

(Program Manager, International)

Gender analysis seems to have been part of the first evaluations, although it was not considered a central focus. The stakeholders involved in this part of the program cycle saw this issue as secondary, which primarily consisted in reporting data disaggregated by gender. It should also be noted that the nine stakeholders that discussed the role of gender in the CGP's evaluation were from international organizations and that this view was absent amongst national stakeholders. This division would further support the views expressed by three international stakeholders that gender dimensions are usually brought in by international partners rather than nationally driven (Box 53).

Box 53

> "From an M&E and evaluation research perspective, if you have an interest in empowerment indicators, it's often externally imposed, it often comes through the impact evaluations. And that also means that, you know, these indicators are externally imposed as well."
>
> (Researcher/Organizational Point of View, International)

Indeed, three of the international organizations involved in the planning, funding and/or evaluation of the CGP had a growing internal focus on gender in the recent years, with strategies aiming towards gender mainstreaming or integration across their activities and the programs they support. This may explain why gender issues and women's empowerment had been progressively integrated into some aspects of a program like CGP (Box 54).

Box 54

> "Originally, the demand for that [gender focus] was coming from management, this kind of recognition that this is an increasingly important area of research, but also of policy and programming."
>
> (Researcher/Organizational Point of View, International)

This lack of operational integration of gender and women's empowerment is reflected in the types of reviewed documents that cover these issues. While the potential of CTs for women's empowerment and the findings from other countries were discussed in the reviewed documents (Kardan *et al.*, 2011; Barca *et al.*, 2015; Food and Agriculture Organization of the United Nations and FAO, 2015; O Campos and FAO, 2015; Pavanello *et al.*, 2015; UNICEF-ESARO *et al.*, 2015; Fisher *et al.*, 2017b; Gavrilovic *et al.*, 2018b), there is no indication that women's empowerment or gender equality was part of the program during the early phases. None of the operational documents obtained covered information related to gender equality or women's empowerment, although, as the stakeholders highlighted, CGP evaluations found that women were often the recipients or the decision-makers for the CGP funds (Kardan *et al.*, 2011;

World Vision, 2012; Oxford Policy Management *et al.*, 2014). Instead, as described in the interviews, these issues and related concepts were covered primarily in M&E reports and related research articles, and addressed the impact of the CGP on different dimension(s) of women's empowerment (Kardan *et al.*, 2011; World Vision, 2012; Oxford Policy Management *et al.*, 2014; FAO, 2015; O Campos and FAO, 2015; Pace *et al.*, 2019). The terms of reference referred to gender analysis while evaluation instruments and documents included questions related to decision-making, control over CGP transfers, income and social and economic inclusion by gender (Oxford Policy Management, 2011, 2013; UNICEF Lesotho, 2010).

CGP affecting gender and women's empowerment

As previously discussed, gender and women's empowerment were rather secondary issues in the early phases of the CGP. Hence, only a handful of documents and four of stakeholders involved in the CGP's implementation and evaluation mentioned any impact of the program on women's empowerment. As a result, the impact of the CGP on these issues remained widely unknown or debated.

The mechanisms described both in the program documents and by the stakeholders assume that, by giving women control over cash, a CT program like the CGP would improve their position in the household and the community, thus allowing them to re-join community networks and making their own choices and decisions (Box 55) (which are seen as more child-friendly)(Kardan *et al.*, 2011; O Campos and FAO, 2015; Pavanello *et al.*, 2015; Gavrilovic *et al.*, 2018b).

Box 55

> "Where the households' heads are female, the money is actually given to them and then, they have decision making [power]. Once they have money, they can decide how they will spend the money for children's education, health…"
>
> (Program Manager, International)

The reported impact seems more nuanced. Three stakeholders said that the CGP was improving women's access to cash and their power in making decision for the benefit of the children. Some of the evaluation

documents also found some improvement in access to resources (including food) in female-headed households (Barca *et al.*, 2015; Pace *et al.*, 2019). However, the reviewed documents and one of the stakeholders involved in evaluation and subsequent research on the CGP described gender norms and relations within households' decision-making as mainly unchanged by the transfer (Oxford Policy Management *et al.*, 2014; FAO, 2015; O Campos and FAO, 2015). In fact, at the local level, four implementers described how the transfer may trigger or feed disputes within some households, especially when parents are separated (Box 56). On the contrary, four managers at the national and international levels described how the CGP reduced tensions in some households by reducing the stress due to the lack of income (Box 56).

Box 56

> "If the families had to separate, they fight for the booklet to receive the child grant. In most cases where we have those incidents, they are fighting for that booklet. Plus, within the families, in a case where there is separation between the husband and wife, you may find those kinds of incidents."
>
> (Implementer, Local)
>
> "'It's an issue that we normally do not discuss a lot, in terms of mental health. Some parents were talking about the possibility of reduced stress, anxiety, or worrying about where the next meal will come from. Because they know that they will always get a certain amount of money they can depend on so that, the parents and the children did not have to worry about money"
>
> (Program manager, Local and national)

These discrepancies may result from the structure of the household and whether the woman is the sole head of the household or not.

Finally, at community level, a previous qualitative evaluation had identified that tensions between beneficiary and non-beneficiary households as a result of the CGP were stronger amongst women, although the reasons for this gender difference were not provided (Oxford Policy Management *et al.*, 2014).

Discussion

This article explored CGP stakeholders' understanding and operationalization of the concept of economic empowerment and its associated terminology in this CT program. We assessed how local, national and international stakeholders involved in different steps of the program defined this concept, saw its role(s) and its effects in the CGP. Then we compared these findings with those from program documents.

Main findings

The complexity of economic empowerment found in the literature was reflected in our study in the diversity of definition dimensions identified in the desk review and the interviews (Luttrell *et al.*, 2009). Both the interviews and the documents widely acknowledged the multi-dimensional nature of economic empowerment, by including several of these dimensions in their respective definitions. Some dimensions made consensus, namely access to economic resources and opportunities, agency, and social and economic inclusion. Access to economic resources and opportunities in particular was the most prominent dimension across the interviews and the desk review. This focus on resources might reflect an approach to social protection still driven by the risk management model rather than by a more transformative approach, where the concept empowerment in its complexity is more integrated (Molyneux *et al.*, 2016). Interestingly, while the reference to Sen's capabilities approach is widely reflected in the international development literature's definitions of empowerment (Narayan-Parker, 2005; Luttrell *et al.*, 2009; GEH, 2020), this terminology was absent in our study and the concept of capabilities was only selectively reflected in some of the definitions of empowerment provided by stakeholders (in the agency dimension, primarily). Other dimensions - economic empowerment understood as community empowerment or as lifting families out of poverty (graduation) - were less agreed upon in our study and seemed to be a terminology primarily used by specific stakeholders. For example, graduation from poverty was used as a definition primarily by stakeholders in managerial position. Yet, this dimension was not associated with the concept of economic empowerment in the desk review. Similarly, community empowerment was a dimension mainly found in the definitions from implementers at the local level and selected international managers but only appeared in the more recent documents of the desk review.

In this regard, the definition of women's empowerment and gender issues deserves a special attention, as it primarily came from international organizations and stakeholders in position of leadership or cross-country comparison documents. This raises the question of whether these concepts may have been externally imposed or imported onto the program. As this study illustrates, the integration of a gender lens or gender sensitivity into CTs like the CGP was influenced by the global agenda and driven by the approach defined in selected international organizations. Gender was primarily associated with the situation of women, particularly mothers and female heads of households. While this may help raise the profile of such issues in a context where women still face multiple barriers and vulnerabilities (*SADC gender protocol 2015 Barometer - Lesotho*, 2015; OECD, 2019), it also risks missing some of the country's specificities, such as the increased vulnerabilities of boys and young men related to education and related labor opportunities (Jha and Kelleher, 2006; Lefoka, 2007). Secondly, focusing on mothers and female caregivers can reaffirm gender norms, thus failing to empower these women (Nussbaum, 2000; Molyneux, 2006; Holmes and Jones, 2010). In our study, we found that women's empowerment primarily referred to giving women access to or control of economic resources in the household. This contrasts to the findings of previous research on women's empowerment in CTs and international development programs, where this concept was overwhelmingly interpreted (and measured) as meaning agency, particularly women's decision and bargaining power (Malhotra *et al.*, 2005; Peterman *et al.*, 2019). The diversity of dimensions linked to the definition of women's empowerment in our study, especially in the desk review, and the differences in the relative importance of these dimensions between the interviews and the desk review, highlight the diversity and lack of consensus around this concept. Given the international drive behind the definitions found in this study, this diversity and lack of consensus may be a reflection of the debate on the definition and measurement of women's empowerment definition and measurement (Laszlo *et al.*, 2017; GEH, 2020). In the last decades, a number of frameworks and reports have been developed to guide either research or policy and programs on women's empowerment (Laszlo *et al.*, 2017; Gavrilovic *et al.*, 2018b; Banati *et al.*, 2020; GEH, 2020). While these resources have helped raise the visibility and awareness around this issue in CT programs, they may also fail to capture the specific mechanisms and norms at play in a given context – a missed opportunity for an effective operationalization of gender sensitive programing and women's empowerment (Holmes and Jones, 2010).

This diversity of definitions impacted how economic empowerment was integrated into the CGP. First, the three most widely shared definitions of the concept – access to economic resources and opportunities, agency, and social and economic inclusion – were also the dimensions where there was the widest agreement as to the roles they played in the CGP. In comparison, there were more disagreements over the role(s) of community empowerment or lifting families out of poverty, especially between the findings from the interviews and those from the desk reviews. Secondly, the most common dimension of these definitions – economic empowerment as improving access to economic resources – was the most integrated across the program, from the program's goals to processes (e.g. messaging) and perceived effects on beneficiaries. In comparison, the role of economic empowerment as agency was primarily reflected in the CGP's mechanisms of action while the role of economic empowerment as social and economic inclusion was particularly highlighted as an effect of the program. This selective integration of different dimensions of empowerment may result from the dual nature of this concept: a process and an outcome. Luttrell et al. (2009) have already illustrated how taking an instrumentalist or a transformative approach to empowerment tend to lead stakeholders towards a particular type of interventions but also affect their operational choices in a program. These findings further illustrate the operational implications of having different understanding and conception of this concept. The progressive integration of gender issues and women's empowerment was rather unique as it seemed to have been formally integrated into the CGP primarily through program evaluation exercises. The second factor of integration of gender sensitivity seemed to have been pragmatic and driven by the vulnerability of female-headed households, although international stakeholders' definition of gender as women's situation may still have played a role in this process. Indeed, other gendered vulnerabilities (e.g. boys') may have been given comparatively less importance in the targeting of recipients. Finally, our study found that, with the exception of gender issues and women's empowerment, all dimensions of economic empowerment were strengthened in the CGP objectives and mechanisms of action in the later phases, especially in the Cash Plus pilots.

Our study revealed that the operationalization of even the most agreed upon dimensions of the concept of economic empowerment remains incomplete, especially when it came to day-to-day implementation. Indeed, when discussing this concept and its main dimensions as a goal or an objective of the program, these were either described as strategic or implicit goals (rather than operational targets), or their achievement was impeded by other features of the program. For example, access to economic resources

and opportunities were included in the program's theory of change but not necessarily relayed as an objective across the program cycle while social and economic inclusion was only mentioned as an implicit objective by stakeholders in managerial position. Graduating from poverty was mentioned as an objective by selected stakeholders. Yet, both the interviews and the desk review suggest than neither the amount nor the processes were robust enough to achieve this objective in the early phases. Feasibility, given the constraints of the Lesotho context (e.g. institutional capacity; funding; local economic context), appeared to be key drivers of some of these decisions.

Secondly, these findings raise the issues of communication and continuity in the program. The gaps we observe between the strategic and operational levels, or between international, national and local teams may be the result of insufficient communication and consensus building on the program between stakeholders. Staff turnover during and between phases of the program was not only a challenge for this study but may also have contributed to communication issues. While variations in definitions and operationalization of key concepts – if purposeful – may allow more flexibility in a program to respond to local specificities, we found no indication that this was the case in the early phases of the CGP.

Studying the role of these different dimensions and their evolution over time or program cycles illustrate two further findings of this study. The first finding is how the program's design itself can be (dis)empowering or used to mitigate certain concerns from key stakeholders. The roles assigned to communities are a good example of this issue. Communities' involvement in undertaking selective program tasks (e.g. beneficiary selection, case management, evaluation) was linked, in part, to community empowerment as well as social and economic inclusion. At the same time, this involvement of community was used to address some of the stakeholders' concerns over beneficiaries' abusing the transfer and the program creating tensions in the community. While these features of the program did contribute to some dimensions of economic empowerment, they might also negatively impact beneficiaries' agency, thus leading to disempowering processes and effects in this dimension of the concept. The second finding relates to the role of evaluation. Indeed, as previously described in the CGP evaluation, M&E seems to have in part driven the evolution of the program and its subsequent pilots (Pellerano *et al.*, 2016). We have already described how gender sensitivity and women's empowerment issues first formally entered the program in through the first evaluation, although its integration and operationalization remained incomplete. Furthermore, as this study illustrates, some dimensions of economic empowerment that

were primarily present in the effects of the program's early phases (such as social and economic inclusion or community empowerment), became explicit objectives in the later phases, with dedicated activities in the Cash Plus pilots. While other factors may have also contributed to this growing integration of economic empowerment as an objective and focus of the program, rigorous evaluation and research that allowed the exploration of the strategic goals as well as the operational targets may have played a part in strengthening the role of economic empowerment in the CGP. However, it should be noted that as of today, these pilots have been discontinued and not yet replaced or integrated into social protection programs.

Finally, this study identified gaps in the known effects of the CGP, especially in the more disputed dimensions of economic empowerment such as community empowerment and women's agency and choice or preferences. Although this is unsurprising given the limited and debated operationalization of these dimensions in the program, the growing focus of Lesotho's Ministry of Social Development on some of these issues as part of the Community Development Model offers new incentives to build a consensus on these dimensions' role in individual program and a strong M&E system to assess these program's processes and impact (Ministry of Social Development and Government of the Kingdom of Lesotho and UNICEF, 2016).

Implication for the CGP and other CT programs in Africa

This study is a further step towards strengthening economic empowerment in or through CT programs in Lesotho and in Sub-Saharan Africa.

Besides clarifying the definitions and role(s) of economic empowerment, gender issues and women's empowerment from CGP stakeholders' point of view, this study has identified key issues and features of the program relevant beyond this particular context. First, this study illustrates how the economic empowerment of individuals, households, vulnerable groups or communities occurs both out of and through the design of a CT program. Yet, it also highlights how such a complex, multidimensional concept is likely to lead to conflicting processes and effects, as we found in the operationalization of economic empowerment as agency and as community empowerment. Hence, if the objective of economic empowerment is to continue gaining prominence in the CGP or in other CTs, it is essential to carefully map

and understand these processes while building consensus around those deemed most important to the program.

Secondly, our study highlights the gaps found between levels of intervention and program cycles. Although diversity and disagreements are not surprising given the variety and number of stakeholders' involved in the CGP as well as the period of time covered, this signals potential issues in the exchange and transmission of information between the field and the strategic level as well as between the different organizations involved. If the path towards a more empowering and gender-sensitive CT program is pursued further in Sub-Saharan Africa, this points to the importance of discussing and clarifying not only program objectives but also the meaning of keywords like empowerment.

Finally, the study of gender issues and women's empowerment in the CGP raises the issue of new objectives being externally brought in without a full adoption and integration into a national program. Lesotho has committed to mainstreaming gender into its policy and programs while pursuing a gender-sensitive approach in several areas (Government of the Kingdom of Lesotho, 2018). At the same time, both this study and other research on the CGP has highlighted the relevance of gendered processes within households or communities, which may interfere with the impact of the CGP (Sebastian *et al.*, 2017; Carraro and Ferrone, 2019). While international stakeholders may have increased awareness and visibility around these issues, our study shows how the definitions and operationalization of these concepts in the CGP may not be entirely adequate or sufficient in the Lesotho context. This reflects recommendations already formulated in previous research and evaluation on CT regarding the importance of understanding empowerment in context in order to properly measure it (Laszlo *et al.*, 2017; Peterman *et al.*, 2021). This study adds to this recommendation by highlighting how understanding empowerment and gender in context can inform the operationalization and integration of these issues into CTs like the CGP. As previous research has stated, many gaps and debates remain in the definition of women's empowerment as well as in the role this and gender issues play in social protection programs (Peterman *et al.*, 2019, 2021; Laszlo *et al.*, 2020). In response to some of these gaps, this study is a further step towards mapping and understanding how these concepts are perceived and play into complex social protection programs like the CGP. This step is essential in order to guide stakeholder discussion on the role of gender-sensitivity in CTs and better evaluate the impact of such programs.

Limitations

Despite our best efforts in recruiting informants, staff turn-over in selected organization and refusal to take part in this project prevented us from interviewing all the informants initially identified in the sampling strategy. When possible, an alternate stakeholder with either organizational knowledge or involvement in **part** of the phases of interest was identified and interviewed. The desk review was also extensive to try and capture all historical records from program stakeholders and regularly updated with documents provided by the stakeholders.

The present study also focuses on the early phases of the CGP, which started over a decade ago. This may affect the reliability of the information informants recalled, especially as the program evolved and developed over time. At the same, distance from the period of interest allowed informants to be more reflexive or even critical of these early phases, thus providing a richer, more transparent view of the CGP. To limit the risks of recall biases, informants were asked extensive information about when they were involved in the program, what their role was at different points and were probed about the chronology of certain program elements when relevant. References to specific program documents or wider events were also used to contextualize the information. When discrepancies were observed in the analysis, we explored whether these might be explained by an evolution of the program or differences as to when specific informants were involved.

Conclusion

The CGP was initially designed to target the multidimensional vulnerabilities affecting children in a context of widespread poverty, food insecurity and the HIV/AIDS epidemic. Our study illustrates the initial ambitious vision of this program at the strategic level, which explicitly or implicitly touched upon many dimensions of economic empowerment and gender. We identified five key dimensions of economic empowerment: access to economic resources and opportunities, agency, social and economic inclusion, community empowerment and lifting families out of poverty (or graduation). Women's empowerment tended to echo several of these dimensions: women's access to and control over economic resources, women's agency in the households, women's spending and investment choice or preferences, women's social and economic inclusion in their communities, gender relations and gendered constraints driving women's disadvantage. As for gender issues, gender was overwhelmingly used to refer to the situation of women (in general or female head of households specifically). There were areas of consensus on how these different constructs were understood and

operationalized. The majority of sources and informants identified more than one dimensions in their definitions of these concepts, thus illustrating the complexity of these concepts as applied to the CGP. Economic empowerment as access to economic resources and opportunities (for beneficiaries as a whole or for women in particular) was the most prominent and integrated dimension of economic empowerment across the program. However, our study found a number of discrepancies and disagreements in the operationalization of these different concepts, affecting the least agreed upon definitions in particular. Secondly, with the exception of access to resources, all other dimensions of these concepts were operationalized selectively throughout the program. This uneven operationalization has highlighted how different empowerment processes may conflict with one another, thus affecting the impacts of the program. However, these discrepancies have also highlighted more systematic divisions, particularly between the strategic and operational levels of the program – pointing to operationalization gaps as well as stakeholder-specific agendas and priorities. Because of their debated role(s) and importance in the CGP, a number of potential effects of the CGP, such as its community empowerment and women's empowerment effects, remain under studied.

List of abbreviations

CGP: Child Grants Program

CT: cash transfers

DFID: Department for International Development

FAO: Food and Agriculture Organization

ICWH: Improving Child Wellbeing and Household Resiliency

LFSSP: Linking Food Security to Social Protection Programme

LMICs: low- and middle-income countries

M&E: Monitoring and evaluation

MoSD: Ministry of Social Development

NISSA: National Information System for Social Assistance

OCV: orphans and vulnerable children

SPRINGS: Sustainable Poverty Reduction through Income, Nutrition, and Access to Government Services

UN CERF: United Nations Central emergency response fund

UNCTAD: United Nations Conference on Trade and Development

VAC: Village Assistance Committee

WEE: Women's economic empowerment

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PAPER 4. EXPLORING HEALTH EQUITY IN LESOTHO'S CHILD GRANTS PROGRAM. A QUALITATIVE STUDY.

Exploring health equity in Lesotho's Child Grants Program. A qualitative study.

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Author's contribution:

- Conception or design of the work: EB; VK; CS; KM
- Data collection: EB; TH; KB
- Data analysis and interpretation: EB; VK; TH;
- Drafting the article: EB
- Critical revision of the article: VK; TH; KB; CS; KM
- Final approval of the version to be submitted: EB; VK; TH; KB; CS; KM

Keywords: child health; cash transfer; Lesotho; health equity; economic empowerment; social protection

Abbreviated running title: Health equity in Lesotho's CGP

Key messages:

- The CGP had a holistic and ambitious vision, which explicitly or implicitly touched upon many dimensions of child health and health equity.
- Despite some consensus on how the concept was understood, there were wide variations in the operationalization of the different dimensions of health equity and child health.
- Even the dimensions of health equity most stakeholders and documents agreed upon, didn't seem fully operationalized throughout the program, especially in the day-to-day operations and M&E at the local level.
- A number of potential health equity effects of the CGP remain under studied while other effects related to specific health disadvantages or gaps may have been weakened by operationalization challenges.

Word count: 10 501

Ethical approval

As no health or sensitive data would be collected, the study did not require clearance from the Norwegian Regional Committees for Medical and Health Research Ethics or from the Basotho authorities. However, prior to the interviews and in line with national data protection laws, we gave a notification to the Norwegian Centre for Research Data regarding the project (NSD Notification Form 828582). For the storage and management of personal data, we obtained written consent from individual informants, using the NSD template letter and form.

For the desk review, we primarily relied on documents publicly available online. For those that were not publicly available, we sought authorization to access and include the documents from the authors/editors or the organizations that generated or published these records.

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Competing interests:

The authors have declared that no competing interests exist.

Abstract

Despite their growing popularity, little is known about how cash transfers can affect health disparities in targeted communities. Lesotho's Child Grants Program (CGP) is an unconditional cash transfer targeting poor and vulnerable households with children. Started in 2009, the CGP is one of Lesotho's key programs in developing the country's social protection system. Using the CGP's early phases as a case study, this research aims to capture how program stakeholders understood and operationalized the concept of health equity in Lesotho's CGP.

The qualitative analysis relied on a desk review and semi-structured key informant interviews with program stakeholders. The program documents were coded deductively while the interview transcripts were coded inductively. Both materials were analyzed thematically before comparing their findings. When differences or disagreements arose within a theme, we explored potential determining factors for these variations according to the program's chronology, the stakeholders' affiliations and their role(s) in the CGP.

The definitions of health equity in the context of the CGP reflected the complexity and multi-dimensional (or even debated) nature of the concept. This concept was overwhelmingly defined as focusing on children's access to health services for the most disadvantaged households. There was less agreement about other definitions of the concept, which seemed to be terminologies primarily used by specific stakeholders. These discrepancies in the definitions were further reflected in the role this concept played in the CGP, as the least common definitions were also comparatively less integrated into the program. Even the most common definitions of this concept didn't seem fully operationalized throughout the program, especially in the day-to-day operations and reporting at the local level. This operationalization gap not only affected the study of selected health spillover effects of the CGP but also might have undermined other program impacts related to specific health disadvantages or gaps.

Background

Cash transfers (CT) have been increasingly used in low- and middle-income countries (LMICs) as a poverty reduction and social protection tool (Bastagli *et al.*, 2016). CTs are programs providing non-contributory monetary grants to individuals (UNICEF-ESARO and Transfer Project, 2015). There is evidence that CT

programs are associated with increased use of child health services, improvements in child health and nutrition while simultaneously addressing numerous social determinants of health for beneficiary households, such as school attendance, asset ownership, social capital, and empowerment (Lagarde *et al.*, 2009; Owusu-Addo and Cross, 2014; Bastagli *et al.*, 2016; Bonilla *et al.*, 2017; Pega *et al.*, 2017; Walque, 2017). However, despite their potential for improving health equity, considerably less is known about the consequences and implications of these programs for health disparities among children.

Started in 2009, Lesotho's Child Grants Program (CGP) aims to improve the living standards of orphans and vulnerable children (OVC) to reduce malnutrition, improve health status and increase school enrollment (Pellerano *et al.*, 2014a). It is an unconditional CT targeting poor and vulnerable households with children. From three Community Councils (about 1,250 households) in 2009 the program grew to 10 Community Councils (2,300 households) in 2013 at the time of the first evaluation. The CGP was also expanded from three districts (Qacha's Nek, Mafeteng and Maseru) to five districts (Qacha's Nek, Maseru, Leribe, Berea and Mafeteng). All these Community Councils were located in rural areas in the lowlands and foothills, with limited access to health services and markets (Pellerano *et al.*, 2014a). In the 2014 evaluation, the CGP showed promising results regarding selected economic outcomes, child health outcomes and determinants of health amongst beneficiary households. However, the health and human development effects of the program on the wider community haven't been studied. While the CGP's theory of change[1] highlighted the key aim of reducing inequalities (including in child health)(Pellerano *et al.*, 2014a), the definition and integration of this concept into the program remains unclear.

The Empowerment for Health Equity – Lesotho (E4HE Lesotho) project intends to inform the study of health inequalities and power issues in CTs like the CGP. Using a mixed method approach exploring the CGP as a case study, the E4HE Lesotho project aims to understand the effect of the CGP on the health gap or gradient in young children in the targeted communities, particularly in regard to various economic empowerment pathways. As a result, it will help inform future phases of the CGP's health equity and

[1] Theory of change is a methodology designed to support development programs' strategic planning and evaluation. Amongst other applications, a theory of change can be used to detail the logical sequence of a program, describing how individual activities might lead to the desired change or outcomes, and the different pathways though which this change may occur (Vogel, 2012).

economic empowerment approaches, as well as inform other CT programs. This article is the second of the E4HE Lesotho series and focuses on how the concept of health equity was perceived and operationalized by CGP stakeholders in the early phases of the program.

Aim and research questions

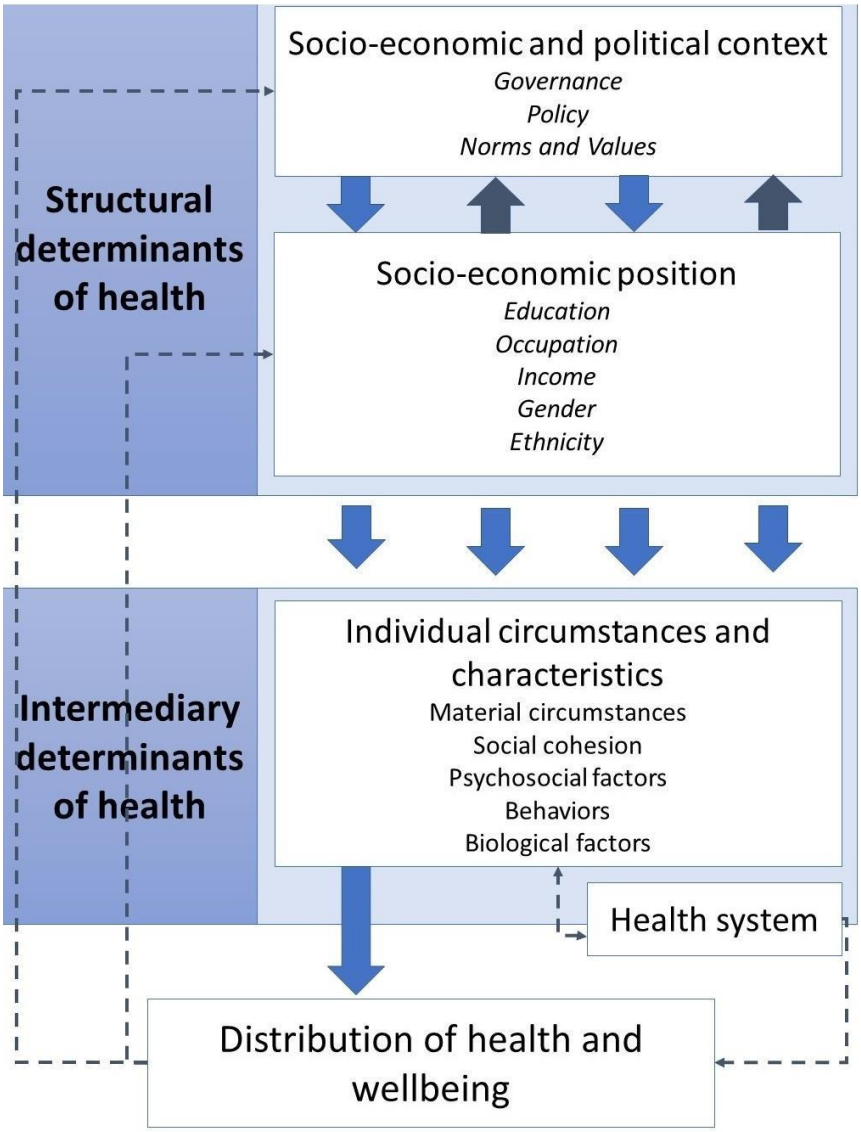
To inform the study of health inequalities and power issues in CTs like the CGP, this study aims to capture how program stakeholders understood and operationalized "health equity" in the early phases of Lesotho's CGP, prior to the introduction of complementary or Cash Plus pilots. More specifically, this study aimed to answer the following questions:

- How do program stakeholders define the concept of health equity?
- What role do they see this concept play in the program?
- Did these roles and definitions evolve over time?
- How do the program stakeholders perceive the effects of the CGP on child health equity in the treatment communities?

Theoretical framework: understanding health equity

There are different ways to define health (in)equity. However, a key idea behind this concept is that health is shaped by factors around us that are at least partially beyond our control (see Figure 1). These personal, social, economic, political or environmental factors are known as determinants of health, as they shape the health of an individual or a population. In this regard, young children are particularly vulnerable as they are dependent on others for their health and development and their basic needs (Black *et al.*, 2017). Hence, child health is determined both by children's individual specificities and by the circumstances in which they and their caregivers live, work, and age, as well as the systems put in place to deal with these issues (Commission on Social Determinants of Health, 2008). Disparities in these determinants can lead to inequalities or inequities in child health.

*Figure 1. An overview of the determinants of health - WHO Commission on the Social Determinants Health's framework**



**Adapted from the Commission's Discussion paper 2 (Solar O and Irwin A, 2010)*

In their more neutral definition, health inequalities refer to disparities or differences in different health indicators and outcomes (Kawachi *et al.*, 2002). However, the term is often used interchangeably with health inequities, defined as avoidable inequalities (Whitehead and Dahlgren, 2006; Commission on Social Determinants of Health, 2008). As they are socially constructed, these types of inequalities are considered unfair and unjust. Hence, the notion of equity also implies a moral aspect around what is fair in a society (Commission on Social Determinants of Health, 2008; WHO Social Determinants of Health team, 2013).

Graham's typology of policies and interventions further illustrates some of the different conceptions and definitions of health inequalities (Graham, 2004). At one end of the continuum, health inequalities are equivalent to health disadvantages resulting from the poverty and exclusion faced by a specific group. Thus, addressing health inequalities involves targeted interventions focusing on the needs and vulnerabilities of that group in order to ensure a minimum health "level" – or floor. As this definition does not take into account the rest of the population, interventions following this approach, while leading to absolute improvements in the targeted group's health outcomes, may still result in growing disparities between that group and the rest of the population. Under this scenario, a CT program like the CGP would lead to improvement amongst beneficiary children over time (and/or as compared to a similar control group not receiving the intervention), thus reducing their health disadvantage but not necessarily the disparities between beneficiaries and other children in the community.

Approaching health inequalities as the disparities in health between two groups is what Graham defines as the "health gap," which often refer to the difference between the worst-off and the better-off in a population. While such a definition of health inequalities involves more ambitious targets than that of health disadvantages, it still focuses on disadvantaged groups, whose health should "catch-up" to that of the better offs through targeted interventions. Hence, it may ignore the factors and structures that may lead to the privileged position enjoyed by the better-off group while also ignoring those in-between these two groups. Under this approach, a CT program would make beneficiaries' health improve faster than the health of other children.

At the end of the spectrum, health inequalities are defined as a gradient, directly related to the socioeconomic structure of a population. Therefore, reducing the health gradient involves a population-

wide approach that addresses the systemic factors behind such a socioeconomic gradient in order to give each group an “equal chance” to achieve good health. This definition does not imply that health in the most privileged groups stagnates or worsens but rather that health in the other groups must improve faster through a comprehensive policy targeting the roots of inequity. This scenario implies that a CT program affects the wider community directly or indirectly and leads to structural changes that makes the whole community healthier and more equitable.

As Graham’s typology illustrates, one’s definition of health inequalities and approach to tackling them implies a specific response and approach to health equity. Hence, to understand how CT programs might affect child health disparities, it is essential to understand what conception(s) of health equity was adopted in the program and how that concept was put into practice.

Method

Study design

This article follows the same methodology as the first one in our series, as further described in this section. Our qualitative case study relied on the triangulation of information from a review of CGP documents (e.g. briefs, analyses and reports generated by program stakeholders) and semi-structured key informant interviews with CGP stakeholders.

We primarily focus on the CGP’s early phases (2009-2013), before complementary interventions (Cash Plus) were implemented alongside the program. However, to better understand the evolution of the concepts overtime, we have also considered elements from the pilot phase (pre-2009) and the post-evaluation phase (post-2014) when relevant.

Study setting

The United Nations Conference on Trade and Development (UNCTAD) has designated Lesotho as a “least developed country” since the creation of the category in 1971 (UNICEF Lesotho, 2019). When the CGP was introduced in 2009, more than half of Lesotho's children lived in absolute poverty (i.e. they were deprived in two or more essential dimensions), with rates up to 80% in the mountain areas (UNICEF, 2011).

Lesotho had the third highest HIV prevalence rate globally, with an estimated 23% of its adult population living with the virus (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; UNICEF, 2011). The HIV/AIDS epidemic had ripple effects for child health, fueling rising trends in maternal and child mortality in the years prior to the establishment of the CGP (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; UNFPA, 2012). In terms of governance, tensions between political parties, a struggling economy and persistent social and gender inequalities had contributed to recurring political instability (Shale, 2021). Because of Lesotho's economic dependence on its neighbor, South Africa's economic crisis in the 1990s and the retrenchment of thousands of Basotho mine workers had lasting impacts on both national and households' revenues and employment, especially in rural communities heavily dependent on these remittances (UNICEF, 2011; Granvik and UNU-WIDER, 2016; Ministry of Labour and Employment and IOM, 2017). Finally, Lesotho has faced regular extreme weather events, further exacerbating food insecurity (Shale, 2021).

Lesotho has three main governmental CT programs, making CTs a key tool in Lesotho's social protection policy (Table 1) (Granvik and UNU-WIDER, 2016). When the Ministry of Social Development (MoSD) was created in 2012, these programs alone were worth over 400 million maloti (LSL) (about 2.5% of Lesotho's GDP) (Smith *et al.*, 2013).

*Table 1. Overview of CT programs in Lesotho (as of **2012**)* (Smith *et al.*, 2013)

CT program	Target population	Benefits	Number of beneficiaries	Annual expenditure	Started in	Leading governmental institution
Public assistance	"Destitute" (extremely poor individual)	In-kind or cash transfers of an average of LSL 100 /month /person	9 500 individuals	LSL 13 million Source: Government funding	1970's	MoSD[a]
Old Age Pension	All Basotho over 70 years old (excluding civil servant pensioners)	Cash transfers of LSL 350 /month /person	84 000 individuals	LSL 371 million Source: Government funding	2004	Ministry of Finance
Child Grants Program	Poor and vulnerable households with children	Cash transfers of LSL 360 /quarter /household (later modulated from LSL 300 to 750 according to the number of children)	10 000 households	LSL 16,5 million Source: European Commission	2009	MoSD[a]

[a] Previously under the Department of Social Welfare in the Ministry of Health and Social Welfare

Initiated following an assessment and pilot led by the European Commission (2005-2009), the CGP was first designed as a response to the HIV/AIDS epidemic in the country and the resulting rising number of OVC (Pellerano *et al.*, 2016). Unlike other CTs in place in Lesotho at the time, the CGP targeted households rather than individuals. Beneficiary households were selected through a mixed method of Proxy Means Testing and community validation. Proxy Means Testing is a census-based targeting designed to identify ultra-poor and very poor households in the community.[2] Since 2010, this process has been run by

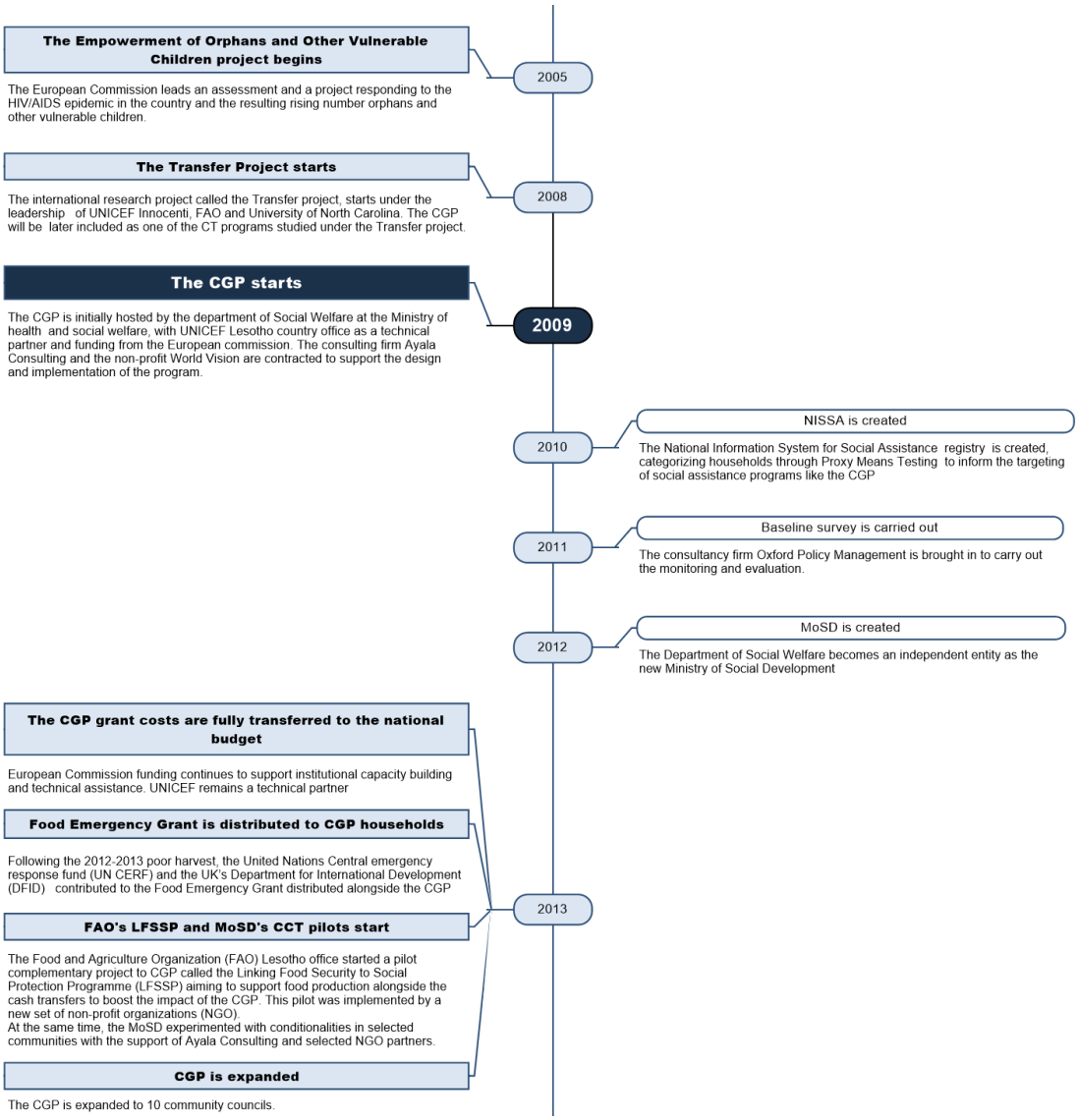
[2] In Lesotho, the Proxy Means Testing took into account elements such as dwelling conditions, households characteristics and the ownership of selective assets to assess household's level of poverty (Pellerano *et al.*, 2014a).

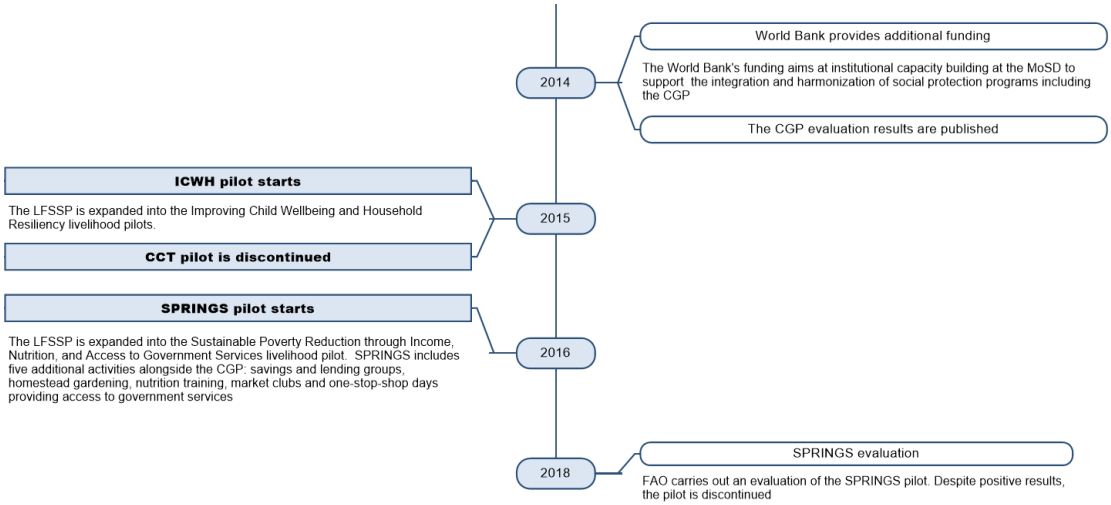
the National Information System for Social Assistance (NISSA). Community validation relied on local communities or their representatives to identify or review the list of potential beneficiaries, in order to select vulnerable households.[3] As an unconditional CT, the CGP didn't require beneficiaries to meet pre-defined targets or undertake specific activities to remain in the program. However, the CGP included strong messaging by staff at pay points and by their community that the transfer was to be used for the children ("soft conditionality"). The CGP was initially designed as a randomized controlled trial. The program randomly assigned electoral divisions in each Community Council to a treatment group (where the CGP was distributed to eligible) or a control group. In control areas, eligible households were identified according to the same process as in treatment areas but the implementation of the CGP was delayed until after the first evaluation.

Figure 2 provides an overview of the CGP's timeline and the organizations involved.

[3] The role and importance of communities in the CGP beneficiary selection process as well as the methodology used evolved over time.

Figure 2. Overview of the CGP between 2005 and 2018 (Pellerano *et al.*, 2014a, 2016; UNC Carolina Population Center *et al.*, 2019; Bhalla, 2021)





Data collection

Data collection was first informed by a mapping of CGP stakeholders using program documents. We regularly updated this initial mapping further to the findings of the desk review and contacts provided by key informants. To help contextualize the study, at the beginning of the data collection phase we also consulted UN agencies in Lesotho with knowledge of the country's economics, politics, gender, human rights, child health and nutrition.

For the desk review, we carried out a manual search of the following stakeholder websites and associated program's pages between November 2020 and January 2021 (see Annex 1 for links to webpages): the Transfer project, UNICEF, UNICEF Innocenti, FAO and its "From Protection to Production" project pages, the Government of Lesotho's Ministry of Social Development, the University of North Carolina at Chapel Hill's Carolina Population Center, the European Commission and its Delegation to Lesotho, the UK's Department for International Development (DFID), United Nations Central Emergency Response Fund (UN CERF), Ayala Consulting, World Vision, Oxford Policy Management, Sechaba Consultants, and

Economic Policy Research Institute. We included 51 program documents of the 60 documents we screened. These 51 documents can be described as follows: 19 monitoring and evaluation (M&E) reports, 12 academic papers produced by program stakeholders, 10 manuals designed to guide the different stage of the program cycle (e.g. operational manuals, M&E guides), three program instruments (e.g. survey questionnaires), three stakeholder reports describing their contribution and activities in the CGP (e.g. annual reports), three internal briefings and one press release.

The sampling strategy for the key informant interviews with stakeholders relied on both purposive and snowballing sampling. Key informants had to be either a stakeholder who was directly involved in the CGP (including professionals that might have moved on to a new position) and/or a professional able to present the point of view of the organizations involved in the program (referred to as "Organizational Point of View"). To ensure good coverage of the different perspectives on the program, our sampling strategy took into account the organizations key informants worked for or represented, their role(s) in the CGP (organizational point of view, team/program management, operations, or analyst/researcher) and the part(s) of the program cycle they were involved in (strategic development and program planning, resource mobilization, implementation, monitoring and evaluation (M&E) and/or research). We developed the initial list of key informants based on our stakeholder map. Then the list was reviewed and complemented by the UNICEF Lesotho country office focal point. Further contacts and stakeholders were added when relevant as the interviews progressed, based on the information and contacts provided by the key informants themselves. For example, due to period covered and staff turnover in some of the targeted organizations, the same role might have been covered by two different informants over time or the same informants might have held more than one position in the CGP. To improve participation, UNICEF Lesotho and the research liaison at the National University of Lesotho provided introductions by email or phone and facilitated interview planning with potential informants whenever possible. When a target informant could not be reached or refused to participate, we attempted to secure an alternate contact. Despite these efforts, we were unable to reach or secure interviews with five of our target informants.

We developed an interview guide for each type of stakeholder, based on their role in the CGP. To respect infection control guidance in place during the data collection period, all the interviews took place online. To make sure that access to the internet was not a barrier, the team offered to cover the cost of mobile data for the time of the interview if the informant did not have access to a stable institutional connection

in Lesotho (however, this did not happen to be the case with any of the interviews). In total, we conducted and audio-recorded interviews with twenty-five key informants from UNICEF entities, the MoSD, the European Commission Delegation in Lesotho, Oxford Policy Management, FAO, World Vision, Ayala consulting and the World Bank Lesotho.

After each interview and during the desk review, we wrote short memos to identify potential disagreements or new themes. These memos were also used to adapt the interview guide and prioritize questions with individual stakeholders. The project leader and the research assistant transcribed and anonymized each interview, using the interview recording and notes. We assigned a code to each informant during data cleaning and coding to ensure anonymity.

Data coding and analysis

Both the documents collected for the desk review and the interview transcripts were coded using NVivo 12.

For desk review, the coding framework was developed deductively, based on the literature (Kabeer, 1999; Graham, 2004; Laszlo *et al.*, 2020), the type of document, and the program cycle's phase covered. To test the suitability of the coding framework and inter-rater reliability between coders, we piloted this coding system with a first batch of five documents that were coded both by the lead researcher and the research assistant. Discrepancies in coding were discussed between the coders and resolved by consensus. After the pilot, the coding framework was reviewed accordingly. The rest of the documents were split between the two coders, with a sample being cross-checked by the other coder. To discuss and solve discrepancies and challenges in document coding, the coders met regularly throughout the coding process. These meetings also allowed us to exchange questions, thoughts and reflections about the study. These discussions were turned into memos used to inform the interviews and the analysis.

To allow more flexibility and the emergence of new unexpected themes, we coded the interview transcripts inductively. Although all the transcripts were coded by the same coder, a qualitative method specialist carried out periodic quality checks to ensure consistency. After the first cycle of coding, we grouped the inductive codes into pre-defined categories similar to those used for the document coding, with some flexibility to allow new categories arising from interviews. As with document coding, we kept notes and memos throughout the coding process to help identify patterns and themes.

To prepare the data for analysis, we initially categorized the collected documents and interview transcripts by organization and stakeholder characteristics (according to role and program cycle). However, we discovered that this approach was inadequate to capture the different understandings and operationalization revealed by the data. Instead, a thematic analysis was conducted. As a first step, we reviewed our memos and applied the NVivo word frequency function on individual transcripts or coded sections in the reviewed documents to help identify emerging themes. We also ran two-way matrices on our contextual codes and each code category (e.g. definitions, roles or effects) to identify potential interactions and better contextualization of the data. When differences or disagreements arose within a theme, we explored potential determining factors for these variations using additional two-way matrices and charts. With these tools, we would observe the distribution of different points of view across stakeholders' organizations and characteristics (according to role and program cycle); whether informants belonged to an international, national or local team or entity; and the period of the CGP the informants or documents covered. We analyzed the documents and interview transcripts separately, before comparing the findings for individual themes.

Validation

To validate our findings, preliminary conclusions and early drafts were shared and discussed with UNICEF Lesotho and the focal point of the MoSD.

Results

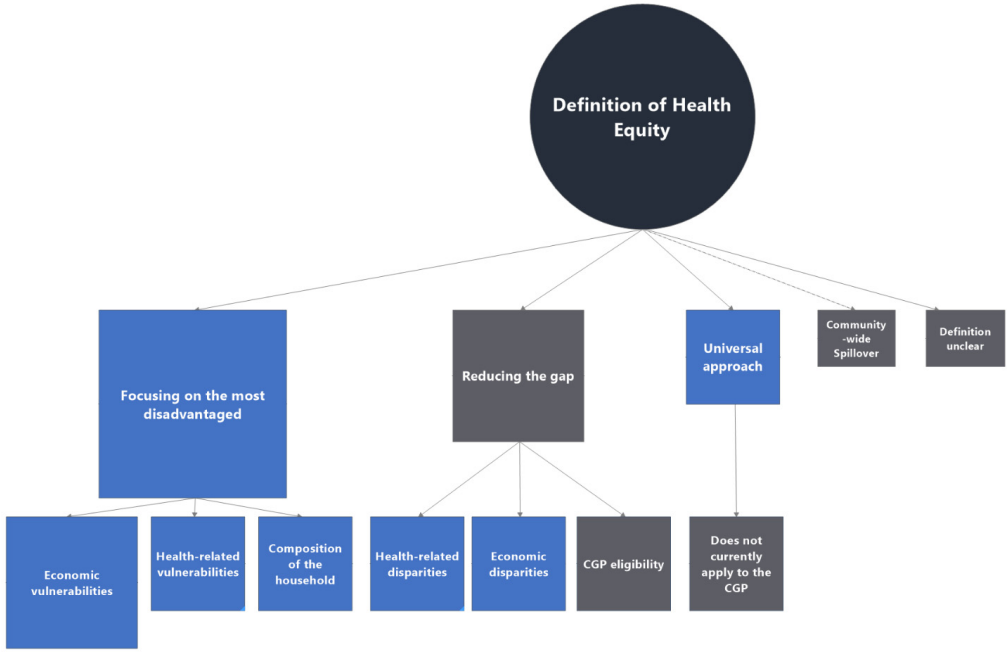
Definitions of key concepts

The definition of health equity varied among and was occasionally unclear to stakeholders, reflecting the complexity of such a construct. However, probing for specific terminology from our theoretical framework and analyzing the meaning of child health separately allowed us to identify some key features. Both health equity and child health were defined as multidimensional constructs, where individual definitions included two or more key dimensions. For health equity, the most prominent dimension was that of health equity as *focusing on the most disadvantaged part of the population*, although the definition of what constitutes that disadvantage was multifactorial and had broadened over time. Health equity as *closing the gap* was far less common, with differences between the interviews and the desk reviews as to which factors determined that gap. Other definitions of health equity, *universalism* and *spillover*, were not

applicable to the CGP or seen as minor, respectively. Child health was primarily defined as *access to health services and medicines*, on its own or alongside other health outcomes related to *nutrition* or *child health status*.

First, we review the findings of the interviews before comparing these findings with those of the desk review. Then, we present our findings on the definitions of child health.

*Figure 3. Mapping the definitions of health equity in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

Defining Health Equity

Although the term "equity" was used in reviewed documents and by almost all program stakeholders, the meaning of this term – either on its own or associated to health – was complex or even unclear. In fact, findings from the interviews showed how stakeholders' definitions included several of the dimensions presented in our theoretical framework (Figure 3). When exploring individual dimensions of the concept, interviews and documents overwhelmingly defined health equity as *focusing on the most disadvantaged part of the population*. The definition of that disadvantage was acknowledged as a multidimensional phenomenon, which had broadened as the CGP evolved, bringing together economic, health and household-related elements. These definitions of disadvantage were also associated with key contextual

factors increasing households' or children's vulnerability in Lesotho, as well as evolution in the targeting method, giving more flexibility to reflect the local context. *Closing a gap* between two groups was comparatively much less common and the characteristics defining the two groups differed between the interviews and the desk review. As for the *universal* approach to equity, neither the interviews nor the desk review applied this definition to the CGP. However, a population- or community-wide perspective on health equity was found amongst selected informants from international organizations and included *community-wide spillovers* in their definitions.

Twenty-three of the 25 stakeholders interviewed discussed the definition of health equity. At the institutional level, equity – in general or related to health– was presented as a key principle or objective for informants from two of the international organizations involved in the CGP. However, five stakeholders across the program cycle, especially at the lower operational level, raised questions as to what the terminology actually meant (Box 1).

Box 1

> "No, I haven't really seen the notion [of] health equity. Maybe that's why I'm asking you to unpack it for me because if you do, I can understand. We were not using the term."
> (Implementer, Local)
>
> "I think people probably did understand different things by it, but it certainly was in the dialogue."
> (Evaluator, International)

Another stakeholder also commented that this term was rather recent and would not have appeared in the early phases of the CGP (Box 2).

Box 2

> "Health equity is quite recent as a term, if I'm not mistaken. So we never talked about that initially in the first phase."
> (Resource mobilization, International)

However, when probed further about specific elements of the program and dimensions of health and equity, these stakeholders did provide valuable definitions.

Twenty-two of the 23 stakeholders that provided definitions in their interviews, linked health equity to *focusing on the most disadvantaged part of the population*. This focus on health equity as *addressing the needs of the most disadvantaged* most likely reflects the program's targeted approach (see 'From theory to practice: role of Health Equity in the CGP'). Only two implementers defined this concept as *closing or addressing a gap between two groups* and three other stakeholders – a researcher and two implementers – linked it to a *universal approach* (Box 3).

Box 3

> "The objective from the beginning was to alleviate or maybe like close the gap, the health gap that this one shouldn't be ignored because of their vulnerability."
> (Planner, National)
>
> "Equity discussions would come in a context where social protection is a bit more mature. When you talk about equity, you're talking about a social protection platform where the total population in a country can have access to social protection. I think, for now, in Lesotho and in a lot of sub–Saharan African countries, they're in the stage before where social protection['s] aim is to enhance extremely poor people's situation so they can try to exit the cycle of poverty."
> (Implementer, International)

However, as these quotes show, the majority of stakeholders included several dimensions of health equity in their definitions of the concept. In fact, only five stakeholders included only one dimension in their definition.

When probed for more detail for each of these different definitions, a greater variety emerges, with the definitions linked to the notions of a gap or universalism becoming more broadly reflected. For example, seven stakeholders referred to a *gap* in their definition while five stakeholders referred to elements linked

to universalism. When referring to a gap as a difference between two groups, stakeholders primarily highlighted health-related and economic disparities between households (Box 4).

Box 4

> "When we introduced the conditional cash transfer, some were not able to access health services. This means that there was a discrepancy between those who were able to access the services and those who were not. So, when [health equity] came up, I understood it to mean that those were not able to access the services should be at the same level of those who access the services."
> (Implementer, Local)
>
> "Our perspective is one of equity, of a program improving equity at the community level, because those people, economically, were left behind."
> (Program Manager, International)

Although the *universal* approach to equity – a progressive approach to covering the whole population – was discussed in the interviews, stakeholders suggested that this definition is not currently applied in the CGP, although it has become a goal in some of the international stakeholders' social protection strategy (Box 5).

Box 5

> "Social protection interventions, especially cash transfer programs that are actually social assistance interventions, are already targeting poor households. You're already not considering the whole population, but just the bottom part of the distribution in terms of wealth and income. So, I guess that equity was not a priority in the sense that the focus was already on [a] subsample of the population classified as vulnerable, ultra-poor or poor."
> (Researcher/Evaluator, International)

However, a community-wide perspective was not entirely absent in the stakeholders' description of the program. *Community-wide spillovers* were a common notion (See Role of key concepts, Health equity in

the CGP) but not necessarily associated with the definition of equity or health equity, with the exception of two stakeholders representing the organizational point of view of international organizations (Box 6).

Box 6

> "The second part of [this concept] is, when households are in the health system, are they able to access health services? By the child grants' support to the household, then they are able to [provide] those other people with financial support [so that] they are able to access medical care."
>
> (Organizational point of view, International)

Finally, as the CGP targets poor and vulnerable households, the terminology associated with various types of disadvantage was the most prominent in informants' definition of health equity. Twenty-two program stakeholders identified diverse and intersecting dimensions that can constitute vulnerability and/or poverty, hence the absence of a cohesive list across the interviews (Box 7). Certain organizations have also developed a specific terminology to discuss these different vulnerabilities (Box 7).

Box 7

> "Vulnerability is more comprehensive because it's not only monetary poverty, but also involves food insecurity, lack of access to schools, lack of access to health centers, lack of access to financial institutions to obtain credit or to borrow money. So, when I use the terminology vulnerability, I'm considering a broader concept."
> (Researcher/Evaluator, International)
>
> "The overall objective of the program is to reduce child poverty. When I say child poverty, it is about reducing deprivation from access to education, primary health care and then also, support families to have proper access to safe water sanitation. So, it's sort of a combination of four or five indicators" (Program Manager, International)

The various definitions of vulnerability offered by informants can be organized first around economic characteristics, then health-related factors and finally, the composition of the household. Economic characteristics (such as source of income, food security and economic opportunities) were most commonly mentioned, with all but two stakeholders including at least of one these elements in their definition of disadvantage. Health-related factors, such as households affected by illness and especially HIV/AIDS, was the second most common, mentioned by the little over half of the stakeholders. The composition of the household (including the presence of orphans, the number of children or the head of the household being a child or an elderly person) was almost as prominent as the health-related factors in stakeholders' definition of disadvantage (Box 8).

Box 8

> "There was a study that was conducted before [the CGP started], which results revealed that most of these children—orphan children— their parents died of HIV and AIDS and most of them came from poor families. It was discovered that they were not attending school properly and food [security] in the house was not good. They couldn't access the medical services. So, the program was introduced mainly to lessen the impact of HIV and AIDS. We looked at a household that had no regular income. We looked at a child-headed households. We also looked at households that still had parents, but who were poor, who couldn't afford to take the children to school or who couldn't afford to take them for medical services."
> (Implementer, Local)

As this quote illustrates, stakeholders from across the program cycle tended to identify more than one category of disadvantage in their definitions. In fact, 15 stakeholders identified elements belonging to at least two of the three categories we have just described.

A majority of stakeholders across the program cycle, 15 in total, highlighted the link between these different dimensions and contextual factors that led to the development of the CGP: the HIV/AIDS epidemic, poverty (linked to the retrenchment of Basotho migrant workers from South Africa), and food insecurity (linked to recurring adverse climate events) (Box 9).

Box 9

> "The objective of the Child Grant Program was to reduce the adverse impacts that poverty, food insecurity, and also HIV and AIDS had on households that were caring for orphans and vulnerable children"
> (Evaluator, National)

The diversity of these definitions can be explored through different lenses. First, temporally: the focus and inclusiveness of these definitions seem to have broadened over time, moving away from HIV-related vulnerability towards a broader definition mainly focused on poverty (Box 10).

Box 10

> "It was very clear that [the program leaders] wanted to go beyond these orphans or vulnerable children, per definition, and so they defined a target focused on poor households with children"
> (Resource mobilization, International)

Fourteen stakeholders also highlighted that the method used to define the disadvantages targeted by the CGP changed as the process and tools evolved but also, according to the importance given to community-based targeting (Box 11).

Box 11

> "I think the targeting has gone through phases. As I indicated, in the current targeting methodology, the broad base focus is poverty. NISSA - which is the main targeting system - has four categories. They classify households into four categories. (…) From there they do what is called community-based targeting. The community-based targeting is done in such a manner that all households will gather in a particular place and they will classify the households following the four categories. (…) You will understand that in **this** methodology, the community-based targeting carries more weight."
> (Implementer, International)

"We want to have standard criteria, but it depends on the local knowledge of a village. When we wanted to strengthen the community assessment component of this NISSA methodology, we solicited some assistance from consultants."
(Evaluator, National)

When this targeting method is given more weight, the communities seem to be given more flexibility in applying different criteria. Yet, stakeholders were divided as to whether this flexibility led to actual differences in how communities defined who is disadvantaged or vulnerable (Box 12).

Box 12

"The definitions would differ depending on the topography because our country is divided into four regions, so the definitions would definitely differ. What we found when we piloted is that even with different locations with slightly different standard of living, cultural differences, there was not much difference basically. [Communities] understood [the concept of poverty] universally amongst those three locations where we were piloting."

(Implementation Manager, Local and national)

"Our beneficiaries come from [locality] and other urban districts. If you look at how we target these households, it differs a bit. We use a different targeting tool. Here in [locality], most of the households, although they look poor, they can still afford most of their basic needs as compared to those who are in the rural areas for whom it is very hard to access services and take their children to school and to health facilities."

(Implementer, Local)

In the later phases, a more formal list of criteria was developed to guide communities' definition of who is vulnerable, although some flexibility remains according to local specificities (Box 13).

Box 13

> "For the community-based targeting, we have a guide that is called a wellbeing chart, so the communities will be taken through that wellbeing chart so that they become familiar with the information and the variables. Then, they are allowed and guided into a discussion with the chart. If they feel that in their area, they may want to leave out a particular variable and add one that is missing, they are allowed."
>
> (Implementer, International)

The term "health equity" was absent from the desk review but several dimensions of the concepts, as found in the theoretical framework, were identified. As in the interview, the terminology associated with various types of *disadvantage* was also the most prominent in the reviewed documents (Cerritelli and EU, 2009; Hurrell *et al.*, 2011; Ayala consulting, 2012; Pellerano *et al.*, 2012a; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014a, 2016). Although no consistent list was found in the program documents covering the early phases of the CGP, economic and socio-economic criteria were the most common, followed by households' structure and characteristics (e.g. presence of orphans, child-/elderly-/female-headed households) and finally, health-related vulnerabilities. As M&E documents showed, there was a continuous attention to the contextual factors that might lead or contribute to these factors of vulnerability (UNICEF Lesotho, 2010; Hurrell *et al.*, 2011; Kardan *et al.*, 2011b; Pellerano *et al.*, 2012b; Asfaw *et al.*, 2013; Oxford Policy Management, 2013; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014b; Barca *et al.*, 2015; UNICEF Lesotho, 2017). However, besides the main factors highlighted in the interviews, the desk review also put forward more structural factors such as local market and local economy characteristics, access to services, access to identity documents and institutional support (Hurrell *et al.*, 2011; Kardan *et al.*, 2011b; Oxford Policy Management, 2011; Pellerano *et al.*, 2012b; Oxford Policy Management, 2013; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014b; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015a).

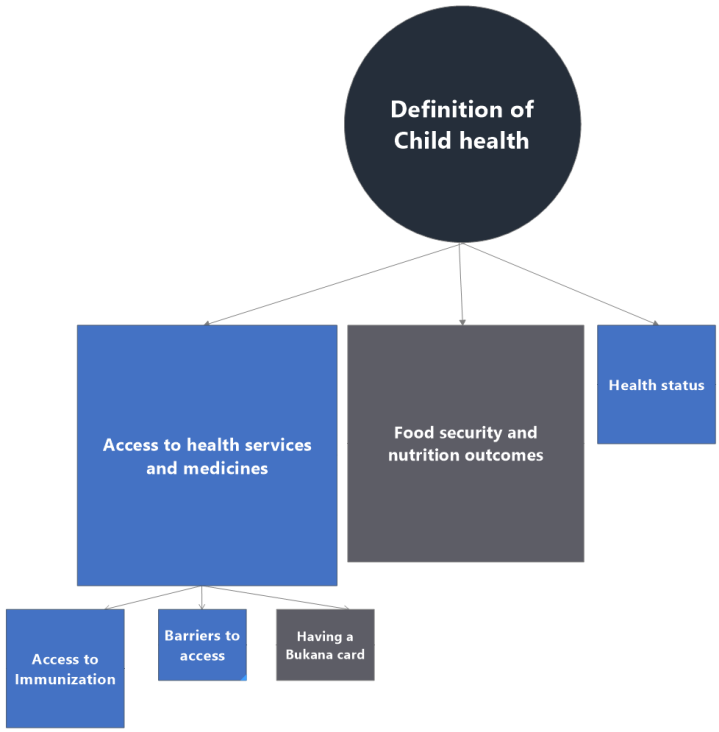
When referring to a *gap* as a difference between two groups, the reviewed documents mainly distinguished between CGP recipients and non-recipients, although the various documents highlighted how this gap was explored across several social, economic and health dimensions (Hurrell *et*

al., 2011; Pellerano et al., 2012a, 2014a). As for the *universal* approach to equity, the desk reviews reflected the findings of the interviews. Although that definition of the concept was present in CGP documents (Pellerano *et al.*, 2012a; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015b; Shafiqul Islam and Ian Orton, 2019), they suggested that this approach was not applied to the CGP, despite its growing influence on international stakeholders' social protection strategy (UNICEF and Overseas Development Institute, 2020).

Defining Child Health

Child health was overwhelmingly defined as *access to health services and medicines* in both the interviews and the desk review (Figure 4). Access to these services was contrasted with the financial and geographical barriers faced by beneficiaries, especially in the desk review. *Health status* (e.g. survival or illnesses) was less common in both program documents and informants' definition. In the interviews, *health status* systematically highlighted alongside access to health services and medicines in child health's definition. This not only demonstrates the central nature of access to health services in the definition of this concept but also stakeholders' awareness of the multidimensional nature of this concept. Although both sources of information considered *food security and nutrition outcomes* an important focus of the CGP, stakeholders were more likely to consider these outcomes part of their definitions of child health, rather than a separate field.

*Figure 4. Mapping the definitions of child health in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

Eighteen stakeholders provided definitions of child health in the context of the CGP. When referring to child health, all but three of these stakeholders referred to *access to health services and medicines*, either in general or regarding specific services and especially immunization. Three stakeholders working at the local and national levels also linked the issue of access to health services with the financial or physical barriers families faced to access child health services in rural Lesotho (Box 14).

Box 14

> "What we knew from the [health objective] was that…Since the health centers are very far of many communities, the patients, whether they are children [or not], struggle to get to the health centers when they are sick. The centers are very far and they don't have transport. So, the messaging was that, when they receive these grants, they should always ensure that there is a little money that is allocated in some cases whenever the children get sick that money is available and used for transport to rush the children to health centers."
> (Implementation Manager, Local and national)

While slightly less common, ten stakeholders also defined *food security and nutrition outcomes* as health. Both of these elements of definitions were found across almost all types of stakeholders regardless of their role in the program (Box 15).

Box 15

> "I think the CGP itself had defined the scope as far as specific health outcomes. They were related to immunization, growth monitoring and to a limited extent nutrition. So that is in as far as health was concerned."
> (Implementer, International)

In contrast, child health understood as *health status* (either in general or as the occurrence of specific illnesses) was far less common and found exclusively amongst five stakeholders in a managerial or leadership position (Box16).

Box 16

> "When we say child health, for us it is about immunization. Then it's about different childhood illnesses - acute respiratory infection, control of diarrheal disease disorders. So there are some basic areas for [our organization] when we say child health"
> (Program Manager, International)

As the previous quotes show, stakeholders often included several of these dimensions in their definitions of child health. With the exception of five stakeholders, all the others defined child health in terms of access to health services and medicines in their definitions, and either nutrition or health status.

A similar pattern of definitions was found in the desk review, although food security and nutritional outcomes tended to be considered separate outcomes rather than child health outcomes (UNICEF Lesotho, 2010; Hurrell *et al.*, 2011; Kardan *et al.*, 2011b; Ayala consulting, 2012; Pellerano *et al.*, 2012b; Oxford Policy Management, 2013; Pellerano *et al.*, 2014b; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015a; Food and Agriculture Organization of the United Nations and FAO, 2015; Davis *et al.*, 2016; Pace *et al.*, 2019a). The reviewed documents also highlighted barriers to access more prominently when discussing health, as well as the importance of having a Bukana card[4] as a proxy for access to healthcare – an element absent from the interviews (Pellerano *et al.*, 2012a, 2014a).

From theory to practice: role of Health Equity in the CGP

The role and importance of health equity in the CGP was affected by the diversity of definitions mentioned above. Focusing on the most disadvantaged had a more prominent role in the CGP than other dimensions of health equity and was present across the program's objectives, mechanisms of action and effects. In contrast, health equity as reducing the gap between groups or as community-wide spillover were primarily present in the CGP's mechanisms of action and selected effects.

We found that the operationalization of health equity in the CGP faced many challenges. Looking at health equity in the CGP's objectives, discrepancies between stakeholders working at different levels and between sources of information in the perceived role played by health equity suggest that this concept - in general terms or referring to the most disadvantaged - was not adequately translated into operational targets or M&E systems. The holistic and ambitious approach that aimed to address the roots of the most disadvantaged's vulnerabilities was also affected by coordination difficulties between different

[4] The Bukana health card is distributed to parents at health care facilities in Lesotho and records key child health indicators - such as weight, height and immunization – from birth until 36 months of age (Pellerano *et al.*, 2012b).

institutions. This operationalization gap was also reflected in how health equity as a mechanism of action or a pathway in the CGP was rather selectively evaluated. This was illustrated in the role of health equity as community-wide spillover, where only three of the five different mechanisms of action had been studied among the effects of the CGP. The discrepancies between sources of information also reflect the relative importance of the different definitions of health equity. Health equity as focusing on the most disadvantaged was not only the most prominent dimension across the CGP's design but also the most agreed upon between interviews and the desk review. In contrast, the absence of health equity as reducing the gap in the findings of the desk review also reflect the minor role of this definition in the program.

We first discuss the role of health equity as a general concept, before exploring the role of the three different definitions of this concept across the CGP's objectives, pathways and mechanisms of action, as well as its effects.

All but one stakeholder provided information on the role of health equity in the CGP. When asked about this concept in general terms, more than half these stakeholders, and especially those involved with the direct implementation of the CGP in the early phases, stated that health equity was not an objective of the CGP. For the ten stakeholders that saw health equity as part of the CGP objectives, they described it rather as a concern, a principle or a goal at the strategic level, which was not translated into operational targets and activities (Box 17).

Box 17

> "[Health equity] was an overarching goal and something in the back of everyone's mind. And of course, the broader objective was to achieve this and consider this, **but,** on the day to day, it wasn't what was being discussed, it wasn't what was being considered."
> (Implementer, International)

This finding is further confirmed by the document review, where the term "health equity" was absent and the term "equity" was used in evaluations and research(Ayala consulting, 2012; Thomson *et al.*, 2012;

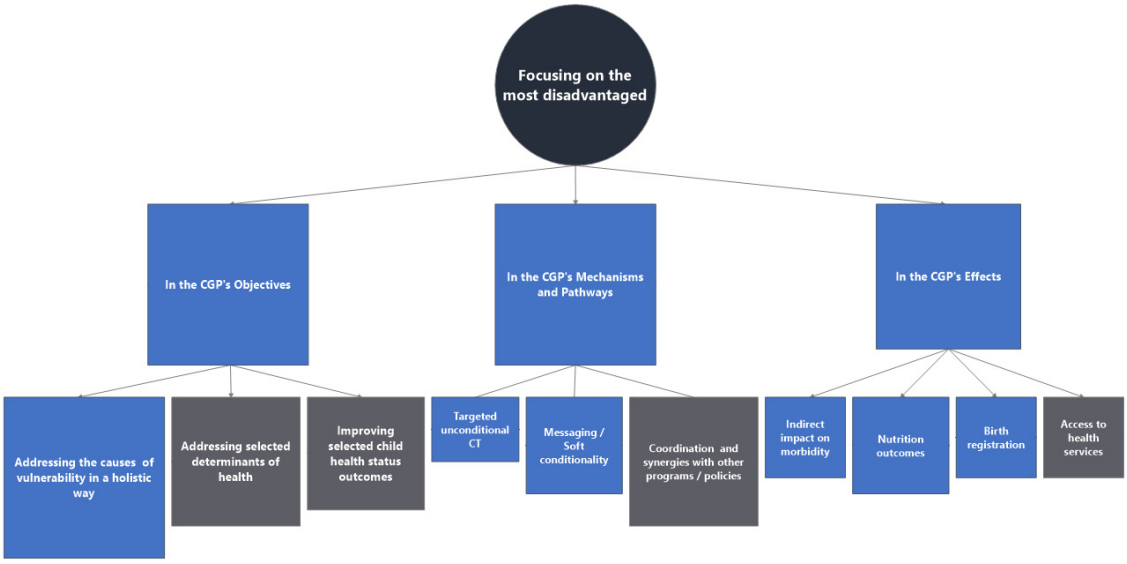
Oxford Policy Management and FAO, 2013; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015b; Pellerano *et al.*, 2016; Daidone *et al.*, 2017), but was widely absent from operational documents such as operations manuals. However, this finding is nuanced when considering the role of individual dimensions of health equity.

Health equity as focusing on the most disadvantaged.

Health equity defined as *focusing on the most disadvantaged* was deeply ingrained in the program, from its objectives to its mechanisms of actions and effects (Figure 5). Both the interviews and the document review highlighted how this dimension of health equity was reflected in some of the key objectives of the program around addressing the root causes of vulnerability and investing in children's human capital. Findings from the interviews pointed to a gap between this dimension of health equity as a strategic objective and as an operational target - an element further confirmed by the desk review. In the CGP's mechanisms of action, this dimension of health equity was reflected across several features such as this CT's targeted approach, its messaging promoting selected health services utilization, and the attempts at linking the CGP with other programs and activities. However, as both sources of information found, this ambitious approach was hampered by several operational challenges. Finally, findings from the interviews widely reflected those of the desk review regarding the CGP's effect on the health disadvantage of beneficiary children, although stakeholders tended to report more positive effects regarding access to healthcare.

In this section, we first explore the findings of the interviews regarding the role of health equity defined as focusing on the most disadvantaged across the CGP's objectives and mechanisms of action. Then we compare these findings to those of the desk review. The effects of the CGP on this dimension of health equity are reported separately.

*Figure 5. Mapping the role(s) of health equity as focusing on the most disadvantaged in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

All but one stakeholder discussed the role of health equity as *focusing on the most disadvantaged*. Unsurprisingly, this definition of the concept appeared as a key objective of the program, as the CGP aims to reduce malnutrition, improve health status and increase school enrollment of children identified as vulnerable. In total, 21 stakeholders discussed this dimension of health equity as a goal or an objective of the CGP (Box 18).

Box 18

> "The CGP was designed and mainly to target the children from poor households and to ensure that they are brought into the mainstream setting of education and health services. (…) We're

mainly focusing on ensuring that the vulnerable children at least meet their daily needs in as far as food is concerned, access to school and access to health."
(Implementer, International)

To achieve this goal, the CGP seemed to have focused particularly on addressing the causes of the vulnerability previously identified in a holistic way and investing in these children's human capital to address vulnerabilities and disadvantage in the long term (Box 19).

Box 19

"We understand and we have seen as [stakeholders] that there is a need for establishment of the program that would really address the needs of the children in general."
(Planner, National)

"The program's intention was to alleviate those households from poverty and being able to help the children with their school needs and every aspect of their daily lives."
(Implementer, Local)

"For us, CGP is a typical program to promote human capital(…) Thanks to CGP, those families were able to send their children to school. In, a society, when children go to school, in a long run you're expecting a society with more educated people, a society where people are contributing, in the economic development sustainable development"
(Program Manager, International)

Over half of the stakeholders from across the program cycle also highlighted how the CGP was addressing selected determinants of health, like hygiene, and access to health services. The physical and financial barriers to these elements were regularly highlighted when describing these objectives (Box 20).

Box 20

> "The other objective was that whenever children fell sick, the parents would always leave out some small amount of money for transport and to take the child to the health centers. When you consider our topography, some health centers are very far so whenever children are sick or any member of the households or any person is sick, they really struggle to get to the health center" (Implementation Manager, Local and national)

As reflected in stakeholders' definition of health, the improvement of specific outcomes regarding child health status, while mentioned, was less common when discussing the early phases of the CGP and primarily focused on nutritional outcomes. Only 11 stakeholders discussed this aspect of child health as an objective of the CGP (Box21).

Box 21

> "Secondly, the program also aimed at reducing malnutrition as well as improving the health status of those children. And also increasing the school enrollment of those children." (Implementation Manager, Local and national)

All of these elements were also reflected in the objectives of the different evaluations, although their importance seemed to vary depending on the evaluation and evaluator. In fact, the relative importance of child health as an objective in the CGP was debated, even when considering the different definitions of the concept previously highlighted. Seven stakeholders, all of them working for international organizations, saw health as an objective of secondary importance compared to broader objectives like poverty reduction or food security (Box 22).

Box 22

> "I do remember going to schools, I do remember interviewing the teachers and exploring [children's] education strongly. I have some vague recollections of speaking to health workers, but I don't remember it being as such pronounced when we were doing our research."
> (Evaluator, International)

> "Our overall objective is to reduce child poverty. So, it's not specific to education, it is not specific to health. It's overall child wellbeing."
> (Program Manager, International)

This debate may also be the result of a divide between the strategic and operational levels. When discussing the focus on the most disadvantaged as an objective of the CGP, seven stakeholders, implementers in particular, described how the overall objective was not actually translated into operational targets (Box 23).

Box 23

> "We wanted to improve health as well as access to health. I can't really say that they were certain standards or quotas set in terms of what we wanted to achieve besides just mentioning them as overall objectives of the program."
> (Program manager, Local and national)

Focusing on the most disadvantaged was also reflected in the mechanisms and pathways the CGP followed or implemented, as 23 stakeholders highlighted. This operationalization of this concept in the CGP mechanisms of action is apparent from the main design features of the program. The choice of a targeted, unconditional CT was described by planners and implementers alike as a strategic choice to maximize impact, although two international stakeholders highlighted more pragmatic motives for this choice (e.g. conditionality not being feasible initially and the need to convince some key stakeholders further) (Box 24).

Box 24

> "I think targeted programs have had more impact on poverty than universal program."
> (Internal M&E, National)

"If you select the very poor and come up with this kind of assistance, then, of course, the outcomes will be positive. Therefore, all the donors become interested and, then we can go into more universal kind of benefits."
(Implementation Manager, International)

"[Speaking about the CGP's targeted approach] we did [the program] the way we did first because of resources; second because of the weakness of the ministry."
(Implementation Manager, International)

As six managers explained, a key mechanism to address health disadvantages was the messaging or soft conditionality, encouraging recipients to attend child health services and vaccination in particular. Birth registration, a pre-requisite to receive the CGP and to access healthcare services, was also promoted (Box 25).

Box 25

"It was a soft condition so that, in addition to receiving [the grant], we asked beneficiaries for example to vaccinate their children or to bring them to health centers when they have health issues."
(Program Manager, International)

The CGP was also coordinated with other health and nutrition activities from non-governmental organizations, international intergovernmental organizations (e.g. UN agencies) or program stakeholders. Reflecting the objectives previously mentioned and the definitions of what constitutes a disadvantage, these other activities were designed to address the roots of vulnerabilities holistically, as six stakeholders explained (Box 26).

Box 26

"Phase one included distributing seeds to the households. It was a wonderful idea, a holistic approach to all the needs of the family: nutrition, education, food security...."

(Implementer, Local)

Seven national stakeholders also highlighted synergies between CGP and other government policies (e.g., free primary care and education) and programs (such as medical exemptions or food support). However, it was unclear whether these synergies were in place in the early phases, as 12 stakeholders mentioned social assistance programs existing in silos or being mutually exclusive (Box27).

Box 27

"There was a lot of policy discussions on that with the government. But when I left, it was still at the level of discussions. There hadn't been any decisions taken by the government. The old age pension was not within the realm of the Ministry of Social Development, the old age pension was managed by the Ministry of Finance. (…) You also had another fund that was for public assistance, to really destitute families. Then you also had other kinds of transfers with the Minister of forestry, agriculture. They had some food-for-work or cash-for-work kind of programs with the World Food Program, FAO and others. But there was no integration, there was no overarching policy that could make sure that the resources were well distributed".
(Resource mobilization, International)

When asked if households could cumulate an Old Age Pension, the Public Assistance and the CGP, a local implementer replied (Box 28):

Box 28

" As far as I know, they can't."
(Implementer, Local)

These mechanisms and pathways designed to implement this focus on the most disadvantaged have been hampered by further operational challenges. Although some coordination and consultation mechanisms between ministries were in place from the start to support the program's holistic approach, these coordination efforts seemed sporadic across the program cycle and levels of implementation. Five

stakeholders reported limited involvement of ministries other than the MoSD, and two national stakeholders explained that existing coordination mechanism didn't directly apply to the CGP (Box 29).

Box 29

> "Since the creation of social development as an [independent] ministry, that has been the missing link between social development and health. We don't share the reports on whether the beneficiaries of these programs still attend the clinics as they supposed to. I think that's the missing link between the two ministries. I think it has to be addressed because I can't confidently say that we are doing well (…) There's a team here, the quality district child protection team, where the health [district representative] is a member and the social development [district representative] is the Secretary. But we don't specifically have those indicators that are attached to this program, we don't report to each other."
>
> (Implementer, Local)

Secondly, it seems that the gap between the strategic and operational levels was reflected in the M&E system of the CGP. When designing the monitoring system, health objectives were not necessarily translated into operational targets. Five of those involved in the CGP's implementation at the local level and its evaluation during these early phases explained that health-related objectives were not part of their day-to-day work or deliverables (Box 30).

Box 30

> "I was chasing very operational targets and I'm sure that, in a different room, [program managers and donors] were talking about outcomes and health targets for example, or education targets, but those were not what I had to report on."
>
> (Implementer, International)

Some of the challenges and shortcomings were in part addressed in subsequent pilots. Specific child health indicators and monitoring systems were part of the conditional cash transfer (CCT) pilot in collaboration with the relevant ministries, alongside additional health and nutrition education activities

(Box 31). The SPRINGS pilot included further nutrition education and a "one-stop shop" aiming to facilitate community's and CGP beneficiaries' access to public services. However, the perceived impact of these later activities on various health outcomes was disputed by one evaluator (Box 31).

Box 31

> "We implemented a conditional cash transfer, with the intention to try and improve health indicators and education indicators. We mainly wanted to see if we could influence access to health, access to food and to education as well."
> (Program manager, Local and national)
>
> "In the case of SPRINGS, one of the components was to have these outreach days or these one-stop shops, what was in previously called wellbeing days. We found that they weren't effective. The local government did not have the capacity to really make these one-stop shops operational and did not have the capacity to have these outreach days operational for the most part."
>
> (Researcher/Evaluator, International)

The desk review's findings broadly reflected the findings of the interviews. In terms of objectives, improving the health and nutritional status of vulnerable children was the overall objective of the CGP stated across program documents (Duynhouwer, 2009; Pellerano *et al.*, 2012b, 2012b; Oxford Policy Management, 2013). As stakeholders had reported, the reviewed documents showed a strong focus on investing in children's human capital to address vulnerabilities and disadvantage in the long term (Duynhouwer, 2009; UNICEF Lesotho, 2010, 2017; Hurrell *et al.*, 2011; Pellerano *et al.*, 2012b). More specific approaches to addressing health disadvantage was far less present in the documents and focused primarily on food security and access to health services (UNICEF Lesotho, 2010; Oxford Policy Management, 2013). Although this became a focus of the evaluation, the improvement of specific outcomes regarding child health status was widely absent in the objectives or anticipated effect of the program.

The reviewed documents also highlighted some operational challenges the stakeholders had discussed. First, M&E documents reflected how cash alone would be insufficient in addressing the barriers to health that stakeholders have described (Kardan *et al.*, 2011b). The operational document for the CCT also cited a lack of appropriate monitoring of the health objectives as one of the motivations behind the CCT pilot (Ayala consulting, 2014). In fact, clear measurable targets for health and nutrition only appeared in the operational documents in relation to the CCT (Ayala consulting, 2012, 2014, 2015).

CGP affecting health equity as disadvantage

When defining health equity as focusing on the most disadvantaged, the impact of the CGP on the health of the beneficiary vulnerable children has already been widely researched and reported in the program's evaluations (Kardan *et al.*, 2011a; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014a; Analysis for Economic Decisions and Analysis for Economic Decisions, 2015b, 2015a; Pace *et al.*, 2019b). Overall, the views of the 20 stakeholders that discussed these, matched the findings of the evaluation. This was to be expected, as several informants referred to these documents when reporting on the CGP impact. The studied effects reflected both the diverse definitions of child health as well as some of the mechanisms of actions previously discussed. These included an indirect impact on morbidity further to investment in selected determinants of health (e.g. clothes, hygiene), improved birth registration and selected nutrition outcomes (Box 32).

Box 32

> "As far as I can remember, [the CGP] had impact on children's health but it was not a direct impact. It was something like, if a family can afford warm clothes or shoes for the kids, that protected them from other diseases like coughing, cold. So indirectly, it had impact on health"
> (Program Manager, International)
>
> "Part of the guidelines of the CGP was that all the children [who] were registered in the program must have birth certificates. So it also contributed towards increased registration of births, because of that soft condition."
> (Program manager, Local and national)

> "The most vulnerable here in Lesotho are found in the mountains. They found that [children] can go days without having a meal or something to eat. With the CGP, that has somehow been affected and impacted positively."
> (Implementer, Local)

However, stakeholders tended to report more positive effect of the CGP on access to healthcare outcomes when the evaluations showed more mixed findings (Box 33).

Box 33

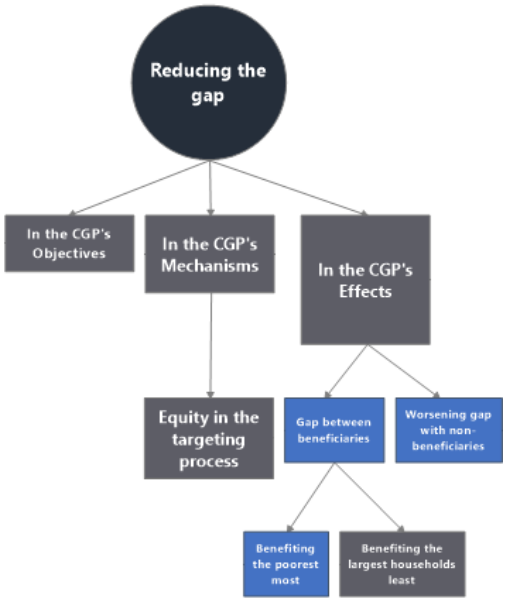
> "The CGP contributed to alleviating certain financial barriers to access health care for households that were not able to travel to the health centers. Now that they were receiving the CGP, things have got better because they could afford transport. They also highlight how easy it has become for them to access over-the-counter medicines for their children."
> (Program manager, Local and national)

Health equity as reducing the gap

Health equity understood as reducing the *gap* played a minor role across the different stages of the program in the early phases of the CGP (Figure 6). Reducing the gap was absent from the desk review and stakeholders discussed this notion either as a wider goal not specific to the CGP or specifically in the context of ensuring a fair beneficiary targeting process. Yet, this dimension of health equity was explored in the effects of the CGP, primarily when comparing the program's impact on different groups of beneficiaries. The interviews echoed the findings of the program's evaluation, suggesting that the poorest beneficiaries may comparatively benefit more from the program. However, both sources of information pointed towards a potential dangerous process where the health gap might have been reduced between beneficiaries and non-beneficiaries primarily because of worsening conditions in the non-beneficiary group.

As in the previous section, we first explore the findings of the interviews regarding the role of health equity understood as reducing the gap in the CGP, and compare these findings to those of the desk review. Then, we report on the effects of the CGP on this dimension of health equity.

*Figure 6. Mapping the role(s) of health equity as reducing the gap in the CGP**



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

Only six stakeholders involved in different components of the program cycle discussed the role of reducing the gap in the CGP, confirming the rather minor importance of this approach to health equity in the CGP. When reducing the gap between two groups was discussed as an objective by stakeholders, it was described as a broader goal rather than a specific CGP objective. In fact, only two stakeholders discussed reducing the gap as an objective (Box 34).

Box 34

> "The broader objective of social protection is actually basically social cohesion - broader objective because social imbalance comes from use-inequality between families within the same community. So the purpose of this social protection program is to reduce inequality, deprivation and enhance social cohesion."
> (Program Manager, International)

In the design and implementation of the CGP, the concept of gap as difference between groups was mainly employed when referring to the targeting of the beneficiaries, to ensure that the program was effectively enrolling the most vulnerable and poorest households. Three stakeholders highlighted this feature of equity in the CGP's design. Yet, they didn't agree as to whether the CGP had succeeded in this regard (Box 35).

Box 35

> "Basically we're saying we don't really want rich households to benefit. The resources are so scarce, at the very least we just want to make sure that the relatively well-off are not somehow taking advantage. That was the kind of equity concern, I guess."
> (External Evaluator, International)
>
> "A lot of vulnerable families are left out. They are not part of the program, and somehow, families that are not so vulnerable are in a program. So there's a lot of discrepancy and differences when it comes to that. I think a lot has to be done in that sense."
> (Implementer, Local)

This rather minor importance of health equity as reducing the gap was also reflected in the desk review, where the terminology of gap or health gap was absent from the program's documents.

CGP affecting health equity as gap

Five stakeholders involved in the evaluation or the implementation at the local level reported some sporadic effects of the CGP on the health gap, primarily between beneficiaries, although they specified that this was not an intended impact of the program. The effect seemed to change depending on the type of vulnerability considered. The poorest seemed to benefit comparatively more on certain outcomes, a finding also supported by the sub-group analysis in the evaluation report for selected health outcomes (Box 36) (Pellerano *et al.*, 2014a).

Box 36

> "We might have done some subgroup analysis of whether the poorer households benefited more, which is what you might expect because the cash represents a bigger gain to them"
> (Evaluator, International)

However, two of the international implementers expressed concerns over the impact of the CGP according to the number of children, even after the indexing of the transfer on the household size (Box 37).

Box 37

> "My personal view is that households are not benefiting equally. If you look at the funding's design, it's indexed on the number of children. If you look at that closely, the higher you go in terms of the number of children in the households, [the more] you realize that some children are actually disenfranchised."
> (Implementer, International)

The negative effect mentioned by one implementer and confirmed by the evaluation document is more concerning (Pellerano *et al.*, 2014a), suggesting that the health gap is primarily affected by stagnating or worsening outcomes amongst non-beneficiaries (Box 38).

Box 38

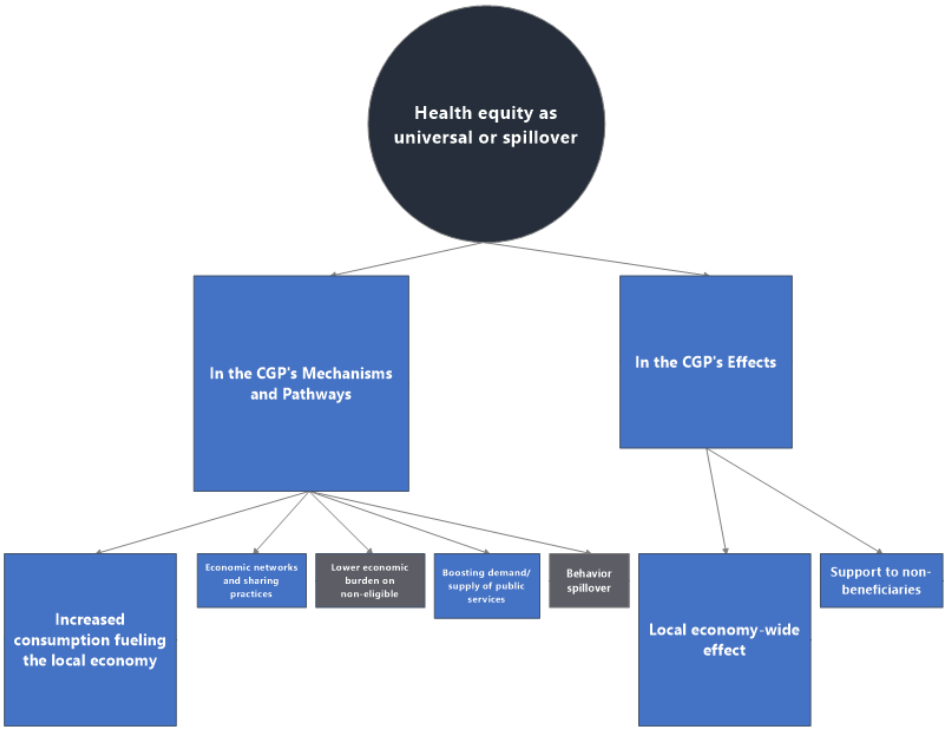
> "[There are] huge gaps between families that are beneficiary and those that are not. The fact that they earn something means that they are better-off than those that are not receiving anything. They are able to access health services now, as compared to those that don't have anything."
> (Implementer, Local)

Health equity as a universal approach or community-wide spillover

As previously described, health equity understood as a *universal approach* was absent from the CGP in the early phases. Instead, the role of a community-wide perspective in the CGP was addressed through the notion of *spillovers* (Figure 7). Both stakeholders and program documents stated that such community-wide spillovers were not an objective of the CGP but were rather reflected in some of the program's mechanisms of action. Economic spillovers through increased consumption amongst beneficiaries were the most prominent mechanisms found in both the interviews and the desk review. Although less pronounced, findings from the desk review and the interviews also described how community-wide spillover may occur through the economic networks and sharing practices in place in these communities, by reducing the obligation of support in non-recipients while allowing beneficiaries to provide this support to others. Finally, both sources identified the potential for better public services in the targeted communities, triggered by the higher demand from CGP beneficiaries. Yet, very few of these mechanisms' effects have been studied. According to both program documents and stakeholders, only the local economy effect (economic spillovers through increased consumption) and to a lesser extent, the CGP's effects on economic networks and sharing practices have been evaluated, showing positive impacts of the CGP.

As in the previous sections, we first explore the findings of the interviews regarding the role of this dimension of health equity in the CGP. Then we compare these findings to those of the desk review. Finally, the effects of the CGP on this dimension of health equity are reported separately.

*Figure 7. Mapping the role(s) of health equity a universal approach or community-wide spillover **



*The size of the boxes is proportional to the number of stakeholders that expressed this view. Blue boxes represent points of view that made consensus while grey boxes contain areas of disagreements either amongst stakeholders or between the interviews and the desk review.

As described when defining health equity, although health equity is understood and promoted as implying a universal approach by some of the stakeholders, this conception of health equity didn't apply to the CGP. As previously described, the decision for a targeted program and against making the CGP universal from the start was both practical (due to lack of resources and capacity) but also strategic, as a way to boost impact and therefore, build support for the CGP (see, "Health equity as focusing on the most disadvantaged").

Twenty stakeholders considered the program's *community-wide spillovers* in their interviews. While the definition of health equity as community-wide spillover was primarily reported by international stakeholders, a wider range of stakeholders across levels of interventions and the program cycle saw a role for this dimension of health equity in the CGP when probed about it. These stakeholders reported expecting to see such spillovers effects. Yet, most of them – 11 in total– agreed that these were not actual objectives of the CGP (Box 39).

Box 39

> "I don't think [the community effect] was part of the design, but as a programmer, you know that there are direct results you are expecting and there could also be some indirect results."
> (Implementer, International)

Instead, spillovers were mainly described in the CGP pathways and mechanisms, which were addressed in 15 interviews. The most common mechanism described by eight stakeholders was how beneficiaries' increased consumption fueled the community's economy, providing additional revenues to non-beneficiaries producing and selling these supplies. Then this additional revenue could be invested for the benefit of non-beneficiary children's health and determinants of health (Box 40).

Box 40

> "Spillovers were observed from households that were not beneficiaries of this program because the households that were not that severely vulnerable had some other ways of getting income, through the little things which they were selling. So it means that when I am a beneficiary and I get this grant, definitely I would have to spend the money on this neighbor who is not a grant recipient. So that exchange means that it also affects the life of that child and this household, which is not that vulnerable."
> (Implementation Manager, Local and national)

An evaluator and an implementer added that the transfer may have also lifted some of the economic burden previously placed on non-beneficiaries to support poor and vulnerable households, thus freeing resources to invest in their own children (Box 41).

Box 41

> "By giving money to the poorest in a community, you're relieving a kind of co-responsibility, these informal support mechanisms that would therefore benefit the better-off households in the community because they no longer have to do that [support the poorest]."
> (Evaluator, International)

Beneficiaries' role in these social and economic networks and sharing practices were also described by two stakeholders. As beneficiaries become able to share resources obtained through the CGP, they can lend or loan to other beneficiaries for them to better access child health services and medicines (Box 42).

Box 42

> "Through the child grants support to the household, other people are able to access medical care with [beneficiaries'] financial support."
> (Organizational point of view, International)

Two stakeholders working at the national and local levels also highlighted how the CGP as a whole (including the messaging and the side activities) and the behavior change amongst beneficiaries may influence non-beneficiary households (Box 43).

Box 43

> "I think parents who are not part of the program are encouraged to send their children to school, encouraged to send their children to routine health checks. Even other households who are not part of this program would probably be motivated to also send their children to school and to health checks,"
> (Planner, National)

Finally, three stakeholders from selected international organizations described how CTs can boost the demand for - and so, stimulate the supply of - public services like healthcare in the community (Box 44).

Box 44

> "It had a wider impact also because of the social workers visiting the given community. In a community, if you had maybe 25% of families receiving the child grant program, somehow there was also an awareness that was there in other families."
> (Resource mobilization, International)
>
> "I would also say whenever you have a number of beneficiaries in a small community coming together, then you have greater access to these services than now, and certainly the neighbors will benefit."
> (Organizational point of view, International)

The findings from the desk review reflected those of the interviews. In the evaluation documents, spillovers were primarily described in the CGP mechanisms, starting with beneficiaries' increased consumption boosting local production and sales (Hurrell *et al.*, 2011; Kardan *et al.*, 2011a; Oxford Policy Management *et al.*, 2014; Pellerano *et al.*, 2014a). These documents also described how such spillovers may occur through community's social and sharing networks (Hurrell *et al.*, 2011; Pellerano *et al.*, 2012b). Finally, operational documents provided information on how the CGP could support the development of public and community initiatives (Ayala consulting, 2010, 2014, 2015; Oxford Policy Management, 2013).

However, the pathways through which the CGP may encourage healthcare seeking or health-related behavior change amongst non-recipients was absent from the desk review.

CGP affecting health equity as spillover

Very few of the effects of the spillover mechanisms described above were studied in CGP communities. The main evaluated outcomes according to program evaluation and eight of the stakeholders concerned the local economy impact (Local Economy Wide Impact Evaluation – LEWIE) related to the increased consumption, selling and production triggered by the CGP on paydays (Box 45).

Box 45

> "Businesses in the rural areas get much support from these beneficiaries. Where the pay points are, they find that there will be a mini market there during payday and I think it has boosted some sort of local economy and produce."
> (Implementer, Local)

Secondly, both the program evaluation and two of the implementers noted positive spillover effects on support given to non-beneficiaries through sharing mechanisms (Box 46) (Pellerano *et al.*, 2014a).

Box 46

> "Some extended family members [of beneficiaries] reported that they were able to get a soft, soft loan from a recipient household to get medical care. Knowing that your relative has received a grant, you would be able to borrow money or to receive health services."
> (Program manager, Local and national)

Overall, the evaluation found that spillover effects on other determinants of health outside of those on the local economy were minor (e.g. asset ownership, employment, school enrollment)(Pellerano *et al.*, 2014a). One of the external evaluators explained that the transfer was probably not enough to lead to significant spillovers (Box 47).

Box 47

> "It's just not enough money to really change things very much, but you're just making [beneficiaries'] lives a little bit better. So the idea that that this cash injection would be enough to stimulate these broader things that non recipients would benefit from was a bit unrealistic to us." (External evaluator, International)

Finally, the spillover effects on child health – whether defined as access to health services, nutritional outcomes or health status – were mainly presented as potential effects rather than actual effects of the CGP by stakeholders. According to an implementer, the community-wide effects may also have been the results of other policies and interventions implemented at the same time (Box 48).

Box 48

> "I think the other OVC project components also had a direct impact, maybe because of their approach. They were targeting the entire communities, not segregating by vulnerabilities. For instance, free primary education was a universal program. It didn't target children from the vulnerable households. It was a universal program, like other programs which were implemented by various departments."
> (Implementation Manager, Local and national)

Discussion

This article explored how stakeholders understood and operationalized the concept of health equity in Lesotho's CGP. Through interviews and a desk review, we explored how different stakeholders involved in the early phases of the program defined this concept, saw its role(s) and its effects in the CGP.

Main findings

Our analysis of health equity definitions in the context of the CGP reflected the complexity and multi-dimensional nature of the concept. In fact, the use of the term "health equity" itself in the program was

rather debated. It was widely absent from program documents while selected stakeholders were unsure of its meaning. Although the field of health equity research isn't exempt from debates, the terminology itself has been widely adopted by health practitioners and researchers (Kawachi *et al.*, 2002; Commission on Social Determinants of Health, 2008; Saran *et al.*, 2020; Welch *et al.*, 2022). As this study further confirms, equity remains understudied in the field of social protection (Saran *et al.*, 2020). Yet, when exploring selected dimensions of health equity from our theoretical framework, both sources of information reflected how several of them were often overlapping. A similar finding applies to the definition of child health, which was equally complex. We identified four main dimensions in the definition of health equity and three in the definition of child health. The fours understanding of health equity were: focusing on the most disadvantaged part of the population, closing a gap between two groups, universal approach and community-wide spillovers. The three dimensions of child health were: access to health services and medicines, food security and nutrition outcomes and health status.

When looking at these dimensions individually, health equity was overwhelmingly defined as focusing on children's access to health services for the most disadvantaged households. That definition was closely linked to contextual factors and constraints that had been contributing to the vulnerabilities and barriers to care faced by children. The definition of what constitutes that disadvantage was also seen as multi-dimensional and had broadened as the program evolved, allowing the targeting process to better account for local communities' specificities. The other definitions of health equity were more disputed or seemed to be a terminology primarily used by specific stakeholders. For example, the definition of health equity as community-wide spillovers or child health as health status primarily came from selected international organizations or stakeholders in positions of leadership. This may reflect the different priorities stakeholders had when it came to health equity in the CGP as well as the evolving priorities of selected international organizations in their approach to CT programs. This may also be the result of the operationalization gap we found when analyzing the role of health equity in the CGP.

Indeed, there was a clear gap between the strategic and operational levels as to the role of health equity as an objective - in general terms or referring to the most disadvantaged. The discrepancies found between sources of information and between stakeholders as to the role of this concept in the CGP's objective revealed that in the early phases, the ambitious approach to the root causes of disadvantage and the holistic vision of children's health and wellbeing failed to be translated into specific, operational

activities and targets. This ambitious approach was also further hampered by operational challenges, such as the difficulty of coordinating several sectors and institutions alongside the CGP. Although some of these gaps were addressed in the subsequent pilots, it should be noted that as of today, these pilots have been discontinued and not yet replaced or integrated into social protection programs.

How individual dimensions of health equity were integrated in the different steps of the CGP further reflect these operationalization gaps. The role(s) of these dimensions also reflect the relative importance of health equity in the program as compared to other priorities. Focusing on the most disadvantaged was the most integrated definition across the program, from the program's goals to mechanisms of action and perceived positive effects on beneficiaries, confirming its comparative importance with other definitions of health equity. However, disagreements between stakeholders or between sources of information as to the role of specific objectives or mechanisms reflecting this approach to health equity raise doubts as to the importance of child health compared to non-health-related priorities in the program, especially amongst international stakeholders. Other dimensions of health equity were brought on not out of the CGP but through its design. Health equity as reducing the gap was mainly related to the perceived fairness and effectiveness of the targeting process and to a lesser extent, to sub-group analysis of the CGP's impact. The role of this dimension was also debated, suggesting a rather minor importance of this definition in the CGP. Health equity as community-wide spillovers was primarily reflected in five CGP mechanisms of action but was absent from the program's objectives. Yet, only three of these five different mechanisms have been studied among the effects of the CGP. This may suggest that this definition of health equity was considered less important compared to other mechanisms of the program but can also further illustrate the operationalization gap, where some of the CGP's pathways were not fully integrated into the M&E system.

Implication for the CGP and other CT programs in Africa

Through this case study, we can further explore the role of health equity in CT programs as well as how complex concepts in the international agenda can be translated into action. Indeed, equity or the reduction of unfair inequalities (in general or health related) have been integrated into the Sustainable Development Goals 3 and 10 (UN General Assembly, 2015). It is part of UN agencies' priorities and strategies (UNICEF Executive Board, 2017; Social Determinants of Health, 2021). In Lesotho, equity was

part of the government's Vision 2020 goals on health, gender and education (Government of the Kingdom of Lesotho, 2002). Yet, as this study illustrates, translating such a complex, multidimensional concept into action is likely to lead to operational challenges. Although there were broad areas of consensus, we found several discrepancies and disagreements as to the meaning of health equity and its related terminology as well as its role in the CGP. Such diversity and disagreements are not surprising given the variety and number of stakeholders involved in the CGP as well as the period of time covered. However, this alerts practitioners and scholars alike to potential issues between stakeholders' competing and evolving priorities as well as in the systematic integration and translation of the program's strategic vision into operations. As CTs are the fastest growing type of safety net program on the African continent (Beegle *et al.*, 2018), lessons from the CGP can help inform a more cohesive approach and integration of health equity into these programs, in a context of an evolving vision of social protection.

Globally, social protection has been increasingly moving from a risk-management to a transformative approach that can address the root causes of vulnerability and bring wider positive changes in society (Molyneux *et al.*, 2016). Reflecting this evolution, selected international CGP stakeholders seem to be moving away from focusing on the most disadvantaged and towards a more inclusive or even universal approach to child health and wellbeing in CT programs (as the more minor definitions of health equity showed). However, our study highlights how national and local stakeholders in Lesotho remain focused on the needs of a very vulnerable population, closer to the risk management approach (Brunori *et al.*, 2010). These stakeholders may not have a clear understanding of the new terminology driving changes at the strategic level. This evolution highlights the importance of building and renewing the consensus amongst stakeholders as to the approach taken to such issues in CTs, especially in a global context of competing and changing positions on social protection among development agencies and donors (Devereux and Roelen, 2016).

Secondly, our case study on health equity highlights the challenges of operationalizing a holistic, multidimensional approach to health equity. Even for the most commonly shared definition of health equity, we found several gaps between the strategic vision and the day-to-day operations and M&E. While consensus building will help address some of the operational challenges we have identified, our study also highlights the need for all the strategic elements being more systematically reflected across activities and monitoring targets. Given the constraints of the program and the Lesotho context, implementation

research into the bottlenecks and discrepancies that have led to this operationalization gap would help further ensure the fidelity and impact of the CGP.

Limitations

We made every effort to identify a wide range of informants representing the diverse stakeholders involved in the CGP's early phases. To secure their participation, we relied on the mediation and support from key focal points in Lesotho and in selected international organizations. However, staff turn-over in selected organization and declined invitations to take part in this project did affect our recruitment. To compensate for these losses, we tried to identify alternate informants either with organizational knowledge or experience with part of the phases of interest for our interviews. We also purposely made the document search extensive for the desk review, in order to compensate for potential gaps in our key informants recruitment.

The reliability of the information provided by informants may have also been affected by the recall period of this study. Indeed, as we focus on the early phases of the CGP, our interviews required stakeholders to remember information from over a decade ago. This was further complicated by the evolution of the CGP over this period. To limit the risks of recall biases, we asked key informants extensive background information on their role and on the chronology of events they referred to in their answers. When relevant, we also used references to specific program documents or wider events to better contextualize the information. As our methodology illustrates, discrepancies and disagreements were explored not only according to the stakeholders' characteristics but also the chronology of the program. While the recall period created challenges in collecting accurate information, it also allowed informants to be more reflexive or even critical of these early phases, thus providing a richer, more transparent view of the program.

Conclusion

The CGP was initially designed to target the multidimensional vulnerabilities affecting children in a context of widespread poverty, food insecurity and the HIV/AIDS epidemic. Our study illustrates the initial holistic and ambitious vision of this program, which explicitly or implicitly touched upon many dimensions of child health and health equity. However, while there were areas of consensus on how these concepts were

understood, our study found wide variations in the operationalization of these terms by stakeholder roles and between the strategic and operational levels of the program. This is first reflected in the diversity of definitions and understanding of the broader concept of health equity but also of some of its dimensions, such as the meaning of vulnerability or disadvantage. The debated relative importance of different definitions further illustrates these discrepancies. Secondly, even the dimensions of this concept most stakeholders and documents agreed upon, didn't seem fully operationalized throughout the program, especially in the day-to-day operations and M&E at the local level. As a result, a number of potential effects of the CGP, such as its health community-wide spillover, remain under studied while other effects related to specific health disadvantages or gaps may have been weakened.

List of abbreviations

CGP: Child Grants Program

CT: cash transfers

CCT: conditional cash transfer

DFID: Department for International Development

FAO: Food and Agriculture Organization

ICWH: Improving Child Wellbeing and Household Resiliency

LFSSP: Linking Food Security to Social Protection Programme

LMICs: low- and middle-income countries

M&E: Monitoring and evaluation

MoSD: Ministry of Social Development

NISSA: National Information System for Social Assistance

OCV: orphans and vulnerable children

SPRINGS: Sustainable Poverty Reduction through Income, Nutrition, and Access to Government Services

UN CERF: United Nations Central emergency response fund

UNCTAD: United Nations Conference on Trade and Development

VAC: Village Assistance Committee

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PAPER 5. USING CASH TRANSFERS TO PROMOTE EQUITY IN CHILD HEALTH IN LESOTHO: A QUANTITATIVE CASE STUDY OF LESOTHO'S CHILD GRANTS PROGRAM

Using cash transfers to promote equity in child health in Lesotho: A quantitative case study of Lesotho's Child Grants Program

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- Conception or design of the work: EB; HF; CS
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Running head: Promoting child health equity with cash transfers

Key Messages:

- While the changes observed over time may suggest a catch-up effect amongst beneficiary households, these effects aren't statistically significant
- The CGP is associated with a reduction in the gap for selected child health outcomes amongst specific sub-groups
- Cash transfers' effects on health disparities in children are complex and do not necessarily lead to an overall catch-up effect for beneficiary children.

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Data availability statement

The data underlying this article were provided by Transfer Project data portal (hosted by the University of North Carolina at Chapel Hill – Carolina Population centre (UNC CPC) under license. Request for data can be submitted directly to UNC CPC (UNC Carolina Population Center et al., 2019).

Ethical approval and data management

No data was directly collected by the project team. Application for access and use of the data from the CGP surveys was made by all relevant team members to UNC CPC (application number 30032001). In line with the data security pledges submitted in the application, only project team members identified in that application had access to the data. The data file and supporting information was kept on the university cloud services in line with university guidelines for storage of personal information. No further ethical approval was required.

Conflict of interest statement.

The authors have no conflict to declare.

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Abstract

Cash transfers have been increasingly popular tools for promoting social inclusion and equity in children in Sub-Saharan Africa. However, less is known about their implications for reducing health disparities in children across the community, beyond the targeted group. Using Lesotho's Child Grants Program (CGP) as a case study, we aim to better understand the potential for cash transfers programs to reduce the gap in child health in the targeted communities. Using a triple difference model, we examine to what extent CGP improved child health outcomes in eligible households compared to non-eligible households in treatment communities versus control communities; and to what extent this effect varied in different population sub-groups. We find that the CGP did not lead to an overall statistically significant effect the child health gap. However, such a "catch-up" effect was observed for selected nutrition outcomes amongst female-headed households and for subjective child health assessment for comparatively more food secure households. This study highlights the potential of CT programs like the CGP to address health disparities in pre-school children for selected population groups in the community. However, these effects are complex and do not necessarily lead to an overall catch-up effect for beneficiary children.

Background

Cash transfers (CT), or non-contributory monetary transfers to individuals or households, have become increasingly popular social protection tools in low- and middle-income countries (LMICs) and particularly in Sub-Saharan Africa (UNICEF-ESARO and Transfer Project, 2015; Bastagli *et al.*, 2016). Initially designed as a response to food crises and the HIV/AIDS epidemic, these programs are seen as important tools for social inclusion and equity promotion for children in the region (UNICEF-ESARO and Transfer Project, 2015). CT programs have shown some promising impacts amongst beneficiary children, including effects on selected health indicators (health service use, nutrition) and determinants of health (school attendance, asset ownership, social capital) (Lagarde *et al.*, 2009; Owusu-Addo and Cross, 2014; Bastagli *et al.*, 2016; Bonilla *et al.*, 2017; Pega *et al.*, 2017; Walque, 2017). However, less is known about these programs' implications of for reducing health disparities in children across the community, beyond the targeted group.

The Empowerment for Health Equity – Lesotho (E4HE Lesotho) project aims to inform the study of health inequalities and empowerment issues in CTs like Lesotho's Child Grants Program (CGP). This is the final article of the E4HE Lesotho series. This paper offers to explore the impact of the CGP on health disparities in children under 6 years old.

Lesotho's Child Grants Program

Lesotho is a landlocked country located within South Africa. When the CGP was established in 2009, Basotho children faced high rates of poverty, food insecurity and the effects of the HIV epidemic that had fueled high levels of orphanhood and rising child mortality (Ministry of Health and Social Welfare - MOHSW/Lesotho and ICF Macro, 2010; UNICEF Lesotho, 2011; UNFPA, 2012). Lesotho's CGP is an unconditional CT targeting poor and vulnerable households with children under 18 years old. It was hosted by the department of Social Welfare at the Ministry of health and social welfare (now established as a separate Ministry of Social Development - MoSD), with UNICEF Lesotho country office as a technical partner and funding from the European commission (Pellerano *et al.*, 2016). The CGP aims to improve the living standards of orphans and vulnerable children (OVC) to reduce malnutrition, improve health status and increase school enrollment (Pellerano *et al.*, 2014). Initiated to respond to the impact of the HIV epidemic, the CGP's scope was broadened to different vulnerabilities affecting children in rural Lesotho.(Besnier *et al.*, Under review) In 2009, the CGP covered about 1,250 households in three Community Councils in the districts of Qacha's Nek, Mafeteng and Maseru. When the follow-up evaluation survey was carried out in 2013, the CGP had been expanded to 2,300 households in ten Community Councils in the five districts of Qacha's Nek, Maseru, Leribe, Berea and Mafeteng. Figure 1 provides an overview of the program's timeline. Targeted communities were primarily located in the lowlands and foothills, with limited access to services and markets. CGP households were selected through a mix of Proxy Means Testing (based on a community census)[1] and a validation process by representatives of the community. Only households with children identified as ultra-poor and very poor are eligible to the CGP.

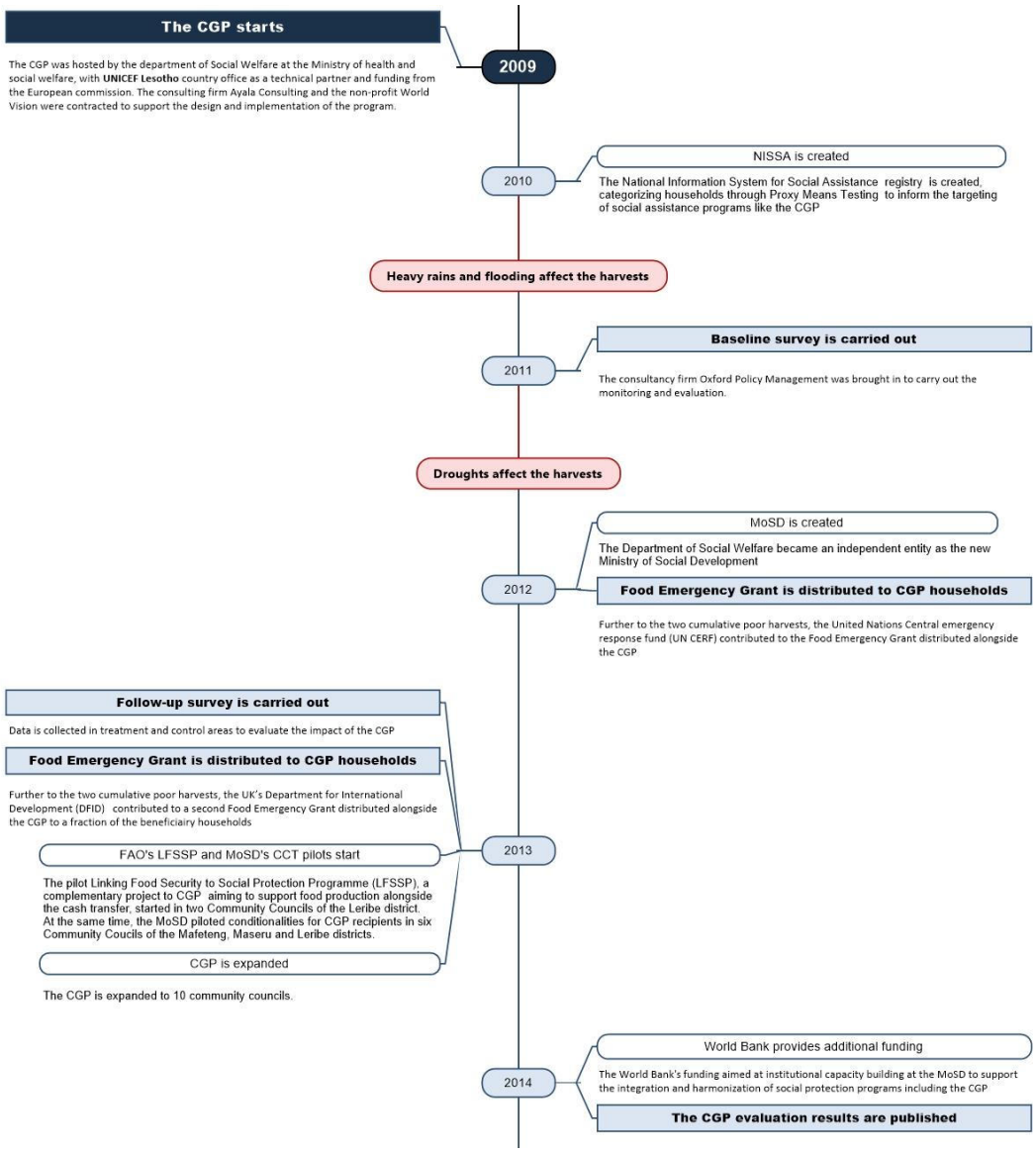
[1] The Proxy Means Testing aimed to assess the household's level of poverty based on dwelling conditions, households characteristics and ownership of selective assets (Pellerano *et al.*, 2014).

Beneficiary households received 360 maloti quarterly (about USD 30)– an amount later adapted from 300 to 750 maloti according to the number of children in the household (Pellerano *et al.*, 2014, 2016). Although the CGP didn't apply strict conditionality to beneficiary households, the implementation of the program included a strong messaging (or soft conditionality) that the transfer was to be used for the children (Pellerano *et al.*, 2014).

The program's theory of change[2] articulated that by reducing poverty and addressing the underlying causes of poverty of vulnerable households, the CGP would reduce inequalities while enabling households to make different time and investment decisions, participate in economic activities and enhance future productivities. The 2014 evaluation found promising effects of the CGP amongst beneficiaries regarding selected economic indicators, child health outcomes and determinants of health (Pellerano *et al.*, 2014). The local economy-wide impact evaluation (LEWIE) found significant economic spillover across the communities where the CGP was implemented (Thome *et al.*, 2016). Finally, Carraro and Ferrone (2019) found that food security in non-beneficiary households with strong geographical and relational proximity to beneficiaries, had improved through program spillover. However, the effects of the program on child health disparities between different groups in these communities and its implications for different vulnerable groups haven't been studied.

[2] Theory of change is an approach designed to support strategic planning and evaluation in development programs. It can be used as a tool to lay out the logical sequence of a program to describe how individual activities might lead to the desired change or outcomes and the different pathways though which this change may occur (Vogel, 2012).

Figure 1. Overview of the CGP and its evaluation



Cash transfers, child health and gender

CTs are the fastest growing type of safety net program on the African continent (Beegle *et al.*, 2018). CTs have been found to improve selected child health and development outcomes amongst beneficiaries, such as lower mortality, morbidity, improved nutritional outcomes, cognitive development and access to child healthcare services. However, evidence syntheses and reviews have found mixed and occasionally contradicting results as to CTs' impact on individual outcomes, suggesting they also vary from one CT to the other (Bastagli *et al.*, 2016; Walque, 2017; Beegle *et al.*, 2018). Some CT programs have also showed that program impact on child health may vary by gender (of the child or the head of the household) (Yoong *et al.*, 2012; Bastagli *et al.*, 2016). However, the evidence on differentiated child health impact between vulnerable groups remains limited (Bastagli *et al.*, 2016). Besides their direct impact on child health, CTs have also been associated with improving determinants of child health amongst beneficiaries, such as a reduction of monetary poverty or improved food security (UNICEF ESARO and Transfer Project, 2015; Bastagli *et al.*, 2016, 2016).

Given women's role in childcare, many CTs have been targeting women specifically. Indeed, selected markers of women's empowerment and status (e.g. women's decision-making power, control over economic resources and assets) have been associated with improved child health outcomes (Duflo, 2012; Richards *et al.*, 2013; Kuruvilla *et al.*, 2014; Carlson *et al.*, 2015; Cunningham *et al.*, 2015; Taukobong *et al.*, 2016; Thorpe *et al.*, 2016). Women are also considered more likely to invest in family-friendly goods that are beneficial to children (Yoong *et al.*, 2012; Richards *et al.*, 2013). Yet, the impact of CT targeting women on child health is disputed. Previous research has found few studies comparing targeting women versus men and findings on the respective child health impact were mixed (Yoong *et al.*, 2012; Bastagli *et al.*, 2016). Besides their instrumental role in child development, women and girls have also been targeted directly as a way to empower female beneficiaries (Yoong *et al.*, 2012; Bastagli *et al.*, 2016). In this field, selected CTs have seen an improvement of markers of women's social and economic empowerment (such as greater autonomy and influence over households' decisions and greater bargaining power). However, the evidence on these outcomes is also mixed (Bastagli *et al.*, 2016).

As these findings suggest, CTs can address selected vulnerabilities in beneficiary children and their caregivers, which makes these programs particularly promising for promoting health equity. Evidence over the indirect effects of CTs on various socio-economic determinants of health beyond the beneficiary group would further support this hypothesis (Angelucci and De Giorgi, 2009; Angelucci et al., 2010; Thome et al., 2016; Carraro and Ferrone, 2019). However, their actual effects on health disparities at the community or population levels remain understudied (Owusu-Addo et al., 2018; Besnier et al., 2021).

Our study of the role of health equity and economic empowerment in Lesotho's CGP shows that, while stakeholders did not necessarily agree on the meaning of these concepts, both were integrated to some degrees in the CGP from its early phases (Besnier et al., Under review, Under review-a). Secondly, as economic empowerment of vulnerable groups (especially women's) was seen as a strategic objective and mechanisms of action of the CGP, we would expect to see specific vulnerable groups (e.g. female-headed households; more deprived households) benefitting more than comparatively less vulnerable groups (Besnier et al., Under review, Under review-a).

Objective

Using the early phases of the CGP as a case study (i.e. 2009-2013), this study aims to better understand the potential for such programs to reduce disparities in child health in the targeted communities. More specifically, this study answers the following research questions:

- What were the effects of the CGP on the health gap between beneficiary and non-beneficiary households with children under 6 years old?
- Did comparatively more vulnerable groups at baseline see a reduction of the child health gap thanks to the CGP?

Scope

To better capture the effects of the CT alone, this study focuses on the early phases of the program, before complementary interventions (Cash Plus) were piloted. The data used for the analysis was collected in

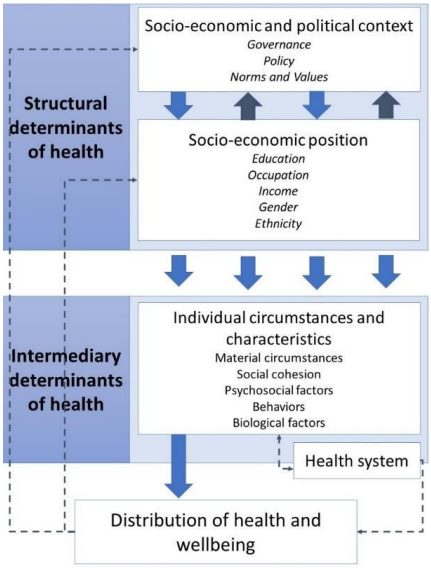
2011 and 2013. The study also takes into account that the cash "Emergency Food Grant" (see Figure 1) distributed to eligible households in control and treatment areas in 2012-2013 (although the amount distributed varied from one household to the next), as it overlaps with the CGP.

Due to the short timespan covered, the broader socio-economic and political context (i.e. structural determinants of health) is considered constant in the period of interest.

Theoretical framework

In their more neutral definitions, health inequalities refer to observable differences in health between individuals or groups (Kawachi *et al.*, 2002). However, this term is often used interchangeably with the term health (in)equity. Although the definitions of health (in)equity may vary, they all rely on two key ideas. First, one's health is not defined by their biology or choices alone but depends on their wider environment (known as determinants of health – see Figure 2) Secondly, some the disparities that these determinants cause are socially-produced and therefore, unfair (Dahlgren and Whitehead, 1991; Kawachi *et al.*, 2002). By addressing several of these determinants, CT programs like the CGP could contribute to the reduction of these inequities. Based on the CGP's theory of change and building on the WHO Commission on the Social Determinants Health (CSDH)'s conceptual framework (Solar O and Irwin A, 2010; Pellerano *et al.*, 2012), we hypothesize that this unconditional CT program could affect inequalities in child health outcomes in the community both directly and indirectly.

*Figure 2. An overview of the determinants of health - WHO CSDH's framework**



** Adapted from the Commission's Discussion paper 2.*(Solar O and Irwin A, 2010)

Direct effects

The CGP provides additional income to ultra-poor and very poor households, thus reducing poverty and the economic inequalities in the community (Pellerano *et al.*, 2012). Hence, it affects beneficiary households' socioeconomic position as well as their children's material circumstances (e.g. clothing, nutrition). Thus, it contributes to improving their health and may reduce the gap in health outcomes between children in the beneficiary and non- beneficiary households. However, since non-beneficiary households are better-off at the start of the program, the reduction of the health gap will only occur as long as other factors don't make non-beneficiary children's health improve faster. If the theory that female recipients may invest the transfer in more family friendly goods is confirmed, the program's effect on children's outcomes should be larger in female-headed beneficiary households, compared to

households headed by a man. If the CGP effectively addresses multiple vulnerabilities and empower vulnerable groups, the most vulnerable groups should also see a greater impact.

The CGP may also affect child health inequalities in the community through another pathway. As beneficiary households spend the CGP funds or are able to re-enter sharing networks in their community, non-recipient households may see their incomes increase as well. Hence, the CGP may further affect the structure of health inequalities in the treatment communities, by modifying the socio-economic position and material circumstances of non- beneficiary children in the community. We consider this a direct effect since it follows directly from the cash transfer. Depending on the size of this effect on non-beneficiary households compared to the effect on beneficiary household, this indirect effect may end up increasing health disparities in the community.

Indirect effects

The CGP may also affect child health and health inequalities indirectly, through the economic empowerment process it triggers. As the CGP's theory of change illustrates, by providing additional financial resources, cash transfers can improve beneficiary households' access and control over such resources, and their ability to make investment choices, while reducing the effect of shocks or other constraints. As a result, households can invest in social and human capital that can improve their agency (Pellerano *et al.*, 2012). Additionally, following the CSDH framework's description of the mechanisms through which income affects health (Solar O and Irwin A, 2010), the CGP could also affect the agency of beneficiary households (and particularly their female members) if not that of the community as a whole. By reducing stress caused by poverty and increasing their ability to cope with risks and shocks, CTs may affect the psychosocial determinants of health in the beneficiary households (Bastagli *et al.*, 2016; Molyneux *et al.*, 2016; Samuels and Stavropoulou, 2016; Zimmerman *et al.*, 2021). Previous literature on CTs also shows that some programs can affect power relations and bargaining powers within the household, which can improve both the control over resources and the agency of children's caregivers (especially women's) (Bastagli *et al.*, 2016; Bonilla *et al.*, 2017). Secondly, the program's evaluation highlights how the CGP had modified beneficiary households' participation and place in community's support and sharing networks, thus potentially affecting social cohesion (Pellerano *et al.*, 2014). By

affecting these intermediary determinants of health, the CGP may affect the distribution of selected child health outcomes in the community, thus affecting the health gap between beneficiary and non-beneficiary households and/or modifying the structure or gradient of such outcomes.

Hypothesis

This study will test the "catch-up" hypothesis as to how the CGP might have affected the health gap in children in targeted communities. This hypothesis is articulated as follows

1. Due to the CGP, the health gap between children in eligible and non-eligible households in treatment communities is reduced, compared to the gap in control communities. The beneficiary group's health improves at a faster path than non-beneficiaries', allowing children receiving the CGP to "catch up" on their health disadvantage. This hypothesis implies that the program mainly impacts the health of the targeted group, either directly or indirectly.
2. If we assume that CGP reduces multiple vulnerabilities and empower vulnerable groups as intended, then this catch-up effect should be larger in households that were more vulnerable at baseline (e.g. female-headed households; poorer households)

Methodology

Data and study design

To better evaluate the impact of the CGP, the program was initially designed as a randomized controlled trial. Within each of the ten Community Councils covered by the CGP, electoral divisions were randomly assigned to the treatment group (where eligible households received the CGP) and control group (where households were divided between eligible and non-eligible but the CGP's implementation was delayed until the end of the evaluation). The evaluation of the CGP included household survey data collected at baseline and follow-up from both eligible and non-eligible households in treatment and control areas. The evaluation was led by Oxford Policy Management while Sechaba Consultant was contracted to collect the

survey data. They surveyed 3,054 households in 2011 (at baseline) and 2,300 households at the same time of the year in 2013 (follow-up), to avoid seasonal variations.[3] The household questionnaire covered 22 broad themes, including households' general characteristics (e.g. composition and demographics), economic characteristics and activities (e.g. incomes, assets, agricultural production, risk preferences, businesses), consumption, food security, community networks, individual member's demographics, health, child education, adult labor participation, and child labor and time use (Pellerano *et al.*, 2014). Survey instruments are available on the Transfer Project website (Oxford Policy Management, 2011, 2013). The overall sample attrition was low (6%) (Pellerano *et al.*, 2014). As this study focuses on a subset of this sample (households with children under 6 years old), our sample includes 1,532 households (see Table 1).

Table 1. Distribution of households by eligibility and areas

	Control areas Frequency (%)	Treatment areas Frequency (%)	Total
Non-eligible	210 (31.72%)	248 (28.51%)	458
Eligible	452 (68.28%)	622 (71.49%)	1 074
Total	662	870	1 532

Data sources

This study relies on the "Lesotho-Child Grant Programme data" collected by Oxford Policy Management and Sechaba Consultants in 2011 and 2013, available from the Transfer Project data portal (hosted by the University of North Carolina at Chapel Hill – Carolina Population centre (UNC CPC) (UNC Carolina Population Center *et al.*, 2019).

[3] Due to program constraints, follow-up data was only collected amongst half of the non-eligible households.

Selection of variables

The selection of variables for the model was guided by the outcomes of our previous E4HE qualitative study analyzing how CGP stakeholders had defined and operationalized the concept of health equity (Besnier *et al.*, Under review, Under *review-a).* In this study, health was primarily defined as access to healthcare, and to a lesser extent, as nutrition and health status. For this model, we examine our hypothesis using four child health outcomes: 1) whether any of the children has been ill over the last 30 days, 2) whether the household has spent money on healthcare (including transport or medicines) over the last 30 days, 3) self-assessment by the adult respondent of the children's health status in the household (categorized here as "good" or not), and 4) children's food security (as a proxy for nutrition status), measured by three variables: a child not going to bed hungry, eating fewer meals or eating smaller meals in the last three months. All variables were coded as 1 for good health and nutrition and 0 for other answer categories. Due to a lack of data at baseline, anthropometric variables (weight between birth and two years old) and immunization records were excluded. All outcomes refer to children below the age of 6 years old. Eligibility to CGP is used as a proxy to socio-economic status, as the program targeted the poorest households.

To explore the effect of the CGP by vulnerable sub-groups, we based our selection of vulnerability variables on how CGP stakeholders had defined vulnerabilities but also economic empowerment and gender issues in the E4HE qualitative studies (Besnier *et al.*, Under review, Under review-*a*). Indeed, by discussing the role of economic empowerment, stakeholders identified households' characteristics that should be particularly affected by the CGP. The first variable we identified for the sub-group analysis is food security at baseline (as a proxy for access to economic resources). Stakeholders had also explained the *de facto* role of gender (understood primarily as mothers and female heads of households) in the program, due to the increased vulnerabilities of female-headed households and women's role in childcare. To explore the CGP's potential impact on gendered vulnerabilities, we include the gender of the head of the household (whether the head of the household is a woman or a man) as our second vulnerability variable.

Analysis

First, we provide an overview of households' background characteristics by areas (treatment v. control), eligibility and gender of the head of household. Then, we estimate the impact of the CGP on the health gap using a triple differences (DDD) model. As the following equation shows, we compare the changes in child health outcomes between baseline and follow-up for beneficiaries and non- beneficiaries in treatment areas with the changes observed between eligible and non-eligible in control areas. Our estimates are intention-to-treat effects.

$$HEALTH_{it} = \beta_1 A_i + \beta_2 ELIG_i + \beta_3 T_t + \beta_4 T_t * ELIG_i + \beta_5 A_i * T_t + \beta_6 A_i * ELIG_i + \beta_7 A_i * T_t * ELIG_i + \varepsilon_{it}$$

where i indexes household and t indexes baseline (t=0) or endline (t=1). *HEALTH* is our measure of child health. *A* represents area's participation and takes the value 1 for treatment communities and 0 for control communities. *ELIG* is a binary indicator of eligibility to receive the CGP. Survey rounds are indicated with *T* and it takes the value of 1 for endline and 0 for baseline, while ε is the error term. All independent variables are binary indicators ("dummy variables"). As the randomized design of the program should control for unobserved variables, we do not include control variables. Since our child health and nutrition outcomes tend to be highly correlated, each OLS regression was run separately.

The catch-up hypothesis says that the health gap between children in beneficiary and non-beneficiary households (i.e. beneficiary and non-beneficiary households in the treatment communities) should decrease. The DDD estimate tells us whether the difference between eligible and non-eligible, from baseline to follow-up, is different in the treatment areas compared to the control areas. This estimate is the causal effect of program eligibility, assuming that the difference between eligible and non-eligible from baseline to follow-up in the control area is a valid counterfactual development for the same difference in the treatment area.

To explore the effect of the CGP on the health gap between different subgroups groups, we subset the analysis by the child food security status of the household at baseline (as a proxy for access to economic resources) and by gender of the head of households. For the analysis by food security status, the nutrition

outcomes were not included as they overlap with the variable used to assess access to economic resources.

Validation

UN agencies in Lesotho involved in the fields of economics, politics, gender, human rights, child health and nutrition were consulted as part of the qualitative study that informed the present research, to help contextualize the study.

Early findings were presented and discussed with UNICEF Lesotho and the focal point of the Ministry of Social Development, for review and validation.

Results

Background characteristics

Table 2 provides an overview of households' background characteristics at baseline in control and treatment areas. To confirm that eligible households were more disadvantaged than non-eligible households, we estimated the baseline balance between eligible and non-eligible households (see Table A1a in Annex 1). This confirms that eligible households tended to be worse off on a number of child health and nutrition indicators than non-eligible households (as expected). The exception is child illnesses, which was also found to be slightly higher in the non-eligible group in the CGP's baseline report, although that difference isn't statistically significant (Pellerano *et al.*, 2012).

Ahead of the sub-group analysis, we also estimated the baseline balance between food insecure and food secure households (see Table A1b in Annex 1), and between female-headed and male-headed households (see Table A1c in Annex 1). Food secure households at baseline tend to score better on a number of socio-economic and health characteristics (e.g. adult education, children having a bukana card and a birth certificate, child illnesses), although these differences were not always statistically significant –

possibly because of the small sample of food secure households. Looking at the gender of the head of the households, male-headed households also tend to score better than female-headed households on socio-economic and health characteristics.

Table 2. Descriptive statistics in treatment and control areas

	Control areas (1)				Treatment areas (2)				t-test difference
	Non-eligible		Eligible		Non-eligible		Eligible		(1)-(2)
	N	Mean/SE	N	Mean/SE	N	Mean/SE	N	Mean/SE	
Male-headed households	92	0.641 [0.050]	215	0.530 [0.034]	110	0.800 [0.038]	295	0.559 [0.029]	-0.061*
Adult education achievement	105	0.351 [0.022]	226	0.303 [0.015]	124	0.290 [0.021]	311	0.292 [0.012]	0.027*
Households own or cultivate land in the past year	105	0.905 [0.029]	226	0.823 [0.025]	124	0.903 [0.027]	311	0.907 [0.017]	-0.057**
Households have access to a piped water supply source	105	0.505 [0.049]	226	0.571 [0.033]	124	0.565 [0.045]	311	0.498 [0.028]	0.033
Children <3y.o. have a bukana card[4]	105	0.752 [0.042]	226	0.611 [0.033]	124	0.726 [0.040]	311	0.614 [0.028]	0.010
Children in the Household have a birth certificate	105	0.229 [0.041]	226	0.115 [0.021]	124	0.153 [0.032]	311	0.164 [0.021]	-0.010
Has received a cash transfer/ public assistance in the last year	105	0.105 [0.030]	225	0.102 [0.020]	124	0.161 [0.033]	311	0.100 [0.017]	-0.014
Adults in the Household have a passport[5]	104	0.692 [0.045]	223	0.453 [0.033]	123	0.707 [0.041]	308	0.477 [0.029]	-0.014

[4]The Bukana health card is distributed to parents at health care facilities in Lesotho and records key child health indicators - such as weight, height and immunization – for birth until 36 months of age (Pellerano *et al.*, 2012b). It can be used as a proxy to assess healthcare utilization.

[5] Having a passport allows Basotho adults to seek work in neighboring countries, a key source of revenues for rural households (Pellerano *et al.*, 2012b; Ministry of Labour and Employment and IOM, 2017).

No child illness in the last 30 days	105	0.602 [0.045]	226	0.627 [0.030]	124	0.510 [0.043]	311	0.594 [0.026]	-0.032
Healthcare Spending on children in the last 3 months	105	0.196 [0.037]	222	0.194 [0.025]	124	0.295 [0.040]	307	0.185 [0.021]	0.049
Self-assessed child health status	104	0.949 [0.020]	225	0.928 [0.017]	121	0.944 [0.019]	308	0.891 [0.017]	-0.022
No child going to bed hungry in the last 3months	105	0.762 [0.042]	226	0.615 [0.032]	124	0.798 [0.036]	311	0.691 [0.026]	0.029
No child eating fewer meals in the last 3months	105	0.543 [0.049]	226	0.235 [0.028]	124	0.556 [0.045]	311	0.322 [0.027]	-0.060*
No child eating smaller meals in the last 3months	105	0.514 [0.049]	226	0.226 [0.028]	124	0.524 [0.045]	311	0.302 [0.026]	-0.056

The value displayed for t-tests are the differences in the means across the groups.

***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

CGP's effect on child health disparities

Table 3 presents the results of the DDD model for our sample. The final coefficient (Area_Treat*Eligible*F-up - the DDD estimate) tells us whether the change from baseline to follow-up is different for the eligible versus the non-eligible households in treatment areas compared to control areas. If the CGP has led to catch-up in child health, we should expect these coefficients to be positive and significant. The coefficients are positive, suggesting that the CGP improved child health and nutrition outcomes for beneficiaries compared to non-beneficiaries (as compared to trends in the control areas). We find that the cash transfer improved child health outcomes from 5 to 13 percentage points (column 1-3) and nutrition outcomes from 3 to 5 percentage points. However, none of them are statistically significant, meaning that we cannot reject the null hypothesis for any of these estimates. The Follow-up coefficients show that there was a worsening of these outcomes between baseline and follow-up, but that such effects varied across treatment and control area, which may have affected the impact of the CGP and our ability to derive robust conclusions on the effect of the program.

We suspect that the statistical power of the analysis may have been affected by contradictory trends at the local level. Hence, we analyzed these results by districts. Indeed, in our qualitative study, some of the stakeholders suggested that vulnerabilities and constraints (e.g. access to services, economic opportunities) may differ from one area to the next. We performed an analysis of variance, adjusting p-values for multiple testing using the Bonferroni correction, to confirm whether some of the districts showed statistically significant differences in the child health outcomes of interest. This test confirmed that the populations in the districts of Maseru, Leribe and Berea (as a whole or eligible households in particular) showed such differences. Therefore, to check whether our general estimates were affected by contradictory trends in these specific districts, we tested the model removing one district at a time as a robustness test. The DDD results (see tables A2a to f in Annex 2) showed overall similar trends as those presented in Table 3. However, the findings for child health spending show that their statistical significance is affected by specific district (Maseru and Leribe for this particular outcome). These variations may be the result of district-specific trends. However, the sample sizes of individual districts (and related lack of statistical power) prevented us from exploring these local trends and phenomena further.

Table 3. DDD model results for child-level outcomes in household-level analysis

Outcomes are coded so that positive score means good nutrition and health in children under 6 years old

	No child illness in the last 30 days	Healthcare Spending on children in the last 3 months	Self-assessed child health status	No child going to bed hungry in the last 3months	No child eating fewer meals in the last 3months	No child eating smaller meals in the last 3months
Treatment areas	-0.092	0.099*	-0.005	0.036	0.014	0.010
	(0.062)	(0.054)	(0.028)	(0.055)	(0.066)	(0.066)
Eligible	0.025	-0.002	-0.021	-0.147***	-0.308***	-0.289***
	(0.054)	(0.044)	(0.026)	(0.053)	(0.056)	(0.056)
Follow-up	-0.044	0.109**	-0.044	-0.019	-0.124**	-0.143**
	(0.063)	(0.052)	(0.034)	(0.051)	(0.057)	(0.056)
Elig*F-up	-0.008	-0.088	0.034	0.062	0.204***	0.201***
	(0.075)	(0.062)	(0.042)	(0.064)	(0.070)	(0.069)
Area_Treat*F-up	0.034	-0.149**	-0.034	0.017	-0.009	0.002
	(0.082)	(0.071)	(0.050)	(0.070)	(0.081)	(0.080)
Area_Treat*Eligible	0.059	-0.108*	-0.032	0.040	0.073	0.067
	(0.074)	(0.063)	(0.037)	(0.069)	(0.077)	(0.077)
Area_Treat*Eligible*F-up	0.047	0.128	0.050	0.042	0.054	0.031
	(0.098)	(0.082)	(0.059)	(0.087)	(0.098)	(0.097)
Constant	0.602***	0.196***	0.949***	0.762***	0.543***	0.514***
	(0.045)	(0.037)	(0.020)	(0.042)	(0.049)	(0.049)
Observations	1,532	1,524	1,524	1,531	1,532	1,532
R-squared	0.008	0.011	0.007	0.023	0.042	0.036

Standard errors clustered on household in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Sub-group analyses

To test the impact of the CGP on different vulnerable groups, we ran a subgroup analysis according to child food security level at baseline (Table 4), and the gender of the head of the household (Table 5). We only report the DDD estimates (full tables are available in Annex 3).

Table 4 shows positive DDD estimates for two outcomes: healthcare spending on children (benefitting food insecure households) and self-assessed health (in favor of more food secured households). However, looking at the differences between the two groups, only the effect on self-assessed health is statistically significant. This implies that unlike comparatively more vulnerable households, more food secure households did see a catch-up effect on how they assessed the health of their children.

Looking at Table 5, we see positive DDD estimates for health outcomes for male-headed households and for female-headed households regarding nutrition outcomes. Interestingly, the other group also systematically observed an opposite trend, as the negative DDD estimates for child health outcomes amongst female-headed households and those for child nutrition outcomes amongst male-headed households show. These opposite trends may explain why the general results in Table 3 didn't show any statistically significant results. Indeed, as the two group are almost evenly divided in our sample (40% male-headed households versus 60% female-headed households), their opposite effects may be canceling each other. The results for child healthcare spending in Table 5 should be interpreted with caution, as the difference between male- versus female-headed households for this estimate is only significant at a fairly high p value ($p<0.1$). In contrast, the difference between male- versus female-headed households for child nutrition outcomes are statistically significant at $p<0.05$, leading to more confident results in the "catch-up" effects observed amongst female-headed households for these outcomes. As children in female-headed households were found to have a statistically significant nutrition disadvantage at baseline (Table A1c), these findings would suggest that the CGP may have contributed to a reduction of the gendered-gap between these two types of households.

Table 4. DDD model results for child-level outcomes in household-level analysis by food security status at baseline.

Outcomes are coded so that positive score means good nutrition and health in children under 6 years

	Households where children **had to** eat fewer meals in the last 3 months at baseline (0)			Households where children **did not** have to eat fewer meals in the last 3 months at baseline (1)		
	Illness in the last 30 days	**Healthcare Spending in the last 3 months**	**Self-assessed health status**	**Illness in the last 30 days**	**Healthcare Spending in the last 3 months**	**Self-assessed health status**
Area_Treat*Eligible*F-up	0.061	0.205*	-0.110	-0.035	0.076	0.198**
	(0.130)	(0.108)	(0.083)	(0.159)	(0.133)	(0.088)
Observations	976	972	970	562	558	560
R-squared	0.018	0.014	0.005	0.015	0.016	0.025

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5. DDD model results for child-level outcomes in household-level analysis by gender of the head of the households.

Outcomes are coded so that positive score means good nutrition and health in children under 6 years

	Female-headed households			**Male-headed households**		
	Illness in the last 30 days	**Healthcare Spending in the last 3 months**	**Self-assessed health status**	**Illness in the last 30 days**	**Healthcare Spending in the last 3 months**	**Self-assessed health status**
Area_Treat*Eligible*F-up	-0.045	-0.101	0.128	0.136	0.210*	0.031
	(0.170)	(0.148)	(0.107)	(0.130)	(0.109)	(0.078)
Observations	572	570	568	852	846	848
R-squared	0.002	0.026	0.010	0.016	0.011	0.008

Table 5. (cont.)

	Female-headed households			Male-headed households		
	Going to bed hungry in the last 3months	**Eating fewer meals in the last 3months**	**Eating smaller meals in the last 3months**	**Going to bed hungry in the last 3months**	**Eating fewer meals in the last 3months**	**Eating smaller meals in the last 3months**
Area_Treat*Eligible*F-up	0.031	0.366**	0.304*	0.056	-0.154	-0.168
	(0.162)	(0.177)	(0.175)	(0.116)	(0.130)	(0.127)
Observations	572	572	572	851	852	852
R-squared	0.027	0.066	0.051	0.027	0.029	0.025

Robust standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

Discussion

CTs have been presented as tools to promote equity amongst children. We tested whether Lesotho's CGP might have promoted health equity in targeted communities during the early phases of the program (2011-2013), prior to the introduction of Cash Plus interventions. All our outcomes are measured in 2013, two years after the baseline survey, which means that we study short-term effects. First, we assessed whether the CGP would allow the disadvantaged children receiving the CGP to "catch-up" with other, less vulnerable children in the community in terms of health outcomes. Then, we explored whether specific vulnerable groups may have seen their child health gap reduce as a result of the program. Before exploring the main findings of this study, it is important to highlight some of its key strengths and limitations.

Strengths and limitations

Unlike many CT pilots and programs, the CGP's monitoring and evaluation included data collection amongst both eligible and non-eligible households, thus offering a unique opportunity to explore the program's effect on child health inequalities at community level. The randomized controlled trial design followed by the CGP evaluation in these early phases provides a promising design for exploring the direct effect of the program on these inequalities.

Yet, certain limitations should be noted. First, children under 6 years old make up less than 12% of the total sample (Pellerano *et al.*, 2012). The small size of our population of interest limited our ability to further explore trends and phenomena at the district levels, and may have impacted the statistical power of our analysis for some of the outcomes we studied. Secondly, as this study relies on secondary data analysis, certain key child health outcomes – such as immunization or anthropometric indicators – could not be included, as they were only collected in the follow-up survey.

Both of these factors affected our ability to test potential correlations between the CGP's health equity effect and measures of economic empowerment identified in our qualitive study, as the samples for these indicators would have been too small to lead to meaningful interpretation. Instead, our study focuses on the CGP's impact on different vulnerable groups. Based on the CGP's theory of change and the findings from our qualitative study, we assume that if the CGP had led to an empowerment of vulnerable households, comparatively more vulnerable households would have seen a more important catch-up effect (Pellerano *et al.*, 2014; Besnier *et al.*, Under review).

Finally, although our study focused on the CGP phases before the introduction of Cash Plus components, we cannot exclude the possibility that other interventions in the targeted areas, such as the 2012-2013 food emergency grant distributed to CGP-eligible households as well as other emergency support available from local authorities and NGOs, may have contributed to the effects we observe here. Hence, while our study does support a catch-up effect of the CGP for female-headed households, the causal link between the CGP and these effects must be interpreted with caution.

Main findings

Although the program's 2014 evaluation had found that the CGP had reduced illnesses amongst beneficiary children, our study shows that this change was not statistically significant, thus rejecting the hypothesis of a catch-up for this outcome. As non-eligible households also reported slightly higher incidence of child illnesses at baseline, a reduction of inequalities in child morbidity at community level is unlikely. This would also suggest that there might be other factors of vulnerability – beyond those identified as selection criteria for the CGP - driving the patterns of childhood illnesses in these communities. Secondly, our findings don't support the hypothesis that the CGP allowed a reduction of inequalities in access to healthcare by making fund available to recipients to cover the cost of transport or medicines. Therefore, while previous qualitative research had found indications that the CGP improved recipient children's access to medicines (Oxford Policy Management and Andrew Kardan, 2014), our findings suggest that these improvements might not have been enough to overcome the various accessibility and/or affordability barriers to healthcare identified in the 2011 baseline study (Pellerano *et al.*, 2012). Yet, our robustness test by district suggests that the effect of the CGP on this latter outcome may have been influenced by trends specific to individual districts. As the program is expanded to a growing number of households, an analysis at district level may help better understand these local trends and the factors that influence them.

Our findings regarding self-assessed health and nutrition outcomes help illustrate a key finding of this study regarding the impact of the CGP on different vulnerable groups. As our sub-group analyses show, the CGP seems to have led to a catch-up effect between eligible and non-eligible in self-assessed

child health for beneficiary children that were comparatively more food secure at baseline. A possible explanation for this effect is how the CGP funds were spent. As the 2014 evaluation showed, beneficiary households spent most of their resources on food (Pellerano *et al.*, 2014). Hence, it is possible that more food secure households had slightly more flexibility to invest CGP funds into a more diverse basket of goods, leading to an increased feeling of health and wellbeing and a larger reduction of stress in these households, as program stakeholders suggested in our qualitative study (Besnier *et al.*, Under review). Meanwhile, more food insecure beneficiary households might have had to dedicate a larger portion of this additional income to their children's basic nutrition needs, especially in a context of poor harvests. However, further analysis on a wider sample would be necessary to confirm this hypothesis.

Our findings on nutrition outcomes further illustrate a differentiated effect of the program for different types of households. While our overall findings didn't find a statistically significant reduction of the gap between beneficiary and non-beneficiary children regarding their nutrition, the sub-group analysis by gender of the head of the household suggests that this might be result of opposite trends between male-headed and female-headed households. Indeed, female-headed households, who tended to be more vulnerable at baseline, did see a catch-up effect in their children's outcomes further to the CGP. If these findings were to be confirmed as the program is scale-up to the whole country, they would support the gender equity potential of the CGP for selected outcomes. If so, the results would also partially support the theory that these improvements may be linked to selected gendered empowerment processes such as improved access to economic resources for women.

This study contributes to the field of CT research in two ways. First, it helps build the evidence base on the effect of CTs like the CGP on the health gap. Previous research had explored the impact of the CGP on different groups of eligible households (heterogeneity analysis) (Pellerano *et al.*, 2014; Sebastian *et al.*, 2017). There is also a growing body of literature exploring the effect of CTs and safety net programs on various determinants of health for non-eligible households (indirect treatment effect or spillovers on education, consumption or food security) (Angelucci and De Giorgi, 2009; Angelucci *et al.*, 2010; Beegle *et al.*, 2017; Carraro and Ferrone, 2019). For example, previous studies on the CGP had found positive economic spillover and selective food security spillover amongst non-eligible households (Thome *et al.*,

2016; Carraro and Ferrone, 2019). Yet, the implications of CTs for child health disparities at the community level have remained understudied (Owusu-Addo *et al.*, 2018). This study points towards the potential of CT to reduce the health gap amongst specific population groups. Secondly, our sub-group analysis suggests that CTs affect vulnerabilities differently and may not help reduce health disparities across all factors of health inequalities. A possible reason for these difference lies in the different needs, preferences and choices of various vulnerable groups. For example, Yoong et al. (2012) has highlighted how the gender of the adult recipient affected different child outcomes rather than female recipients being systematically more family-friendly. In their study of the psychosocial effects of CTs, Samuels and Stavropoulou (2016) have shown how different factors of vulnerabilities may affect the psychosocial effect of these programs on various vulnerable groups. This study further supports CTs having differentiated impacts on health inequalities according to the characteristics of the households and the outcomes of choice, possible because of different constraints, opportunities and preferences. To better understand how CTs can contribute to child health equity, future research should more systematically explore their impact amongst different population groups and as well as the processes through which these equity effects can be enhanced.

Conclusion

In this paper, we examined to what extent CT programs could reduce child health inequalities. First, we explored whether the CGP reduced the gap in selected child health outcomes between beneficiary households and non- beneficiary households in areas receiving the CGP compared to control areas. Secondly, we examined whether this effect differs according to selected factors of vulnerability, namely child food security at baseline (as a proxy of access to economic resources) and the gender of the head of the household. We find that while the changes observed may suggest a catch-up effect amongst beneficiary households, these effects aren't statistically significant. The robustness tests and sub-group analysis shows that these overall results may be impacted by opposing local or group-specific trends. Secondly, we find that the CGP was associated with a reduction in the gap for selected child health outcomes amongst specific sub-groups. However, these catch-up effects did not necessarily benefit the comparatively more vulnerable groups across all outcomes. This study highlights the potential of CT

programs like the CGP to address health disparities in pre-school children for selected population groups in the community. However, these effects are complex and do not necessarily lead to an overall catch-up effect for beneficiary children.

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ANNEXES

ANNEX 1. SUPPLEMENTARY MATERIAL – PAPER 1

ANNEX 1. 1. Intervention Table

The table below presents broad types of interventions for which systematic reviews reporting population health impacts have been identified in the Campbell Collaboration and UNICEF Office of Research- Innocenti evidence mega-map on child welfare(Campbell Collaboration & UNICEF Office of Research- Innocenti, 2018) and/or that have been identified by professionals and researchers contacted by the review team. These interventions have been categorized according to WHO EURO's definitions of health promotion, protection and prevention.(WHO EURO, 2015)

	Health promotion *Intersectoral and interdisciplinary operations enabling people to stay healthy or improve their health and its determinants.*	Health protection *Use of legal, regulatory or enforcement mechanisms to safeguard public health*	Disease prevention *Public health services within the health system that target individuals or populations at risk of developing a disease.*
Structural level	• Welfare system	• Environmental health standards and safety (e.g. water and air quality)	• Health systems resources allocated to prevention • Health system's scope and coverage (as applied to preventive services)
Public policy level	• Universal Health coverage policies (as applied to children and their families) • Family policy • Financial assistance/Public assistance (e.g. conditional cash transfer) • Food policy • Access to health services policies	• Environmental health standard application and enforcement	• Water, sanitation and waste management infrastructure. • Child immunization policies and programs.
Social or community level	• Health and nutrition education • Food fortification and supplements	• Pollution and chemical exposure reduction interventions (e.g. cookstove distribution)	• Hygiene promotion • Parenting programs • Community outreach • Community health services • Vector control campaign (mosquito nets distribution, insecticide) • Deworming campaigns
Individual or household level	• Interventions promoting/changing nutrition practice (e.g. breastfeeding support, nutrition therapy, supplementation)	NA (see definition of health protection)	• Preventive health services (immunization, preventive treatment for HIV) • Psychosocial support • Counselling • Water, sanitation and hygiene (WAS) interventions

ANNEX 1. 2. Which Public Health Interventions Are Effective in Reducing Morbidity, Mortality and Health Inequalities from Infectious Diseases Amongst Children in Low-Income and Middle-Income Countries (LMICs): Protocol for an Umbrella Review

BMJ Open

Which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases amongst children in low-income and middle-income countries (LMICs): protocol for an umbrella review

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ABSTRACTS

Introduction Despite significant progress in the last few decades, infectious diseases remain a significant threat to children's health in low-income and middle-income countries. Effective means of prevention and control for these diseases exist, making any differences in the burden of these diseases between population groups or countries inequitable. Yet, gaps remain in our knowledge of the effect these public health interventions have on health inequalities in children, especially in low-income and middle-income countries. This umbrella review aims to address some of these gaps by exploring which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases among children in low-income and middle-income countries.

Methods and analysis An umbrella review will be conducted to identify systematic reviews or evidence synthesis of public health interventions that reduce morbidity, mortality and/or health inequalities due to infectious diseases among children (aged under 5 years) in low-income and middle-income countries. The interventions of interest are public health interventions targeting infectious diseases or associated risk factors in children. We will search for reviews reporting health and health inequalities outcomes in and between populations. The literature search will be undertaken using the Cochrane Library, Medline, EMBASE, the CAB Global Health database, Health Evidence, the Campbell Collaboration Library of Systematic Reviews, International Initiative for Impact Evaluation Systematic review repository, Scopus, the Social Sciences Citation Index and PROSPERO. Additionally, a manual search will be performed in Google Scholar and three international organisations websites (UNICEF Office of Research—Innocenti, UNICEF, WHO) to capture grey literature. Data from the records meeting our inclusion/exclusion criteria will be collated using a narrative synthesis approach.

Ethics and dissemination This review will exclusively work with anonymous group-level information available from published reviews. No ethical approval was required.
The results of the review will be submitted for publication in academic journals and presented at international public health conferences. Additionally, key findings will be summarised for dissemination to a wider policy and general public audience as part of the Centre for Global Health Inequalities Research's policy work.

PROSPERO registration number CRD42019141673

Strengths and limitations of this study

- This umbrella review will help to assess the availability and quality of evidence on the population health and equity effect of selected public health interventions addressing the burden of infectious diseases in children in low-income and middle-income countries.
- By searching for a wide range of public health interventions, this review will help identify areas or sectors where the evidence on equity is weak and needs further research.
- Including both academic and grey literature as well as different approaches and definition of equity will help overcome some of the difficulties faced in previous mapping of the literature on this topic.
- More recent primary studies on new interventions may not be captured, as they may not have been synthesised into reviews yet.
- The variety of interventions covered constrains the type of synthesis and analysis possible with the data extracted, hence our decision to opt for a narrative synthesis rather than a quantitative analysis.

INTRODUCTION

Despite economic development and improvement of morbidity and mortality globally, disparities in health have persisted between and within countries.[1–4] As children depend on others for their health and well-being, they are particularly affected by these inequalities.[5] For example, in 2016, the mortality rate for children under 5 years old ranged from 2.2 per 1000 live births in Luxembourg to 130.6 in the Central African Republic, with two regions—South Asia and western sub-Saharan Africa—accounting for more than half of all under 5 deaths globally.[2] The Institute for Health Metrics and Evaluation Global Burden of Diseases estimates that while under 5 mortality represented less than 10% of all deaths globally in 2017, they made up more than one-third of all deaths in low-income countries.[6] Additionally, according to the United Nations Children's Fund (UNICEF), in countries with high child mortality, the children living in the poorest households are almost twice as likely to die before the age of 5 years than those from the richest households.[3]

Some major progress has been made in fighting infectious diseases.[7] The number of deaths attributed to these diseases has decreased in the last few decades,[8] while the incidence of major infectious threats to global health, such as HIV, tuberculosis and malaria have dropped significantly since 2000.[9] According to UNICEF, about 70% of the global decline in children under 5 mortality since 2000 is due to the prevention and treatment of infectious diseases.[3] However, the burden in this age group remains significant, especially in low-income and middle-income countries (LMICs). Lower respiratory infections, such as pneumonia, were among the top three causes of death in children under 5 years in both LMICs while diseases like whooping cough and measles ranked within the 10th leading causes of death.[10] In 2016, the leading causes of deaths globally in infants and young children (as percentages of all deaths in that age group) were three infectious diseases: acute respiratory infections, diarrhoea and malaria.[11] These diseases were also three of the five leading causes of disability-adjusted life years—a measure of years in good health lost due to illness or premature death—in children under 5 living in low-income countries in 2017.[10]

Effective means of prevention and control for these diseases, such as immunisation or vector control, are available. For example, WHO has licensed vaccines for the prevention and control of 25 infections,[12] 11 of which are recommended for all children worldwide.[13] Some health promoting interventions, such as health education or improved infant and child nutrition, have also a protective effect against some of these diseases.[14 15] Therefore, any inequalities in the burden of these diseases between population groups or countries could be defined as avoidable, thus qualifying as inequities according to WHO definition: 'avoidable inequalities in health between groups of people within countries and between countries [arising] from inequalities within and between societies'.[16]

Globally, the evidence base on the effect of public health interventions on health inequalities in children is growing but gaps remain.[15 17 18] Previous work has suggested that the available evidence is disproportionally coming from high-income countries.[17 19 20] A 2018 mapping of the evidence available on LMICs regarding interventions to improve child well-being,[21 22] also found that while reviews may provide data disaggregated by population group, very few explicitly focus on the potential equity issues raised by the differences between groups. Finally, most of the reviews available focus exclusively on targeted interventions towards disadvantaged groups without necessarily addressing the gap between or across different groups.[17 23] Therefore, the impact of such interventions may not be reflected across or between different population groups.

In this umbrella review, we explore which public health interventions are effective in reducing morbidity, mortality and health inequalities from infectious diseases among children in LMICs.

METHODS AND ANALYSIS

An umbrella review will be conducted to identify systematic reviews or evidence synthesis of public health interventions that reduce morbidity, mortality and/or health inequalities due to infectious diseases among children (aged under 5 years) in LMICs. An umbrella review is defined as the compilation and synthesis of evidence from multiple (systematic) reviews into a single, easy-to-use document.[24] Umbrella reviews, also called 'overview of reviews' or 'review of reviews', are an established method of locating, appraising and synthesising systematic reviews of interventions.[25] They use systematic review methodology to locate and evaluate published systematic reviews of interventions: a systematic search of the literature, a screening and selection of the records according to predefined criteria, systematic data extraction and quality appraisal, and synthesis of the results or findings. The main difference with conventional reviews is the type of publication included, as umbrella reviews include other systematic reviews or evidence synthesis rather than primary studies. Umbrella reviews are, therefore, able to present the overarching findings of such systematic reviews (usually considered to be the highest level of evidence) and can also extract data from the best quality studies within them.[26] In this way, they represent an effective way of rapidly reviewing a broad evidence base. Umbrella review methodology is an increasingly commonly used technique in public health and medical research[20 27–30] but no umbrella review has yet been conducted in relation to reducing morbidity, mortality and health inequalities from infectious diseases among children.

This umbrella review focuses on infectious or communicable diseases as defined in the 11th International Classification of Diseases: 'conditions caused by a pathogenic organism or microorganism, such as a bacterium, virus,

parasite or fungus'.[31] These diseases can be transmitted from person to person or from animals to people either directly or indirectly. For the purpose of this review and given their significant burden in LMICs, only the burden of these diseases in children will be considered.

Model, framework or theory

This review builds on the concept of population health as defined by the Canadian Institute for Advanced Research, which involves maximising health at population level while reducing inequities by addressing the determinants of health.[32] Under this conception of health, public health is to be understood as the science and process to improve and ensure the health of and across populations. Therefore, in this review, public health interventions will be defined as policies, programmes or actions aiming at 'preventing disease, prolonging life and promoting health through the organised efforts of society'[33] and 'shift(ing) the distribution of health risk by addressing the underlying social, economic and environmental conditions'.[34]

In terms of interventions to reduce health inequalities, it builds on the Bambra *et al* framework.[35] Drawing on the health inequalities conceptual literature,[36 37] the Bambra *et al* intervention framework sets out how different levels of interventions, different approaches to conceptualising health inequalities and different intervention strategies can combine to reduce health inequalities.

Using this framework (which itself draws on the matrix developed by Dahlgren and Whitehead[38]), four levels of intervention are identified: the structural and macropolicy level (the macroeconomic, cultural and environmental context that influences the living standards of the whole population), the public policy level (policies that influence the environments in which people live, work or study), the social networks and community level (the collective actions that affect the health of communities and local areas by building social cohesion and mutual support), and the individual or household level (the interventions and strategies targeting the health individual people or households). Following Bambra *et al*'s characterisation of different intervention approaches to health inequalities (drawing on the typologies developed by Graham and Kelly[37] and Graham,[39]), our framework identifies three conceptual intervention approaches to reducing health inequalities within populations and three equity objectives for these interventions. As such, this framework identifies targeted approaches (directed at on specific groups, ie, deprived, vulnerable or disadvantaged groups—in a population), universal approaches (interventions that apply uniformly to the population) or proportionate universalism (interventions that are applied universally but that their intensity and scale should be proportionate to the level of disadvantage or health gradient across that population)[40] as the three conceptual approaches to reducing health inequalities within populations. The three equity objectives of these interventions used in this framework follow the definitions from Graham's typology[39]: 'remedying health disadvantages', which addresses the health needs of the most deprived or disadvantaged population; 'narrowing health gaps', which focuses on reducing the difference in health found between the most privileged and the most disadvantaged groups and 'reducing health gradients', which aims to reduce health differences across the whole population.

Finally, this framework is further augmented with WHO Regional office for Europe's (WHO EURO) definition of essential public health operations,[41] which identifies three core public health functions or services relevant to this work: promoting child health, protecting children from infectious diseases and preventing such diseases. Although WHO EURO recognises that certain actions may be overlapping between these three different public health functions, it broadly defines these as follows. Health promotion refers to intersectoral and interdisciplinary operations enabling people to stay healthy or improve their health and its determinants. Health protection refers to actions primarily involving the use of legal, regulatory or enforcement mechanisms to safeguard public health. Finally, prevention refers to public health services within the health system that target individuals or populations at risk of developing a diseases.[41]

Applied to child health, each intervention could be categorised and analysed according to the framework below (figure 1), in order to identify structures or patterns of interventions related to specific population or health inequalities outcomes.

Scope

Research questions

- Which public health interventions are effective in reducing morbidity and mortality from infectious diseases among children in LMICs?
- What are the effects—if any—of these interventions on health inequalities?

The Population, Intervention, Comparison/control, Outcomes and Study design (PICOS) for our review are described below:

Population

The populations of interest are children under 5 years old or households with at least one child under 5 years old, living in countries that have been listed as low-income, lower-middle or upper-middle-income by the World Bank at least once from 2000 to present.[42] This definition of low-income, lower-middle or upper middle-income countries will allow us to capture the increased efforts in improving child health further to the adoption of the Millennium Development Goals (MDGs), which was associated to a global under 5 mortality rate dropping by 44% between 2000 and 2015.[9]

Intervention

The interventions of interest are public health interventions targeting infectious diseases or associated risk factors in children (table 1). Following our definition of

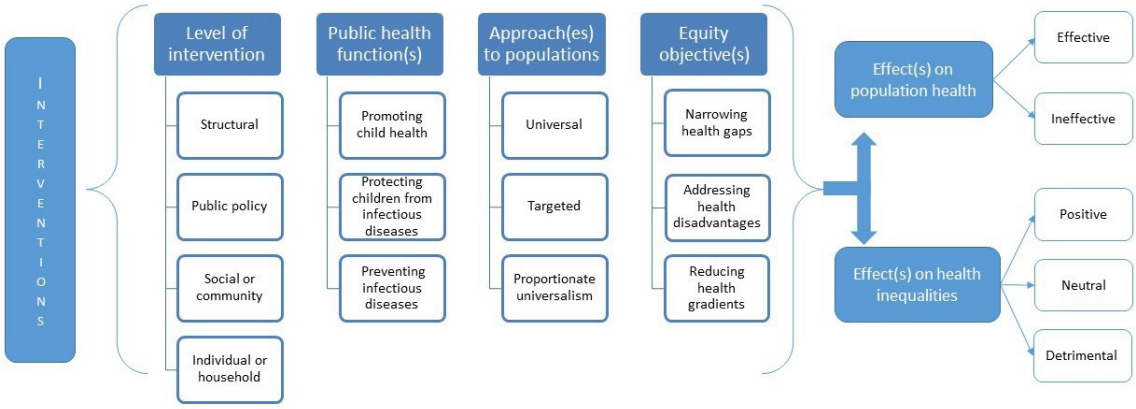

Figure 1 Analytical framework to understand the effect of public health interventions on health inequalities in LMICs.
LMICs, low-income and middle-income countries.

public health interventions, these involve active, collective action(s), policy/ies, programme(s) or project(s) aiming at creating change and, ultimately, improving health. These interventions should include primary prevention interventions targeting specific diseases (eg, immunisation programmes or mosquito nets distribution) and policies or interventions addressing environmental, behavioural or metabolic/nutritional risks (eg, support to breastfeeding), as well as protective factors for infectious diseases (eg, cookstove intervention programmes or water and sanitation systems). These interventions may also include wider health promotion or health protection actions that have had an effect on the burden of infectious diseases in children (eg, environmental regulations, parenting programmes or conditional cash transfers, inclusion of preventive services in Universal Coverage packages).

Secondary prevention activities (early detection of a disease before it becomes symptomatic) and tertiary prevention activities (involving improving treatment and recovery, improving the health outcomes in those already affected by a disease)[43] as well as curative approaches are beyond the scope of this umbrella review and will be excluded.

Table 1 presents broad types of interventions for which systematic reviews reporting population health impacts have been identified in the Campbell Collaboration and UNICEF Office of Research—Innocenti evidence mega-map on child welfare[21] and/or that have been identified by professionals and researchers contacted by the review team. These interventions have been categorised according to WHO EURO's definitions of health promotion, protection and prevention.[41]

Comparison/control

To account for the diversity of methods used to asses public health interventions[44] and in line with the umbrella review of public health interventions by Thomson *et al*,[20] this umbrella review will consider systematic reviews and evidence synthesis of primary studies with and without control groups. Control groups may include randomised or matched designs. Other comparison groups will also be considered, such as preintervention and postintervention or alternative intervention comparisons.

Outcomes

The outcomes of interest involve both health and health inequality outcomes in and between populations, which reflect the effectiveness of the intervention. Primary outcomes include population-level measures such as: mortality and morbidity measures for infectious diseases, the number of cases reported for individual infectious diseases, the number of cases averted, the number of deaths due to these diseases, the incidence of these diseases, service uptake or intervention coverage (eg, immunisation, children sleeping under mosquito nets or coverage of postpartum prevention of mother-to-child transmission of HIV).

Secondary outcomes include measures of variation in these health outcomes between groups or populations according to the Progress+factors (table 2).

Study design

Only systematic reviews (including meta-analysis) and evidence syntheses covering at least two relevant primary studies and published in the last 5 years (2014–2019) will be included. However, no publication date thresholds will be applied to the studies included in individual reviews. This approach will ensure that the review captures the most up-to-date findings while limiting the risk of overlaps and redundancies between reviews. At the same time, applying no publication date limitations to the studies included by individual reviews will allow us to capture the progress made in individual fields of public health, including those achieved during the MDG era.

Systematic reviews involve a systematic search, appraisal and synthesis of research evidence following a transparent and systematic method.[24] Meta-analyses are a statistical

Table 1 Types of public health interventions targeting infectious diseases or associated risk factors in children identified in previous research

	Health promotion Intersectoral and interdisciplinary operations enabling people to stay healthy or improve their health and its determinants	Health protection Use of legal, regulatory or enforcement mechanisms to safeguard public health	Disease prevention Public health services within the health system that target individuals or populations at risk of developing a disease
Structural level	► Welfare system	► Environmental health standards and safety (eg, water and air quality).	► Health systems resources allocated to prevention. ► Health system's scope and coverage (as applied to preventive services).
Public policy level	► Universal health coverage policies (as applied to children and their families). ► Family policy. ► Financial assistance/public assistance (eg, conditional cash transfer). ► Food policy. ► Access to health services policies.	► Environmental health standard application and enforcement.	► Water, sanitation and waste management infrastructure. ► Child immunisation policies and programmes.
Social or community level	► Health and nutrition education ► Food fortification and supplements	► Pollution and chemical exposure reduction interventions (eg, cookstove distribution).	► Hygiene promotion ► Parenting programmes ► Community outreach ► Community health services ► Vector control campaign (mosquito nets distribution, insecticide) ► Deworming campaigns
Individual or household level	► Interventions promoting/changing nutrition practice (eg, breastfeeding support, nutrition therapy, supplementation).	NA (see definition of health protection).	► Preventive health services (immunisation, preventive treatment for HIV). ► Psychosocial support. ► Counselling. ► Water, sanitation and hygiene interventions.

technique used in certain systematic reviews in order to combine the results of quantitative studies.[24] Evidence syntheses bring individual studies within the context of global knowledge for a given topic. They use a transparent methodology detailing a clear question and the method to identify, select, appraise, analyse and synthesise studies.[45] Following these definitions (and in keeping with the criteria of the Database of Abstracts of Reviews of Effects),[46] three key elements will be required for systematic reviews or evidence syntheses to be included in this umbrella review: (1) a clear question, (2) a transparent method for the search, selection and appraisal of evidence or studies and (3) a separate synthesis of the results or evidence meeting this umbrella review's scope and inclusion criteria.

In keeping with other public health umbrella reviews,[20] the types of primary studies included within the systematic reviews may consist of experimental or quasi-experimental studies, with or without control groups, such as: randomised and non-randomised controlled trials, controlled observational studies, before and after studies, interrupted time-series studies, natural policy experiments, evaluation studies, cohort studies, case–control studies and ecological studies.

Search strategy

The literature search was undertaken between 19 and 30 June 2019 using the following databases: the Cochrane Library (includes the Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled

Table 2 Factors contributing to health (in)equity (known as progress+factors)

Place of residence	Rural/urban, housing characteristics
Race, ethnicity, cultural background	Racial, ethnic and sociocultural background
Occupation	Employment status, type of occupation, employment-based benefits.
Gender and sex	Biological and gender-based differences and characteristics
Religion	Religious background
Education	Years in and/or level of education attained, school type
Social capital	Social relationships and networks, support and participation at neighbourhood/community/family level
Socioeconomic status	Income, welfare, assets and resources at individual or household level
+	These include other factors of inequalities such as age, disability, being part of a vulnerable group (eg, refugee or displaced person, minority)

Adapted from Kavanagh *et al*[50]; O'Neill *et al*.[51]

Trials and the Cochrane Clinical Answers), Medline (Ovid), EMBASE (Ovid), the CAB Global Health database (Ovid), Health Evidence (McMaster University), the Campbell Collaboration Library of Systematic Reviews (The Campbell Library), International Initiative for Impact Evaluation Systematic review repository (International Initiative for Impact Evaluation—3ie), Scopus (Scopus), the Social Sciences Citation Index (SSCI, Web of Science) and PROSPERO (Centre for Reviews and Dissemination, University of York). Additionally, a manual search will be performed in Google Scholar and on the following websites:

- UNICEF Office of Research—Innocenti https://www.unicef-irc.org/publications/
- UNICEF https://www.unicef.org/publications/ and https://data.unicef.org/resources/
- WHO https://apps.who.int/iris/ and https://www.who.int/maternal_child_adolescent/

The search was performed by one reviewer (EB), with guidance from the research librarians (MRJ and AK) regarding the databases chosen and the design of the search strings. The search string used a combination of MeSH terms and free-text keywords and was adapted by one reviewer (EB) for each database. Prior to developing the full search (online supplementary annex 1), test search strings have been piloted by one reviewer (EB) with comments and advice from a second reviewer (KT) and the research librarians (MRJ and AK). Once the search string has been defined, the Polyglot Search Syntax Translator[47] was used by one reviewer (EB) to facilitate and support the translation of the search strings from one database to the other. Searches were limited to records published since 2000. No restriction of language was applied. The full-search strategy can be found in online supplementary annex 2.

Screening

Article screening will be carried out the software Rayyan.[48] Titles and abstracts will be screened by one reviewer (EB) according to the inclusion/exclusion criteria listed below. Ten per cent of the titles and abstracts selected at random will be screened independently by a second reviewer (KT). Screening and inclusion of full texts will then be assessed independently by two reviewers (TM and EB or DS and EB). An inter-rater reliability will be assessed using the kappa statistic at each screening stage. Discrepancies will be resolved by consensus between the two reviewers. If a consensus fails to be reached, the relevant record will be sent to the third reviewer for arbitration. A flow chart describing the study selection process will be developed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[49]

Study selection

Inclusion/exclusion criteria

Inclusion

1. The review team has access to the publication's full text.
2. The publication was published between 2014 and 2019.
3. The publication is an academic article or a report of a systematic review (including a meta-analysis) or an evidence synthesis as defined in PICOS, synthesising at least two relevant primary studies.
4. The publication covers exclusively or synthesises separately, studies in countries defined at least once since 2000 as low-income, lower-middle or upper-middle-income by the World Bank historical classification.[42]
5. The publication covers interventions targeting children from live birth until 5 years old or households with children under 5 years old.
6. The publication covers active, collective health promotion, health protection or primary prevention public health interventions addressing or affecting the burden of infectious diseases or their risk factors.
7. The publication reports health or health inequalities outcomes in and between populations, disaggregated by one or more of the PROGRESS+factors as defined in PICOS.

Exclusion

1. The publication's full text cannot be obtained by the review team.
2. The publication was published before 2014.
3. The publication is a primary study, a conference proceeding or paper, an abstract, editorial, letter, comment, erratum, survey, note or a doctoral thesis; or does not meet one or more of the three key elements of systematic reviews and evidence syntheses as defined in PICOS; or does not synthesise at least 2 relevant primary studies.
4. The publication only includes interventions in country/ies the World Bank historical classification has continuously defined as high-income between 2000 and 2019,[42] or does not synthesise or report on low-income, lower-middle or upper-middle-income countries separately.
5. The publication only includes interventions targeting adults, pregnant women, adolescents or children older than 5 years old; or fail to synthesise primary studies' results for the under 5 age group separately.
6. The publication only includes curative interventions or secondary or tertiary prevention interventions, is not addressing or affecting the burden of infectious diseases or their risk factors, or only report trends in individual behaviours without any actions aiming at changing or influencing them.
7. The publication does not include a relevant overall health outcome or disaggregated information by or between population groups.

Data extraction

Within the reviewer team (TM and EB; DS and EB or EB and KT), data will be extracted by one reviewer and checked by a second. A data extraction form will be developed using the PROGRESS+framework[50 51] and the PRISMA-E checklist.[52] This form will include studies' details; the characteristics of interventions covered according to our framework; the PROGRESS+factors covered (if any); their main findings and outcomes at population level and/or disaggregated by relevant groups as well as critical assessment criteria (see online supplementary annex 3). Discrepancies will be resolved by consensus between the two reviewers. If a consensus fails to be reached, the relevant record will be sent to a third reviewer for arbitration.

Quality appraisal

Within the reviewer team (TM and EB; DS and EB or EB and KT), the critical appraisal will be carried out by one reviewer using AMSTAR 2[53] at the same time as the data extraction, and checked by a second reviewer. Discrepancies will be resolved by consensus between the two reviewers. If a consensus fails to be reached, the relevant record will be sent to a third reviewer for arbitration.

Overlaps between studies

As they extract relevant information, the reviewers (EB, DS and TM) will catalogue the primary studies covered by individual review into a citation matrix developed by Thomson *et al*[28] in order to identify overlaps (online supplementary annex 3). This citation list will be checked by a second reviewer alongside the critical appraisal and extraction sheet.

Patient and public involvement

No patient involved.

The scope of this review was informed by the literature and discussions with public health experts.

SYNTHESIS

The findings of the publication included will be collated using a narrative synthesis approach. Indeed, the broad scope of interventions, study designs and type of outcomes included in public health umbrella reviews make narrative synthesis approaches more suitable than quantitative analysis.[26] Findings from individual reviews or syntheses will be categorised according to the framework defined previously in order to identify structures or patterns of interventions related to specific population or health inequalities outcomes. Then, for each category or pattern, these findings will be analysed according to their effect on population health outcomes and health inequalities, highlighting similarities and differences for various types of interventions and the strength of the evidence. To allow us to identify potential gaps in the research affecting a specific field or type of interventions, reviews failing to report health inequalities will be marked and analysed separately. The citation matrix developed during the extraction will also allow for the identification of overlaps between reviews, which will be analysed according to the reviews' publication date, scope and quality.

A discussion on the main gaps and methodological challenges faced by the review will also be included.

PILOT SEARCH

The search strategy was piloted in a health database (Medline, via Ovid) and a social science database (Scopus) (see online supplementary annex 1), with support and guidance from NTNU research librarians (MRJ and AK). A selection of four tracer systematic reviews and evidence syntheses[54–57] was used to test whether the different search strings identified them. The choice of the final search string was made based on the result of each stage (online supplementary annex 4).

At a first stage, search terms included the population, the intervention, the type of study covered using either the database own limit options or the terminology developed by the Scottish Intercollegiate Guidelines Network[58] and the publication year. These strings returned 3091 records in Medline and 4148 in Scopus (as of 22 May 2019).

At the second stage, terminology related to the primary outcomes (health outcomes at population level) was added. As the review covers both population health and health inequalities outcomes, it was decided not to include

health inequality terms in order not to lose reviews not explicitly reporting health inequalities outcomes. These strings returned 2404 records in Medline and 3572 in Scopus (as of 22 May 2019).

The pilot shows a small reduction of the number of records found between the two phases by 14% in Scopus and 23% in Medline while keeping all four test articles. Therefore, it was decided to use the search string from the second pilot for this search. The search string was translated from Medline onto the other six databases (see online supplementary annex 2). The Polyglot Search Syntax Translator[47] was used to facilitate and support the translation of the search strings from one database to the other.

DISCUSSION

Although progress has been made in reducing the burden of infectious diseases during the MDG era,[3 5] the burden among children under the age of 5 remains significant in LMICs, with stark inequalities between social groups. Infectious diseases are still among the leading causes of deaths and among under 5.[6 11] Mortality data collected during the MDGs also confirm that children from disadvantaged households and neighbourhoods were more likely to die before the age of 5 than their counterparts born in more privileged groups.[59]

By their multisectoral nature, public health interventions offer great opportunities to support the efforts towards achieving the UN Sustainable Development Goals as a whole and the targets related to child health and health inequalities in particular. Yet, current projections show great variations between countries' probability to achieve these goals,[60] calling for increased efforts locally and globally in the next decade to improve child health equitably.

This umbrella review will help to assess the availability and quality of evidence on the population health and equity effect of selected public health interventions addressing the burden of infectious diseases in children in LMICs. It will identify interventions that have had a proven impact on the protection of child health via the prevention of infectious diseases and inequalities within them. Finally, it will help to identify areas or sectors where the evidence on equity is weak and needs further research.

Strengths and limitations

This umbrella review will search for a wide range of public health interventions, thus offering a good mapping of the field and the state of evidence about equity. Additionally, including both academic and grey literature as well as different approaches and definitions of equity will help overcome some of difficulties related to the sources of information or the search for equity-related studies, which previous mapping of the literature on this topic faced.

However, the wide scope of this review also constrains the type of synthesis and analysis possible with the data extracted, hence our decision to opt for a narrative synthesis rather than a quantitative analysis. It should also be noted that more recent primary studies on new interventions may not be captured by the review, as they may not have been synthesised into reviews yet. Yet, the scope and design of this review will ensure a solid assessment the availability and quality of evidence on this issue, thus offering a solid evidence base for future research as well as public health practice and policy in LMICs.

DISSEMINATION

The protocol for this review has been registered with PROSPERO (CRD42019141673).

The results of the review will be submitted for publication in academic journals and presented at international public health conferences. Additionally, key findings will be summarised for dissemination to a wider policy and general public audience as part of the Centre for Global Health Inequalities Research's policy work.

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ANNEX 1. 3. PRISMA-E

Checklist of Items for Reporting Equity-Focused Systematic Reviews				
Section	**Item**	**Standard PRISMA Item**	**Extension for Equity-Focused Reviews**	**Pg #**
Title				
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Identify equity as a focus of the review, if relevant, using the term equity	1
Abstract				
Structured summary	2	2. Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	State research question(s) related to health equity.	3-4
	2A		Present results of health equity analyses (e.g. subgroup analyses or meta-regression).	3
	2B		Describe extent and limits of applicability to disadvantaged populations of interest.	3
Introduction				
Rationale	3	Describe the rationale for the review in the context of what is already known.	Describe assumptions about mechanism(s) by which the intervention is assumed to have an impact on health equity.	5
	3A		Provide the logic model/analytical framework, if done, to show the pathways through which the intervention is assumed to affect health equity and how it was developed.	6-8
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Describe how disadvantage was defined if used as criterion in the review (e.g. for selecting studies, conducting analyses or judging applicability).	5; S2 appendix
	4A		State the research questions being addressed with reference to health equity	5
Methods				
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.		8
Eligibility criteria	6	6. Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	Describe the rationale for including particular study designs related to equity research questions.	10-11; S2 appendix
	6A		Describe the rationale for including the outcomes - e.g. how these are relevant to reducing inequity.	10; S2 appendix
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	Describe information sources (e.g. health, non-health, and grey literature sources) that were searched that are of specific relevance to address the equity questions of the review.	8-9; S2 appendix
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Describe the broad search strategy and terms used to address equity questions of the review.	9; S2; S4-5 Appendices
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).		12-13; S2 Appendix
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.		13; S2; S6 Appendices
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	List and define data items related to equity,where such data were sought (e.g. using PROGRESS-Plus or other criteria, context).	10; 13; S2;S6 appendices
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.		13; S2; S6 Appendices
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).		10; S2 Appendix
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	Describe methods of synthesizing findings on health inequities (e.g. presenting both relative and absolute differences between groups).	13-14; S2 Appendix
Risk of bias	15	15. Specify any assessment of risk of bias that may affect the cumulative evidence		13-14; S2 Appendix

across studies		(e.g., publication bias, selective reporting within studies).		
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	Describe methods of additional synthesis approaches related to equity questions, if done, indicating which were pre-specified	N/A
Results				
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.		14-15
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Present the population characteristics that relate to the equity questions across the relevant PROGRESS-Plus or other factors of interest.	S6;S9 Appendices
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).		16-17; S9 appendix
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.		S9 Appendix
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Present the results of synthesizing findings on inequities (see 14).	17-45
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).		20-45
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	Give the results of additional synthesis approaches related to equity objectives, if done, (see 16).	N/A
Discussion				
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).		46-48
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).		48-51
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	Present extent and limits of applicability to disadvantaged populations of interest and describe the evidence and logic underlying those judgments.	51
	26A		Provide implications for research, practice or policy related to equity where relevant (e.g. types of research needed to address unanswered questions).	51-52
Funding				
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.		53

From: Source: Welch V, Petticrew M, Tugwell P, Moher D, O'Neill J, Waters E, White H, and the PRISMA-Equity Bellagio Group. (2012) PRISMA-Equity 2012 Extension: Reporting Guidelines for Systematic Reviews with a Focus on Health Equity. PLoS Med 9(10): e1001333. doi:10.1371/journal.pmed.1001333

For more information: http://equity.cochrane.org/equity-extension-prisma

ANNEX 1. 4. Pilot Literature Search

Pilot search strings

Keywords

Pilot 1

[**Population]**

Title, Abstract, Key words=

"developing countries" OR (developing OR less developed OR under developed OR underdeveloped OR middle income OR low income OR lower income OR underserved OR under served OR deprived OR poor (*adj*) countr*)OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition* OR
Africa OR Asia OR Caribbean OR "West Indies" OR "South America" OR "Latin America" OR "Middle East" OR "Central America"

AND
infant OR newborn OR neonate OR baby OR toddler OR pre-school OR pediatric OR child* OR perinatal OR kindergarten OR parent* (or narrowed search by age group)

[**Intervention**]
AND
Title, Abstract, Keywords=
health intervention OR public health OR health promotion OR prevention OR protection OR preventive health services OR preventive OR control
OR child health OR child welfare OR child care
OR policy OR program OR project
OR Communicable disease* (*Keyword*) OR infectious disease* (*Keyword*)
OR water OR sanitation OR latrine OR toilets OR "waste disposal" OR sewage OR hygiene OR hand wash* OR nutrition policy OR food policy OR breastfeeding OR nutrition therapy OR supplement OR parenting program OR counseling OR "health education" OR health knowledge/attitude/practice (Keyword) OR instruction OR immuni$ation OR vaccine OR immune* OR inoculation OR (prevent* (*adj*) transmission) OR insecticides OR mosquito control OR bed/mosquito nets OR Parasitic Diseases [prevention , control] (*Keywords*) OR vector control OR Prevention of mother-to-child transmission / PMTCT OR deworming OR community health OR outreach OR (psychosocial (*adj*) support) OR Psychosocial Support Systems (*keyword*) OR (social (*adj*) support) OR financing/organized (*keyword*) OR (finance* OR cash OR money (adj) transfer) OR saving* OR voucher OR microfinance OR microcredit OR Welfare OR public assistance OR social security OR insurance OR "family policy" OR environment* [Prevention, control]
AND

[**Type of study**]

Title, Abstract, Keywords=
(systematic review OR "evidence synthesis" OR Meta-Analysis (or narrowed by type)
NOT Editorial or Letter or Comment or Erratum or Conference paper or Survey or Note)

Limit: published since 2000

Pilot 2

Pilot 1 AND
[**Outcome**]
Title, Abstract, Keywords =
effective* OR impact OR effect OR outcome assessment
OR (reported (*adj*) cases) OR (cases (*adj*) averted) OR morbidity OR mortality OR death* OR disease* OR illness OR coverage
OR (population health OR global health OR outcome assessment)

Search string in Medline

Pilot 1

Number of hits: 3,091 (as of 22/05/2019)
Search string:

Type of study	1	exp Systematic Review/ or exp Meta Analysis/ or exp Meta-Analysis as Topic/ or exp Meta-Analysis/ or exp Review Literature as Topic/
	2	(meta analy$ or metaanaly$ or (systematic adj (review$1 or overview$1))).tw.
	3	(cochrane or embase or (psychlit or psyclit) or (cinahl or cinhal) or (psychinfo or psycinfo) or science citation index or bids or cancerlit).ab.
	4	(reference list$ or bibliograph$ or hand-search$ or relevant journals or manual search$).ab.
	5	(selection criteria or data extraction).ab.
	6	evidence synthes$.tw.
	7	((systematic adj2 (review* or overview*)) or (umbrella adj2 review) or "review of reviews" or (systematic adj (review$1 or overview$1))).tw.
	8	1 or 2 or 3 or 4 or 5 or 6 or 7
	9	(Comment or Letter or Editorial or animal or Published Erratum).hw. or conference paper.tw. or (Surveys and Questionnaires).hw. or note.pt.
	10	8 not 9
Population	11	(Africa or Asia or Caribbean or West Indies or South America or Middle East or Latin America or Central America).ab,hw,kf,kw,ti.
	12	(developing countries or lmic or lmics or third world or lami countries or global south or transition*).ab,hw,kf,kw,ti.
	13	((developing or less developed or under developed or underdeveloped or middle income or low income or lower income or underserved or under served or deprived or poor) adj countr*).ab,hw,kf,kw,ti.
	14	(low* adj (gdp or gnp or gross domestic or gross national)).ab,hw,kf,kw,ti.
	15	11 or 12 or 13 or 14
	16	exp Infant, Newborn/ or exp Child/ or exp Infant/ or exp Parents/ or exp Child, Preschool/

	17	(infant or newborn or neonate or baby or babies or toddler or pre-school or pediatric or child* or perinatal or kindergarten or parent*).ab,hw,kf,kw,ti.
	18	16 or 17
	19	15 and 18
Intervention	20	exp Child Care/ or child welfare/ or exp Child Health/
	21	exp Communicable Disease Control/
	22	exp Communicable Diseases/ or exp Public Health/ or exp Health Promotion/ or exp Public Health/ or exp PRIMARY PREVENTION/ or exp Preventive Health Services/ or exp "DELIVERY OF HEALTH CARE"/
	23	(health intervention or public health or health promotion or prevention or protection or preventive health services or preventive or control or child health or child welfare or child care or policy or program or project).ab,hw,kf,kw,ti.
	24	(health adj8 (intervention$ or prevention or policy or policies or program$ or project$)).tw.
	25	exp Public Policy/ or exp Organizational Policy/ or exp Fiscal Policy/ or exp Policy/ or exp Health Policy/ or exp Programs/ or exp Sewage/ or exp Bathroom Equipment/ or exp Water/ or exp Hygiene/ or exp Waste Management/ or exp Nutrition Therapy/ or exp Nutrition Policy/ or exp Health Education/ or exp Counseling/ or exp Health Knowledge, Attitudes, Practice/ or exp immunization/ or exp Immunization Programs/ or exp Community Health Aides/ or exp Social Support/ or exp Financing, Organized/ or exp maternal welfare/ or exp public policy/ or exp social welfare/ or exp social security/ or exp Environmental Health/ or exp Environmental Policy/
	26	(Communicable disease* or infectious disease* or water or sanitation or hygiene or health knowledge or Health attitude or practice or immunization or Parasitic Diseases or Psychosocial Support Systems or water or sanitation or latrine or toilets or waste disposal or sewage or hygiene or hand wash* or nutrition policy or food policy or breastfeeding or nutrition therapy or supplement or parenting program or counseling or health education or instruction or immuni#ation or vaccine or immune* or inoculation or insecticides or mosquito control or bed nets or mosquito nets or vector control or Prevention of mother-to-child transmission or PMTCT or deworming or community health or outreach or saving* or voucher or microfinance or microcredit or Welfare or public assistance or social security or insurance or family policy or environment*).tw.
	27	((psychosocial adj3 support) or (social adj3 support) or (prevent* adj3 transmission) or ((finance* or cash or money) adj3 transfer) or (environment adj3 (prevent* or control*))).tw.
	28	20 or 21 or 22 or 23 or 24
	29	25 or 26 or 27
	30	28 or 29
P+I+S	31	10 and 19 and 30
Year	32	limit 31 to yr="2000 -Current"

Pilot 2

Number of hits (as of 22/05/2019): 2,404

Search string:

Type of stu	1	exp Systematic Review/ or exp Meta Analysis/ or exp Meta-Analysis as Topic/ or exp Meta-Analysis/ or exp Review Literature as Topic/
	2	(meta analy$ or metaanaly$ or (systematic adj (review$1 or overview$1))).tw.

	3	(cochrane or embase or (psychlit or psyclit) or (cinahl or cinhal) or (psychinfo or psycinfo) or science citation index or bids or cancerlit).ab.
	4	(reference list$ or bibliograph$ or hand-search$ or relevant journals or manual search$).ab.
	5	(selection criteria or data extraction).ab.
	6	evidence synthes$.tw.
	7	((systematic adj2 (review* or overview*)) or (umbrella adj2 review) or "review of reviews" or (systematic adj (review$1 or overview$1))).tw.
	8	1 or 2 or 3 or 4 or 5 or 6 or 7
	9	(Comment or Letter or Editorial or animal or Published Erratum).hw. or conference paper.tw. or (Surveys and Questionnaires).hw. or note.pt.
	10	8 not 9
Population	11	(Africa or Asia or Caribbean or West Indies or South America or Middle East or Latin America or Central America).ab,hw,kf,kw,ti.
	12	(developing countries or lmic or lmics or third world or lami countries or global south or transition*).ab,hw,kf,kw,ti.
	13	((developing or less developed or under developed or underdeveloped or middle income or low income or lower income or underserved or under served or deprived or poor) adj countr*).ab,hw,kf,kw,ti.
	14	(low* adj (gdp or gnp or gross domestic or gross national)).ab,hw,kf,kw,ti.
	15	11 or 12 or 13 or 14
	16	exp Infant, Newborn/ or exp Child/ or exp Infant/ or exp Parents/ or exp Child, Preschool/
	17	(infant or newborn or neonate or baby or babies or toddler or pre-school or pediatric or child* or perinatal or kindergarten or parent*).ab,hw,kf,kw,ti.
	18	16 or 17
	19	15 and 18
Intervention	20	exp Child Care/ or child welfare/ or exp Child Health/
	21	exp Communicable Disease Control/
	22	exp Communicable Diseases/ or exp Public Health/ or exp Health Promotion/ or exp Public Health/ or exp PRIMARY PREVENTION/ or exp Preventive Health Services/ or exp "DELIVERY OF HEALTH CARE"/
	23	(health intervention or public health or health promotion or prevention or protection or preventive health services or preventive or control or child health or child welfare or child care or policy or program or project).ab,hw,kf,kw,ti.
	24	(health adj8 (intervention$ or prevention or policy or policies or program$ or project$)).tw.
	25	exp Public Policy/ or exp Organizational Policy/ or exp Fiscal Policy/ or exp Policy/ or exp Health Policy/ or exp Programs/ or exp Sewage/ or exp Bathroom Equipment/ or exp Water/ or exp Hygiene/ or exp Waste Management/ or exp Nutrition Therapy/ or exp Nutrition Policy/ or exp Health Education/ or exp Counseling/ or exp Health Knowledge, Attitudes, Practice/ or exp immunization/ or exp Immunization Programs/ or exp Community Health Aides/ or exp Social Support/ or exp Financing, Organized/ or exp maternal welfare/ or exp public policy/ or exp social welfare/ or exp social security/ or exp Environmental Health/ or exp Environmental Policy/
	26	(Communicable disease* or infectious disease* or water or sanitation or hygiene or health knowledge or Health attitude or practice or immunization or Parasitic Diseases or Psychosocial Support Systems or water or sanitation or latrine or toilets or waste disposal or sewage or hygiene or hand wash* or nutrition policy or food policy or breastfeeding or nutrition therapy or supplement or parenting program or counseling or health education or instruction or immuni#ation or vaccine or immune* or inoculation or insecticides or mosquito control or bed nets or mosquito nets or vector control or Prevention of mother-to-child transmission or PMTCT or deworming or community health or outreach or saving* or voucher or microfinance or microcredit or Welfare or public assistance or social security or insurance or family policy or environment*).tw.

	27	((psychosocial adj3 support) or (social adj3 support) or (prevent* adj3 transmission) or ((finance* or cash or money) adj3 transfer) or (environment adj3 (prevent* or control*))).tw.
	28	20 or 21 or 22 or 23 or 24
	29	25 or 26 or 27
	30	28 or 29
P+I+S	31	10 and 19 and 30
Outcomes	32	exp Population Health/ or exp Global Health/ or exp "Outcome Assessment (Health Care)"/
	33	(population health or global health or outcome assessment).ab,hw,kf,kw,ti.
	34	32 or 33
	35	(effective* or impact or effect or outcome assessment or morbidity or mortality or death* or disease* or illness or coverage or (reported adj3 cases) or (cases adj3 averted)).tw.
	36	34 or 35
P+I+O+S	37	31 and 36
Year	38	limit 37 to yr="2000 -Current"

Search string in Scopus

Pilot 1

Number of hits (as of 22/05/2019): 4,148

Search string:

((((TITLE-ABS-KEY (low* W/2 gdp) OR TITLE-ABS-KEY (low* W/2 gnp) OR TITLE-ABS-KEY (low* W/2 "gross domestic") OR TITLE-ABS-KEY (low* W/2 "gross national"))) OR ((TITLE-ABS-KEY (africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America")) OR (TITLE-ABS-KEY ("developing countries" OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition*)) OR ((TITLE-ABS-KEY (developing W/2 countr*) OR TITLE-ABS-KEY ("less developed" W/2 countr*) OR TITLE-ABS-KEY ("under developed" W/2 countr*) OR TITLE-ABS-KEY (underdeveloped W/2 countr*) OR TITLE-ABS-KEY ("middle income" W/2 countr*) OR TITLE-ABS-KEY ("low income" W/2 countr*) OR TITLE-ABS-KEY ("lower income" W/2 countr*) OR TITLE-ABS-KEY (underserved W/2 countr*) OR TITLE-ABS-KEY ("under served" W/2 countr*) OR TITLE-ABS-KEY (deprived W/2 countr*) OR TITLE-ABS-KEY (poor W/2 countr*))))))

AND (TITLE-ABS-KEY (infant OR newborn OR neonate OR baby OR babies OR toddler OR (pre PRE/0 school) OR pediatric OR child* OR perinatal OR kindergarten OR parent*)))

AND (((TITLE-ABS-KEY (health W/3 intervention*) OR TITLE-ABS-KEY (health W/3 prevention) OR TITLE-ABS-KEY (health W/3 policy) OR TITLE-ABS-KEY (health W/3 policies) OR TITLE-ABS-KEY (health W/3 program*) OR TITLE-ABS-KEY (health W/3 project*))) OR (KEY ("Public Policy") OR KEY ("Organizational Policy") OR KEY ("Fiscal Policy") OR KEY ("Policy") OR KEY ("Health Policy") OR KEY ("Programs") OR KEY ("Sewage") OR KEY ("Bathroom Equipment") OR KEY ("Water") OR KEY ("Hygiene") OR KEY ("Waste Management") OR KEY ("Nutrition Therapy") OR KEY ("Nutrition Policy") OR KEY ("Health Education") OR KEY ("Counseling") OR KEY ("Health Knowledge, Attitudes, Practice") OR KEY ("immunization") OR KEY ("Immunization Programs") OR KEY ("Community Health Aides") OR KEY ("Social Support") OR

KEY ("Financing, Organized") OR KEY ("maternal welfare") OR KEY ("public policy") OR KEY ("social welfare") OR KEY ("social security") OR KEY ("Environmental Health") OR KEY ("Environmental Policy")) OR (((TITLE-ABS-KEY (prevent* W/3 transmission) OR TITLE-ABS-KEY (psychosocial W/3 support) OR TITLE-ABS-KEY (social W/3 support) OR TITLE-ABS-KEY (finance* W/3 transfer) OR TITLE-ABS-KEY (cash W/3 transfer) OR TITLE-ABS-KEY (money W/3 transfer) OR TITLE-ABS-KEY (environment* W/3 prevent*) OR TITLE-ABS-KEY (environment* W/3 control*))) OR (TITLE-ABS-KEY ("communicable diseases" OR "infectious diseases" OR "health knowledge" OR "health attitude" OR "health practice" OR water OR sanitation OR waste OR hygiene OR latrine OR toilets OR "waste disposal" OR sewage OR "hand washing" OR "nutrition policy" OR "food policy" OR breastfeeding OR "nutrition therapy" OR supplement OR "parenting program" OR counseling OR "health education" OR instruction OR immunisation OR immunization OR vaccine OR immun* OR inoculation OR insecticides OR "mosquito control" OR "bed nets" OR "mosquito nets" OR "vector control" OR "Prevention of mother-to-child transmission" OR pmtct OR deworming OR "community health" OR outreach OR saving OR voucher OR microfinance OR microcredit OR welfare OR "public assistance" OR "social security" OR insurance OR "family policy" OR "family policies")) OR ((TITLE-ABS-KEY ("health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project) OR TITLE-ABS-KEY ("Parasitic Diseases" OR finance* OR welfare OR environment*) OR TITLE-ABS-KEY ("Psychosocial Support System")))))

AND ((((KEY ("Systematic Review") OR KEY ("Meta Analysis") OR KEY ("Meta-Analysis as Topic") OR KEY ("Meta-Analysis") OR KEY ("Review Literature as Topic"))) OR ((TITLE-ABS-KEY ("meta analysis" OR "metaanalysis" OR "Meta-Analysis" OR "systematic review" OR overview* OR "evidence synthesis" OR "review of reviews") OR TITLE-ABS-KEY (systematic W/2 review*) OR TITLE-ABS-KEY (systematic W/2 overview*) OR TITLE-ABS-KEY (umbrella W/2 review))) OR ((ABS (cochrane OR embase OR psychlit OR psyclit) OR ABS (cinahl OR cinhal) OR ABS (psychinfo OR psycinfo) OR ABS ("science citation index" OR bids OR cancerlit))) OR ((ABS ("reference list" OR "reference lists" OR bibliography* OR hand-search* OR "relevant journals" OR "manual search" OR "manual searches") OR ABS ("selection criteria" OR "data extraction")))) AND NOT (TITLE-ABS-KEY (comment OR letter OR editorial OR animal)))

AND (PUBYEAR > 2000)

AND (EXCLUDE (DOCTYPE , "sh") OR EXCLUDE (DOCTYPE , "no") OR EXCLUDE (DOCTYPE , "er") OR EXCLUDE (DOCTYPE , "ed") OR EXCLUDE (DOCTYPE , "cp") OR EXCLUDE (DOCTYPE , "cr"))

Pilot 2

Number of hits (as of 22/05/2019): 3,572

Search string:

((((TITLE-ABS-KEY (low* W/2 gdp) OR TITLE-ABS-KEY (low* W/2 gnp) OR TITLE-ABS-KEY (low* W/2 "gross domestic") OR TITLE-ABS-KEY (low* W/2 "gross national"))) OR ((TITLE-ABS-KEY (africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America")) OR (TITLE-ABS-KEY ("developing countries" OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition*)) OR ((TITLE-ABS-KEY (developing W/2 countr*) OR TITLE-ABS-KEY ("less developed" W/2 countr*) OR TITLE-ABS-KEY ("under developed" W/2 countr*) OR TITLE-ABS-KEY (underdeveloped W/2 countr*) OR TITLE-ABS-KEY ("middle income" W/2 countr*) OR TITLE-ABS-KEY ("low income" W/2 countr*) OR TITLE-ABS-KEY ("lower income" W/2 countr*) OR TITLE-ABS-KEY (underserved

W/2 countr*) OR TITLE-ABS-KEY ("under served" W/2 countr*) OR TITLE-ABS-KEY (deprived W/2 countr*) OR TITLE-ABS-KEY (poor W/2 countr*)))))

AND (TITLE-ABS-KEY (infant OR newborn OR neonate OR baby OR babies OR toddler OR (pre PRE/0 school) OR pediatric OR child* OR perinatal OR kindergarten OR parent*)))

AND (((TITLE-ABS-KEY (health W/3 intervention*) OR TITLE-ABS-KEY (health W/3 prevention) OR TITLE-ABS-KEY (health W/3 policy) OR TITLE-ABS-KEY (health W/3 policies) OR TITLE-ABS-KEY (health W/3 program*) OR TITLE-ABS-KEY (health W/3 project*))) OR (KEY ("Public Policy") OR KEY ("Organizational Policy") OR KEY ("Fiscal Policy") OR KEY ("Policy") OR KEY ("Health Policy") OR KEY ("Programs") OR KEY ("Sewage") OR KEY ("Bathroom Equipment") OR KEY ("Water") OR KEY ("Hygiene") OR KEY ("Waste Management") OR KEY ("Nutrition Therapy") OR KEY ("Nutrition Policy") OR KEY ("Health Education") OR KEY ("Counseling") OR KEY ("Health Knowledge, Attitudes, Practice") OR KEY ("immunization") OR KEY ("Immunization Programs") OR KEY ("Community Health Aides") OR KEY ("Social Support") OR KEY ("Financing, Organized") OR KEY ("maternal welfare") OR KEY ("public policy") OR KEY ("social welfare") OR KEY ("social security") OR KEY ("Environmental Health") OR KEY ("Environmental Policy")) OR (((TITLE-ABS-KEY (prevent* W/3 transmission) OR TITLE-ABS-KEY (psychosocial W/3 support) OR TITLE-ABS-KEY (social W/3 support) OR TITLE-ABS-KEY (finance* W/3 transfer) OR TITLE-ABS-KEY (cash W/3 transfer) OR TITLE-ABS-KEY (money W/3 transfer) OR TITLE-ABS-KEY (environment* W/3 prevent*) OR TITLE-ABS-KEY (environment* W/3 control*))) OR (TITLE-ABS-KEY ("communicable diseases" OR "infectious diseases" OR "health knowledge" OR "health attitude" OR "health practice" OR water OR sanitation OR waste OR hygiene OR latrine OR toilets OR "waste disposal" OR sewage OR "hand washing" OR "nutrition policy" OR "food policy" OR breastfeeding OR "nutrition therapy" OR supplement OR "parenting program" OR counseling OR "health education" OR instruction OR immunisation OR immunization OR vaccine OR immun* OR inoculation OR insecticides OR "mosquito control" OR "bed nets" OR "mosquito nets" OR "vector control" OR "Prevention of mother-to-child transmission" OR pmtct OR deworming OR "community health" OR outreach OR saving OR voucher OR microfinance OR microcredit OR welfare OR "public assistance" OR "social security" OR insurance OR "family policy" OR "family policies")) OR ((TITLE-ABS-KEY ("health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project) OR TITLE-ABS-KEY ("Parasitic Diseases" OR finance* OR welfare OR environment*) OR TITLE-ABS-KEY ("Psychosocial Support System")))))

AND ((((KEY ("Systematic Review") OR KEY ("Meta Analysis") OR KEY ("Meta-Analysis as Topic") OR KEY ("Meta-Analysis") OR KEY ("Review Literature as Topic"))) OR ((TITLE-ABS-KEY ("meta analysis" OR "metaanalysis" OR "Meta-Analysis" OR "systematic review" OR overview* OR "evidence synthesis" OR "review of reviews") OR TITLE-ABS-KEY (systematic W/2 review*) OR TITLE-ABS-KEY (systematic W/2 overview*) OR TITLE-ABS-KEY (umbrella W/2 review))) OR ((ABS (cochrane OR embase OR psychlit OR psyclit) OR ABS (cinahl OR cinhal) OR ABS (psychinfo OR psycinfo) OR ABS ("science citation index" OR bids OR cancerlit))) OR ((ABS ("reference list" OR "reference lists" OR bibliography* OR hand-search* OR "relevant journals" OR "manual search" OR "manual searches") OR ABS ("selection criteria" OR "data extraction")))) AND NOT (TITLE-ABS-KEY (comment OR letter OR editorial OR animal)))

AND ((TITLE-ABS-KEY ("population health" OR "global health" OR "outcome assessment") OR TITLE-ABS-KEY (effectiv* OR impact OR effect OR "outcome assessment" OR morbidity OR mortality OR death* OR disease* OR illness OR coverage) OR TITLE-ABS-KEY (reported W/3 cases) OR TITLE-ABS-KEY (cases W/3 averted)))

AND (PUBYEAR > 2000)

AND (EXCLUDE (DOCTYPE , "sh") OR EXCLUDE (DOCTYPE , "no") OR EXCLUDE (DOCTYPE , "er") OR EXCLUDE (DOCTYPE , "ed") OR EXCLUDE (DOCTYPE , "cp") OR EXCLUDE (DOCTYPE , "cr"))

PILOT SEARCH RESULTS

A selection of four tracer systematic reviews and evidence syntheses (namely (Crocker-Buque et al., 2017; Gilmore & McAuliffe, 2013; Owusu-Addo & Cross, 2014; Yuan et al., 2014)) was used to test whether the different search strings identified them. The choice of the final search string was made based on the result of each stage

	Pilot 1		Pilot 2	
Database	Medline	Scopus	Medline	Scopus
Number of hits (22/05/2019)	3,091	4,148	2,404	3,572
(Yuan et al., 2014)	✓	✓	✓	✓
(Crocker-Buque et al., 2017)	✓	✓	✓	✓
(Owusu-Addo & Cross, 2014)	✓	✓	✓	✓
(Gilmore & McAuliffe, 2013)	✓	✓	✓	✓

ANNEX 1. 5. Full Search Strategy

Keywords

[**Population]**
Title, Abstract, Key words=
"developing countries" OR (developing OR less developed OR under developed OR underdeveloped OR middle income OR low income OR lower income OR underserved OR under served OR deprived OR poor (*adj*) countr*)OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition* OR
Africa OR Asia OR Caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America"

AND
infant OR newborn OR neonate OR baby OR toddler OR pre-school OR pediatric OR child* OR perinatal OR kindergarten OR parent* (or narrowed search by age group)

[**Intervention**]
AND
Title, Abstract, Keywords= health intervention OR public health OR health promotion OR prevention OR protection OR preventive health services OR preventive OR control OR child health OR child welfare OR child care
OR policy OR program OR project
OR Communicable disease* (*Keyword*) OR infectious disease* (*Keyword*)
OR water OR sanitation OR latrine OR toilets OR "waste disposal" OR sewage OR hygiene OR hand wash* OR nutrition policy OR food policy OR breastfeeding OR nutrition therapy OR supplement OR parenting program OR counseling OR "health education" OR health knowledge/attitude/practice (Keyword) OR instruction OR immuni$ation OR vaccine OR immune* OR inoculation OR (prevent* (*adj*) transmission) OR insecticides OR mosquito control OR bed/mosquito nets OR Parasitic Diseases [prevention , control] (*Keywords*) OR vector control OR Prevention of mother-to-child transmission / PMTCT OR deworming OR community health OR outreach OR (psychosocial (*adj*) support) OR Psychosocial Support Systems (*keyword*) OR (social (*adj*) support) OR financing/organized (*keyword*) OR (finance* OR cash OR money (adj) transfer) OR saving* OR voucher OR microfinance OR microcredit OR Welfare OR public assistance OR social security OR insurance OR "family policy" OR environment* [Prevention, control]
AND

[**Type of study**] *Title, Abstract, Keywords*= (
systematic review OR "evidence synthesis" OR Meta-Analysis (or narrowed by type)
NOT Editorial or Letter or Comment or Erratum or Conference paper or Survey or Note)

AND
[**Outcome**]
Title, Abstract, Keywords =

effective* OR impact OR effect OR outcome assessment
OR (reported (*adj*) cases) OR (cases (*adj*) averted) OR morbidity OR mortality OR death* OR disease* OR illness OR coverage
OR (population health OR global health OR outcome assessment)

Limit: published since 2000

Databases searches

Search string in Medline

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to June 18, 2019

Number of hits (as of 19/06/2019): 2,444
Search string:

Type of study	1	exp Systematic Review/ or exp Meta Analysis/ or exp Meta-Analysis as Topic/ or exp Meta-Analysis/ or exp Review Literature as Topic/
	2	(meta analy$ or metaanaly$ or (systematic adj (review$1 or overview$1))).tw.
	3	(cochrane or embase or (psychlit or psyclit) or (cinahl or cinhal) or (psychinfo or psycinfo) or science citation index or bids or cancerlit).ab.
	4	(reference list$ or bibliograph$ or hand-search$ or relevant journals or manual search$).ab.
	5	(selection criteria or data extraction).ab.
	6	evidence synthes$.tw.
	7	((systematic adj2 (review* or overview*)) or (umbrella adj2 review) or "review of reviews" or (systematic adj (review$1 or overview$1))).tw.
	8	1 or 2 or 3 or 4 or 5 or 6 or 7
	9	(Comment or Letter or Editorial or animal or Published Erratum).hw. or conference paper.tw. or (Surveys and Questionnaires).hw. or note.pt.
	10	8 not 9
Population	11	(Africa or Asia or Caribbean or West Indies or South America or Middle East or Latin America or Central America).ab,hw,kf,kw,ti.
	12	(developing countries or lmic or lmics or third world or lami countries or global south or transition*).ab,hw,kf,kw,ti.
	13	((developing or less developed or under developed or underdeveloped or middle income or low income or lower income or underserved or under served or deprived or poor) adj countr*).ab,hw,kf,kw,ti.
	14	(low* adj (gdp or gnp or gross domestic or gross national)).ab,hw,kf,kw,ti.
	15	11 or 12 or 13 or 14
	16	exp Infant, Newborn/ or exp Child/ or exp Infant/ or exp Parents/ or exp Child, Preschool/
	17	(infant or newborn or neonate or baby or babies or toddler or pre-school or pediatric or child* or perinatal or kindergarten or parent*).ab,hw,kf,kw,ti.
	18	16 or 17
	19	15 and 18

Intervention	20	exp Child Care/ or child welfare/ or exp Child Health/
	21	exp Communicable Disease Control/
	22	exp Communicable Diseases/ or exp Public Health/ or exp Health Promotion/ or exp Public Health/ or exp PRIMARY PREVENTION/ or exp Preventive Health Services/ or exp "DELIVERY OF HEALTH CARE"/
	23	(health intervention or public health or health promotion or prevention or protection or preventive health services or preventive or control or child health or child welfare or child care or policy or program or project).ab,hw,kf,kw,ti.
	24	(health adj8 (intervention$ or prevention or policy or policies or program$ or project$)).tw.
	25	exp Public Policy/ or exp Organizational Policy/ or exp Fiscal Policy/ or exp Policy/ or exp Health Policy/ or exp Programs/ or exp Sewage/ or exp Bathroom Equipment/ or exp Water/ or exp Hygiene/ or exp Waste Management/ or exp Nutrition Therapy/ or exp Nutrition Policy/ or exp Health Education/ or exp Counseling/ or exp Health Knowledge, Attitudes, Practice/ or exp immunization/ or exp Immunization Programs/ or exp Community Health Aides/ or exp Social Support/ or exp Financing, Organized/ or exp maternal welfare/ or exp public policy/ or exp social welfare/ or exp social security/ or exp Environmental Health/ or exp Environmental Policy/
	26	(Communicable disease* or infectious disease* or water or sanitation or hygiene or health knowledge or Health attitude or practice or immunization or Parasitic Diseases or Psychosocial Support Systems or water or sanitation or latrine or toilets or waste disposal or sewage or hygiene or hand wash* or nutrition policy or food policy or breastfeeding or nutrition therapy or supplement or parenting program or counseling or health education or instruction or immuni#ation or vaccine or immune* or inoculation or insecticides or mosquito control or bed nets or mosquito nets or vector control or Prevention of mother-to-child transmission or PMTCT or deworming or community health or outreach or saving* or voucher or microfinance or microcredit or Welfare or public assistance or social security or insurance or family policy or environment*).tw.
	27	((psychosocial adj3 support) or (social adj3 support) or (prevent* adj3 transmission) or ((finance* or cash or money) adj3 transfer) or (environment adj3 (prevent* or control*))).tw.
	28	20 or 21 or 22 or 23 or 24
	29	25 or 26 or 27
	30	28 or 29
P+I+S	31	10 and 19 and 30
Outcomes	32	exp Population Health/ or exp Global Health/ or exp "Outcome Assessment (Health Care)"/
	33	(population health or global health or outcome assessment).ab,hw,kf,kw,ti.
	34	32 or 33
	35	(effective* or impact or effect or outcome assessment or morbidity or mortality or death* or disease* or illness or coverage or (reported adj3 cases) or (cases adj3 averted)).tw.
	36	34 or 35
P+I+O+S	37	31 and 36
Year	38	limit 37 to yr="2000 -Current"

Search string in Scopus

https://www.scopus.com/

Number of hits (as of 19/06/2019): 3,606

Search string:

((((TITLE-ABS-KEY (low* W/2 gdp) OR TITLE-ABS-KEY (low* W/2 gnp) OR TITLE-ABS-KEY (low* W/2 "gross domestic") OR TITLE-ABS-KEY (low* W/2 "gross national"))) OR ((TITLE-ABS-KEY (africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America")) OR (TITLE-ABS-KEY ("developing countries" OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition*)) OR ((TITLE-ABS-KEY (developing W/2 countr*) OR TITLE-ABS-KEY ("less developed" W/2 countr*) OR TITLE-ABS-KEY ("under developed" W/2 countr*) OR TITLE-ABS-KEY (underdeveloped W/2 countr*) OR TITLE-ABS-KEY ("middle income" W/2 countr*) OR TITLE-ABS-KEY ("low income" W/2 countr*) OR TITLE-ABS-KEY ("lower income" W/2 countr*) OR TITLE-ABS-KEY (underserved W/2 countr*) OR TITLE-ABS-KEY ("under served" W/2 countr*) OR TITLE-ABS-KEY (deprived W/2 countr*) OR TITLE-ABS-KEY (poor W/2 countr*)))))

AND (TITLE-ABS-KEY (infant OR newborn OR neonate OR baby OR babies OR toddler OR (pre PRE/0 school) OR pediatric OR child* OR perinatal OR kindergarten OR parent*)))

AND (((TITLE-ABS-KEY (health W/3 intervention*) OR TITLE-ABS-KEY (health W/3 prevention) OR TITLE-ABS-KEY (health W/3 policy) OR TITLE-ABS-KEY (health W/3 policies) OR TITLE-ABS-KEY (health W/3 program*) OR TITLE-ABS-KEY (health W/3 project*))) OR (KEY ("Public Policy") OR KEY ("Organizational Policy") OR KEY ("Fiscal Policy") OR KEY ("Policy") OR KEY ("Health Policy") OR KEY ("Programs") OR KEY ("Sewage") OR KEY ("Bathroom Equipment") OR KEY ("Water") OR KEY ("Hygiene") OR KEY ("Waste Management") OR KEY ("Nutrition Therapy") OR KEY ("Nutrition Policy") OR KEY ("Health Education") OR KEY ("Counseling") OR KEY ("Health Knowledge, Attitudes, Practice") OR KEY ("immunization") OR KEY ("Immunization Programs") OR KEY ("Community Health Aides") OR KEY ("Social Support") OR KEY ("Financing, Organized") OR KEY ("maternal welfare") OR KEY ("public policy") OR KEY ("social welfare") OR KEY ("social security") OR KEY ("Environmental Health") OR KEY ("Environmental Policy")) OR (((TITLE-ABS-KEY (prevent* W/3 transmission) OR TITLE-ABS-KEY (psychosocial W/3 support) OR TITLE-ABS-KEY (social W/3 support) OR TITLE-ABS-KEY (finance* W/3 transfer) OR TITLE-ABS-KEY (cash W/3 transfer) OR TITLE-ABS-KEY (money W/3 transfer) OR TITLE-ABS-KEY (environment* W/3 prevent*) OR TITLE-ABS-KEY (environment* W/3 control*))) OR (TITLE-ABS-KEY ("communicable diseases" OR "infectious diseases" OR "health knowledge" OR "health attitude" OR "health practice" OR water OR sanitation OR waste OR hygiene OR latrine OR toilets OR "waste disposal" OR sewage OR "hand washing" OR "nutrition policy" OR "food policy" OR breastfeeding OR "nutrition therapy" OR supplement OR "parenting program" OR counseling OR "health education" OR instruction OR immunisation OR immunization OR vaccine OR immun* OR inoculation OR insecticides OR "mosquito control" OR "bed nets" OR "mosquito nets" OR "vector control" OR "Prevention of mother-to-child transmission" OR pmtct OR deworming OR "community health" OR outreach OR saving OR voucher OR microfinance OR microcredit OR welfare OR "public assistance" OR "social security" OR insurance OR "family policy" OR "family policies")) OR ((TITLE-ABS-KEY ("health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project) OR TITLE-ABS-KEY ("Parasitic Diseases" OR finance* OR welfare OR environment*) OR TITLE-ABS-KEY ("Psychosocial Support System")))))

AND ((((KEY ("Systematic Review") OR KEY ("Meta Analysis") OR KEY ("Meta-Analysis as Topic") OR KEY ("Meta-Analysis") OR KEY ("Review Literature as Topic"))) OR ((TITLE-ABS-KEY ("meta analysis" OR "metaanalysis" OR "Meta-Analysis" OR "systematic review" OR overview* OR "evidence synthesis" OR "review of reviews") OR TITLE-ABS-KEY (systematic W/2 review*) OR TITLE-ABS-KEY (systematic W/2 overview*) OR TITLE-ABS-KEY (umbrella W/2

review))) OR ((ABS (cochrane OR embase OR psychlit OR psyclit) OR ABS (cinahl OR cinhal) OR ABS (psychinfo OR psycinfo) OR ABS ("science citation index" OR bids OR cancerlit))) OR ((ABS ("reference list" OR "reference lists" OR bibliography* OR hand-search* OR "relevant journals" OR "manual search" OR "manual searches") OR ABS ("selection criteria" OR "data extraction")))) AND NOT (TITLE-ABS-KEY (comment OR letter OR editorial OR animal)))

AND ((TITLE-ABS-KEY ("population health" OR "global health" OR "outcome assessment") OR TITLE-ABS-KEY (effectiv* OR impact OR effect OR "outcome assessment" OR morbidity OR mortality OR death* OR disease* OR illness OR coverage) OR TITLE-ABS-KEY (reported W/3 cases) OR TITLE-ABS-KEY (cases W/3 averted)))

AND (PUBYEAR > 2000)

AND (EXCLUDE (DOCTYPE , "sh") OR EXCLUDE (DOCTYPE , "no") OR EXCLUDE (DOCTYPE , "er") OR EXCLUDE (DOCTYPE , "ed") OR EXCLUDE (DOCTYPE , "cp") OR EXCLUDE (DOCTYPE , "cr"))

Search string in EMBASE

Ovid Embase 1974 to 2019 June 18

Number of hits (as of 19/06/2019): **2,706**

Search string:

Type of study	1	exp meta analysis/
	2	((meta adj analy$) or metaanalys$).tw.
	3	(systematic adj (review$1 or overview$1)).tw.
	4	(cochrane or embase or (psychlit or psyclit) or (cinahl or cinhal) or (psychinfo or psycinfo) or "science citation index" or bids or cancerlit).ab.
	5	("reference list*" or bibliograph* or hand-search* or "relevant journals" or "manual search*").ab.
	6	("selection criteria" or "data extraction").ab.
	7	"evidence synthes*".ti,ab.
	8	((systematic adj2 (review* or overview*)) or (umbrella adj2 review) or "review of reviews" or (systematic adj (review$1 or overview$1))).ti,ab.
	9	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
	10	note.pt.
	11	(Comment or Letter or Editorial or animal or "Published Erratum").hw.
	12	"conference paper".ti,ab.
	13	(Surveys and Questionnaires).hw.
	14	10 or 11 or 12 or 13
	15	9 not 14
Population	16	(Africa or Asia or Caribbean or "West Indies" or "South America" or "Middle East" or "Latin America" or "Central America").ab,hw,kw,ti.
	17	("developing countries" or lmic or lmics or "third world" or "lami countries" or "global south" or transition*).ab,hw,kw,ti.

	18	((developing or "less developed" or "under developed" or underdeveloped or "middle income" or "low income" or "lower income" or underserved or "under served" or deprived or poor) adj countr*).ab,hw,kw,ti.
	19	(low* adj (gdp or gnp or "gross domestic" or "gross national")).ab,hw,kw,ti.
	20	16 or 17 or 18 or 19
	21	exp infant/
	22	exp newborn/
	23	exp child/
	24	exp parent/
	25	exp preschool child/
	26	21 or 22 or 23 or 24 or 25
	27	(infant or newborn or neonate or baby or babies or toddler or pre-school or pediatric or child* or perinatal or kindergarten or parent*).ab,hw,kw,ti.
	28	26 or 27
	29	20 and 28
Intervention	30	exp child care/
	31	exp child welfare/
	32	exp child health/
	33	exp communicable disease control/ or exp communicable disease/ or exp public health service/ or exp public health/
	34	exp health promotion/
	35	exp primary prevention/
	36	exp preventive health service/
	37	exp health care delivery/
	38	exp health care delivery/
	39	30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
	40	("health intervention" or "public health" or "health promotion" or prevention or protection or "preventive health services" or preventive or control or "child health" or "child welfare" or "child care" or policy or program or project).ab,hw,kw,ti.
	41	(health adj8 (intervention* or prevention or policy or policies or program* or project*)).ti,ab.
	42	exp public policy/ or exp policy/
	43	exp organizational policy/ or exp public policy/ or exp environmental policy/ or exp nutrition policy/ or exp fiscal policy/
	44	exp health program/
	45	exp sewage/
	46	exp bathroom equipment/
	47	exp water/
	48	exp hygiene/
	49	exp waste management/

	50	exp nutrition service/
	51	exp health education/
	52	exp counseling/
	53	exp attitude to health/
	54	exp immunization/
	55	exp social support/ or exp social welfare/ or exp social security/
	56	exp financial management/
	57	exp maternal welfare/
	58	exp environmental health/
	59	42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58
	60	(Communicable disease* or infectious disease* or water or sanitation or hygiene or health knowledge or Health attitude or practice or immunization or Parasitic Diseases or Psychosocial Support Systems or water or sanitation or latrine or toilets or waste disposal or sewage or hygiene or hand wash* or nutrition policy or food policy or breastfeeding or nutrition therapy or supplement or parenting program or counseling or health education or instruction or immuni#ation or vaccine or immune* or inoculation or insecticides or mosquito control or bed nets or mosquito nets or vector control or Prevention of mother-to-child transmission or PMTCT or deworming or community health or outreach or saving* or voucher or microfinance or microcredit or Welfare or public assistance or social security or insurance or family policy or environment*).ti,ab.
	61	((psychosocial adj3 support) or (social adj3 support) or (prevent* adj3 transmission) or ((finance* or cash or money) adj3 transfer) or (environment adj3 (prevent* or control*))).ti,ab.
	62	39 or 40 or 41 or 59 or 60 or 61
P+I+S	63	15 and 29 and 62
Outcomes	64	exp population health/
	65	exp global health/
	66	exp outcome assessment/
	67	(population health or global health or outcome assessment).ab,hw,kw,ti.
	68	64 or 65 or 66
	69	67 or 68
	70	(effective* or impact or effect or outcome assessment or morbidity or mortality or death* or disease* or illness or coverage or (reported adj3 cases) or (cases adj3 averted)).ti,ab.
	71	69 or 70
P+I+O+S	72	63 and 71
Year	73	limit 72 to yr="2000 -Current"

Search string in Web of Science - Social Sciences Citation Index

Web of Science : Social Sciences Citation Index (SSCI) --1956-present

Number of hits (as of 21/06/2019): **1,421**

Search string:

#1	TOPIC: (low* NEAR/2 gdp) OR TOPIC: (low* NEAR/2 gnp) OR TOPIC: (low* NEAR/2 "gross domestic") OR TOPIC: (low* NEAR/2 "gross national") OR TOPIC: (africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America") OR TOPIC: ("developing countries" OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition*) OR TOPIC: (developing NEAR/2 countr*) OR TOPIC: ("less developed" NEAR/2 countr*) OR TOPIC: ("under developed" NEAR/2 countr*) OR TOPIC: (underdeveloped NEAR/2 countr*) OR TOPIC: ("middle income" NEAR/2 countr*) OR TOPIC: ("low income" NEAR/2 countr*) OR TOPIC: ("lower income" NEAR/2 countr*) OR TOPIC: (underserved NEAR/2 countr*) OR TOPIC: ("under served" NEAR/2 countr*) OR TOPIC: (deprived NEAR/2 countr*) OR TOPIC: (poor NEAR/2 countr*) Indexes=SSCI Timespan=1945-2019
#2	TOPIC: (pre NEAR/0 school) OR TOPIC: (infant OR newborn OR neonate OR baby OR babies OR toddler OR pediatric OR child* OR perinatal OR kindergarten OR parent*) Indexes=SSCI Timespan=1945-2019
#3	TOPIC: ((health NEAR/3 intervention*) OR (health NEAR/3 prevention) OR (health NEAR/3 policy) OR (health NEAR/3 policies) OR (health NEAR/3 program*) OR (health NEAR/3 project*)) OR TOPIC: ("Public Policy" OR "Organizational Policy" OR "Fiscal Policy" OR "Health Policy" OR Program* OR "Bathroom Equipment" OR "Waste Management" OR Counseling OR immunization OR immune* OR vaccine OR "Immunization Programs" OR "Social Support" OR "Financing, Organized" OR "maternal welfare" OR "social welfare" OR "Environmental Health" OR "Environmental Policy" OR "communicable diseases" OR "infectious diseases" OR "health knowledge" OR "health attitude" OR "health practice" OR water OR sanitation OR waste OR hygiene OR latrine OR toilets OR "waste disposal" OR sewage OR "hand washing" OR "nutrition policy" OR "food policy" OR breastfeeding OR "nutrition therapy" OR supplement OR "parenting program" OR counseling OR "health education" OR instruction OR inoculation OR insecticides OR "mosquito control" OR "bed nets" OR "mosquito nets" OR "vector control" OR "Prevention of mother-to-child transmission" OR pmtct OR deworming OR "community health" OR outreach OR saving OR voucher OR microfinance OR microcredit OR welfare OR "public assistance" OR "social security" OR insurance OR "family policy" OR "family policies" OR "health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project OR "Parasitic Diseases" OR finance* OR welfare OR environment* OR "Psychosocial Support System") OR TOPIC: ((prevent* NEAR/3 transmission) OR (psychosocial NEAR/3 support) OR (social NEAR/3 support) OR (finance* NEAR/3 transfer) OR (cash NEAR/3 transfer) OR (money NEAR/3 transfer) OR (environment* NEAR/3 prevent*) OR (environment* NEAR/3 control*)) Indexes=SSCI Timespan=1945-2019
#4	TOPIC: ("Systematic Review" OR "Meta Analysis" OR "Meta-Analysis as Topic" OR "Review Literature as Topic" OR meta*analysis OR overview* OR "evidence synthesis" OR "review of reviews") OR TOPIC: ((systematic NEAR/2 review*) OR (systematic NEAR/2 overview*) OR (umbrella NEAR/2 review)) OR TOPIC: (cochrane OR embase OR psyc*lit OR cinahl OR cinhal OR psyc*info OR "science citation index" OR bids OR cancerlit OR "reference list" OR "reference lists" OR bibliography* OR hand-search* OR "relevant journals" OR "manual search" OR "manual searches" OR "selection criteria" OR "data extraction") NOT TOPIC: (Editorial or Letter or Comment or Erratum or Conference paper or Survey or Note) Indexes=SSCI Timespan=1945-2019

#5	TOPIC: ("population health" OR "global health" OR "outcome assessment" OR effectiv* OR impact OR effect OR "outcome assessment" OR morbidity OR mortality OR death* OR disease* OR illness OR coverage) OR TOPIC: ((reported NEAR/3 cases) OR (cases NEAR/3 averted)) Indexes=SSCI Timespan=1945-2019
#6	#2 AND #1 Indexes=SSCI Timespan=1945-2019
#7	#6 AND #5 AND #4 AND #3 Indexes=SSCI Timespan=1945-2019
#8	#6 AND #5 AND #4 AND #3 Refined by: PUBLICATION YEARS: (2019 OR 2012 OR 2005 OR 2018 OR 2011 OR 2004 OR 2017 OR 2010 OR 2003 OR 2016 OR 2009 OR 2002 OR 2015 OR 2008 OR 2001 OR 2014 OR 2007 OR 2000 OR 2013 OR 2006) Indexes=SSCI Timespan=1945-2019
#9	#6 AND #5 AND #3 AND #2 Refined by: PUBLICATION YEARS: (2019 OR 2012 OR 2005 OR 2018 OR 2011 OR 2004 OR 2017 OR 2010 OR 2003 OR 2016 OR 2009 OR 2002 OR 2015 OR 2008 OR 2001 OR 2014 OR 2007 OR 2000 OR 2013 OR 2006) AND [excluding] DOCUMENT TYPES: (EDITORIAL MATERIAL OR PROCEEDINGS PAPER) Indexes=SSCI Timespan=1945-2019

Search string in the Cochrane Library

Cochrane Library: Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled Trials and the Cochrane Clinical Answers with Cochrane Library publication date from Jan 2000 to May 2019

Number of hits (as of 19/06/2019): **559**

Search string:

#1	[mh "Systematic Review"] OR [mh "Meta Analysis"] OR [mh "Meta-Analysis as Topic"] OR [mh Meta-Analysis] OR [mh "Review Literature as Topic"]
#2	("meta analysis" OR metaanalysis OR (systematic NEAR (review OR overview))):ti,ab
#3	(cochrane OR embase OR (psychlit OR psyclit) OR (cinahl OR cinhal) OR (psychinfo OR psycinfo) OR "science citation index" OR bids OR cancerlit):ab
#4	("reference list" OR bibliography OR bibliographies OR hand-search OR "relevant journals" OR "manual search" OR "manual searches"):ab
#5	(("selection criteria" OR "data extraction"):ab)
#6	("evidence synthesis":ti,ab)
#7	(((systematic NEAR/2 (review OR overview)) OR (umbrella NEAR/2 review) OR "review of reviews" OR (systematic NEAR (review OR overview))):ti,ab)
#8	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7
#9	(Comment OR Letter OR Editorial OR animal OR "Published Erratum"):ti,ab,kw OR ("conference paper"):ti,ab,kw OR (Surveys AND Questionnaires):ti,ab,kw OR (note):pt
#10	#8 NOT #9
#11	(Africa OR Asia OR Caribbean OR "West Indies" OR "South America" OR "Middle East" OR "Latin America" OR "Central America"):ti,ab,kw OR ("developing countries" OR lmic OR lmics OR "third world" OR "lami countries" OR "global south" OR transition*):ti,ab,kw OR ((developing OR "less

	developed" OR "under developed" OR underdeveloped OR "middle income" OR "low income" OR "lower income" OR underserved OR "under served" OR deprived OR poor) NEAR (country OR countries)):ti,ab,kw OR (low* NEAR (gdp OR gnp OR "gross domestic" OR "gross national")):pt
#12	[mh "Infant, Newborn"] OR [mh Child] OR [mh Infant] OR [mh Parents] OR [mh "Child, Preschool"]
#13	(infant OR newborn OR neonate OR baby OR babies OR toddler OR pre-school OR pediatric OR child* OR perinatal OR kindergarten OR parent*):ti,ab,kw
#14	#12 OR #13
#15	#11 AND #14
#16	[mh "Child Care"] OR [mh ^"child welfare"] OR [mh "Child Health"]
#17	[mh "Communicable Disease Control"]
#18	[mh "Communicable Diseases"] OR [mh "Public Health"] OR [mh "Health Promotion"] OR [mh "Public Health"] OR [mh "PRIMARY PREVENTION"] OR [mh "Preventive Health Services"] OR [mh "DELIVERY OF HEALTH CARE"]
#19	[mh "Public Policy"] OR [mh "Organizational Policy"] OR [mh "Fiscal Policy"] OR [mh Policy] OR [mh "Health Policy"] OR [mh Programs] OR [mh Sewage] OR [mh "Bathroom Equipment"] OR [mh Water] OR [mh Hygiene] OR [mh "Waste Management"] OR [mh "Nutrition Therapy"] OR [mh "Nutrition Policy"] OR [mh "Health Education"] OR [mh Counseling] OR [mh "Health Knowledge, Attitudes, Practice"] OR [mh immunization] OR [mh "Immunization Programs"] OR [mh "Community Health Aides"] OR [mh "Social Support"] OR [mh "Financing, Organized"] OR [mh "maternal welfare"] OR [mh "public policy"] OR [mh "social welfare"] OR [mh "social security"] OR [mh "Environmental Health"] OR [mh "Environmental Policy"]
#20	("health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project):ti,ab,kw OR (health NEAR/8 (intervention* OR prevention OR policy OR policies OR program* OR project*)):ti,ab,kw OR ("Communicable diseases" OR "infectious diseases" OR water OR sanitation OR hygiene OR "health knowledge" OR "Health attitude" OR practice OR immunization OR "Parasitic Diseases" OR "Psychosocial Support Systems" OR water OR sanitation OR latrine OR toilets OR "waste disposal" OR sewage OR hygiene OR "hand washing" OR "nutrition policy" OR "food policy" OR breastfeeding OR "nutrition therapy" OR supplement OR "parenting program" OR counseling OR "health education" OR instruction OR immunization OR immunization OR vaccine OR immune* OR inoculation OR insecticides OR "mosquito control" OR "bed nets" OR "mosquito nets" OR "vector control" OR "Prevention of mother-to-child transmission" OR PMTCT OR deworming OR "community health" OR outreach OR saving* OR voucher OR microfinance OR microcredit OR Welfare OR "public assistance" OR "social security" OR insurance OR "family policy" OR environment*):ti,ab,kw OR ((psychosocial NEAR/3 support) OR (social NEAR/3 support) OR (prevent* NEAR/3 transmission) OR ((finance* OR cash OR money) NEAR/3 transfer) OR (environment NEAR/3 (prevent* OR control*))):ti,ab,kw
#21	#16 OR #17 OR #18 OR #19
#22	#20 OR #21
#23	#10 AND #15 AND #22
#24	[mh "Population Health"] OR [mh "Global Health"] OR [mh "Outcome Assessment (Health Care)"]
#25	("population health" OR "global health" OR "outcome assessment"):ti,ab,kw
#26	#24 OR #25
#27	(effective* OR impact OR effect OR "outcome assessment" OR morbidity OR mortality OR death* OR disease* OR illness OR coverage OR (reported NEAR/3 cases) OR (cases NEAR/3 averted)):ti,ab,kw
#28	#26 OR #27
#29	#23 AND #28

Search string in CAB Global Health

Ovid: Global Health 1973 to 2019 Week 23

Number of hits (as of 19/06/2019): **1,770**

Search string:

Type of study	1	exp systematic reviews/ or exp meta-analysis/
	2	literature reviews.sh.
	3	(meta analy$ or metaanaly$ or (systematic adj (review$1 or overview$1))).ab,ti.
	4	(cochrane or embase or (psychlit or psyclit) or (cinahl or cinhal) or (psychinfo or psycinfo) or science citation index or bids or cancerlit).ab.
	5	(reference list$ or bibliograph$ or hand-search$ or relevant journals or manual search$).ab.
	6	(selection criteria or data extraction).ab.
	7	evidence synthes$.ab,ti.
	8	((systematic adj2 (review* or overview*)) or (umbrella adj2 review) or "review of reviews" or (systematic adj (review$1 or overview$1))).ab,ti.
	9	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
	10	(Comment or Letter or Editorial or animal or Published Erratum).hw. or conference paper.ab,ti. or (Surveys and Questionnaires).hw. or note.pt.
	11	9 not 10
Population	12	(Africa or Asia or Caribbean or West Indies or South America or Middle East or Latin America or Central America).ab,hw,ti.
	13	(developing countries or lmic or lmics or third world or lami countries or global south or transition*).ab,hw,ti.
	14	((developing or less developed or under developed or underdeveloped or middle income or low income or lower income or underserved or under served or deprived or poor) adj countr*).ab,hw,ti.
	15	(low$ adj (gdp or gnp or gross domestic or gross national)).ab,hw,ti.
	16	12 or 13 or 14 or 15
	17	exp infants/
	18	exp preschool children/ or exp children/
	19	exp parents/
	20	17 or 18 or 19
	21	(infant or newborn or neonate or baby or babies or toddler or pre-school or pediatric or child$ or perinatal or kindergarten or parent$).ab,hw,ti.
	22	20 or 21
	23	16 and 22
Interv	24	exp child care/

	25	exp child welfare/
	26	exp child health/
	27	(health policy or public health or disease control or infectious diseases or infection control).sh.
	28	exp health promotion/
	29	(disease prevention or prevention).sh.
	30	preventive medicine.sh.
	31	exp policy/ or exp nutrition policy/ or exp environmental policy/ or exp fiscal policy/
	32	exp programs/
	33	exp sewage/
	34	exp water/
	35	exp hygiene/
	36	exp waste management/
	37	exp nutritional support/
	38	exp health education/
	39	exp family counseling/
	40	exp immunization/ or exp immunization programmes/
	41	exp community health workers/
	42	finance.sh.
	43	exp social welfare/
	44	exp social security/
	45	exp environmental health/
	46	24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45
	47	(health intervention or public health or health promotion or prevention or protection or preventive health services or preventive or control or child health or child welfare or child care or policy or program or project).ab,hw,ti.
	48	(health adj8 (intervention$ or prevention or policy or policies or program$ or project$)).ab,ti.
	49	(Communicable disease$ or infectious disease$ or water or sanitation or hygiene or health knowledge or Health attitude or practice or immunization or Parasitic Diseases or Psychosocial Support Systems or water or sanitation or latrine or toilets or waste disposal or sewage or hygiene or hand wash$ or nutrition policy or food policy or breastfeeding or nutrition therapy or supplement or parenting program or counseling or health education or instruction or immuni#ation or vaccine or immune$ or inoculation or insecticides or mosquito control or bed nets or mosquito nets or vector control or Prevention of mother-to-child transmission or PMTCT or deworming or community health or outreach or saving$ or voucher or microfinance or microcredit or Welfare or public assistance or social security or insurance or family policy or environment$).ab,ti.
	50	((psychosocial adj3 support) or (social adj3 support) or (prevent$ adj3 transmission) or ((finance$ or cash or money) adj3 transfer) or (environment adj3 (prevent$ or control$))).ab,ti.
	51	47 or 48 or 49 or 50

	52	46 or 51
P+I+S	53	11 and 23 and 52
Outcomes	54	(population health or global health or outcome assessment).ab,hw,ti.
	55	(effective* or impact or effect or outcome assessment or morbidity or mortality or death* or disease* or illness or coverage or (reported adj3 cases) or (cases adj3 averted)).ab,ti.
	56	54 or 55
P+I+O+S	57	53 and 56
Year	58	limit 57 to yr="2000 -Current"

Search string in Health Evidence

McMaster University: https://www.healthevidence.org/search.aspx

Number of hits (as of 19/06/2019): **299**

Search string:

Results for: [("health intervention" OR "public health" OR "health promotion" OR prevention OR protection OR "preventive health services" OR preventive OR control OR "child health" OR "child welfare" OR "child care" OR policy OR program OR project OR water OR sanitation OR hygiene OR "parenting program" OR counseling OR "health education" OR immunization OR vaccine OR Parasitic Diseases OR vector control OR outreach OR psychosocial OR financing OR social security OR insurance OR "family policy" OR environment*) AND (effective* OR impact OR effect OR "outcome assessment" OR morbidity OR mortality OR death* OR disease* OR illness OR coverage)] AND Limit:

Date = Published from 2000 to 2019

Review Type = Meta-analysis, Systematic review of reviews

Population = Infants (0-1 years), LMIC (low-to-middle-income countries), Preschool aged (1-4 years)

Topic Area = Communicable Disease/Infection, Environmental Health, Health Through the Ages -> Healthy Communities (e.g., community development, multicultural health, rural/urban health), Health Through the Ages -> Reproductive Health & Healthy Families, Nutrition, Social Determinants of Health (e.g., social environments, education, employment and working conditions)

Search string in the Campbell Collaboration Library of Systematic Reviews

The Campbell Library: https://campbellcollaboration.org/library.html

Number of hits (as of 21/06/2019): **33**

Search string:

Keyword: child AND health

Coordinating group(s): International Development; Knowledge Translation and Implementation; Nutrition; Social Welfare

Published date: 2000-01-01 to 2019-06-21

Type of documents: Protocol; Review

Search in 3ie Systematic review repository

International Initiative for Impact Evaluation - 3ie: https://www.3ieimpact.org/evidence-hub/systematic-review-repository
Number of hits (as of 24/06/2019): 110
Search terms:
child AND "public health" AND ("infectious diseases" OR "communicable diseases")
SR status: review; protocol
SR Type: Effectiveness review

Search string in Prospero

Centre for Reviews and Dissemination, University of York: https://www.crd.york.ac.uk/prospero/
Number of hits (as of 19/06/2019): 23
Search string:
(child AND low- and middle-income countries):CT,KW,PA,RQ AND (Intervention OR Prevention OR Systematic Review OR Meta-Analysis OR Review of reviews):RT AND (child_health OR Public health including social determinants of health OR Tropical Medicine):HA WHERE CD FROM 01/01/2000 TO 19/06/2019

Manual search

Search in Google Scholar

https://scholar.google.com/
Advanced search for three separate search strings
Number of hits (as of 21/06/2019): 46
Search terms:

Find articles with all of the words: child health
with the exact phrase: systematic review
with at least one of the words: promotion prevention "infectious diseases" "public health" intervention "low * income" "middle * income" countries
where my words occur: In the title of the article
Dated between: 2000-2019

Find articles with all of the words: child health
with the exact phrase: meta-analysis
with at least one of the words: promotion prevention "infectious diseases" "public health" intervention "low * income" "middle * income" countries
where my words occur: In the title of the article

Dated between: 2000-2019

Find articles with all of the words: child health synthesis
with at least one of the words: promotion prevention "infectious diseases" "public health" intervention "low * income" "middle * income" countries
where my words occur: In the title of the article
Dated between: 2000-2019

Search in UNICEF Office of Research – Innocenti

https://www.unicef-irc.org/publications/
Number of records selected (as of 26/06/2019): 5 (after removing duplicates)
Search terms:
Search publication>advanced options, Keyword search: "health"
Three thesaurus searches for "Health", "Cash transfer", "Public policy"

Search in UNICEF websites

Number of records selected (as of 26/06/2019): 12 (after removing duplicates between the two websites)
https://www.unicef.org/publications/
Hand search of the resource pages under the Child survival theme.

https://data.unicef.org/resources/
Search terms:
Resource types: Journal article; Publications
Resource Topics: Diarrhoea; Early childhood development; health; HIV/AIDS; Immunization; Infant and young child feeding; Iodine; Malaria; Malnutrion; Mortality; Nutrition; Pneumonia; SDGs; Survival; Tuberculosis; Vitamin A; Water and sanitation

Search in World Health Organization (WHO)

http://www.who.int/
Number of records selected (as of 26/06/2019): 14 (after removing duplicates)

IRIS repository

https://apps.who.int/iris/
Search terms:
Date issues: 2000-2019
Title: Contains "review"
Title: Contains "child"

Search terms:
Date issues: 2000-2019
Title: Contains “review”
Subject: Contains “child”

Search terms:
Date issues: 2000-2019
Title: Contains “review”
Subject: Contains “public health”

WHO Child health publication page

https://www.who.int/maternal_child_adolescent/documents/year/en/
Hand search for records published after 2000, with a title containing “review”

ANNEX 1. 6. Extraction Template

Main extraction

Bibliographic details						
Publication ID.	Author(s)	Publication Year	Title	Language	Link	Relevant Review Keywords
#######	Free text	Number	Free text	Free text	Hyperlink	Keyword; Keyword;…
System Id in Rayyan						Topics in Rayyan (minus irrelevant ones)

Review details												
Type of review		Countries covered in eligible studies		Population(s) covered in eligible studies		Years covered by the review search strategy		Number of studies included in the review (total)		Number of relevant studies included		AMSTAR 2 rating
Page #	1. Systematic review 2. Meta-analysis 3. Evidence synthesis	Page #	Country 1; Country 2;…	Page #	1.Nenonate (<28 days) 2.Infant (<1 y.o) 3.Child (<5 y.o) 4.Household with children <5	Page #	Free text	Page #	Number	Page #	Number	High Moderate Low Critically low
			These are the countries covered in the synthesis of studies meeting the inclusion criteria, not the whole review		Target population(s) covered in the synthesis of studies meeting the inclusion criteria, not the whole review		Report limits or filters applied in the search regarding publication years		Number of studies included in the whole review		Number of studies included and synthesized in the review, which match our inclusion criteria	Please fill out the second tab of this document for each individual study

Individual studies; synthesis characteristics																
Included primary studies ref.	Study design(s)		Type of control/comparison groups		Setting and population		Description of the intervention(s)		Population Health outcome(s) reported				Health Inequalities outcome(s) reported			
Page #	Page #	1. Randomized controlled trials 2. Non-randomized controlled trials 3. Controlled observational studies 4. Before and after studies 5. Interrupted time-series studies 6. Natural policy experiments 7. Evaluation studies 8. Cohort studies 9. Case-control studies 10. Ecological studies	Page #	Free text	Page #	Free text	Page #	Free text	Page #	1. Mortality 2. Morbidity 3. Number of Cases reported 4. Number of Cases averted 5. Number of deaths due to these diseases, 6. Diseases Incidence 7. Service/ intervention uptake 8. Service/ intervention coverage	Page #	Free text	Page #	Variation between groups or populations in 1. Mortality 2. Morbidity 3. Number of Cases reported 4. Number of Cases averted 5. Number of deaths due to these diseases, 6. Diseases Incidence 7. Service/ intervention uptake 8. Service/ intervention coverage	Page #	Free text
Please remember to report individual studies in the citation matrix		Type of study designs included in the synthesis (please select from the list). Please only report on the designs used in the studies included and synthesized in the review, which match our inclusion criteria.		Type of control/comparison groups used in the studies included in the synthesis. Please only report on the groups used in the studies included and synthesized in the review, which match our inclusion criteria.		Free text		Type/ Objective/ Process		Outcome measure used. Please keep one line per outcome.		Results		Outcome measure used. Please keep one line per outcome.		Results (variation in these health outcomes between groups or populations according to the Progress + factors)

Intervention(s) and outcome summary										
Type of intervention		Summary of review	Level	Public health Function	Approach(es) to populations	Equity objective	PROGRESS+ factors covered		Effect on population health	Effect on health inequalities
Page #	List (Table 1)	Free text	1. Structural 2. Public policy 3. Social/ community 4. Individual/ household	1. Promotion 2. Protection 3. Prevention	1. Universal 2. Targeted 3. Proportionate universalism	0. Not mentioned/not relevant 1. Health disadvantage 2. Health gap 3. Health gradient	1. Place of Residence 2. Race, Ethnicity, cultural background 3. Occupation 4. Gender and sex 5. Religion 6. Education 7. Social Capital 8. Socio-economic status 9. +/Others	Free text	0. Not reported/not relevant 1. Effective 2. Ineffective 3. unclear/insufficient evidence	0. Not reported/not relevant 1. Positive 2. Neutral 3. Detrimental 4. unclear/insufficient evidence
	Please refer to Table 1 in the protocol	A short paragraph summarizing: the aim; PICOS of the review/synthesis; its results. Please report potential heterogeneity/quality issues.	Please refer to the definitions in the protocol's framework	Please refer to the definitions in the protocol's framework	Please refer to the definitions in the protocol's framework	Please refer to the definitions in the protocol's framework	Please refer to Table 2 in the protocol	Details on the factor(s) covered (see examples in Table 2)	Please refer to the protocol's framework	Please refer to the protocol's framework

AMSTAR 2 Checklist (Shea et al., 2017)

Publication ID.	#
Overall rating *High:* *0 or 1 non-critical weakness (critical items are marked with a '*')* *Moderate:* *>1 non-critical weakness* *Low:* *1 critical weakness with or without non-critical weaknesses* *Critically low:* *>1 critical weakness with or without non-critical weaknesses*	High Moderate Low Critically low
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes No
***2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?**	Yes Partial yes No
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes No
***4. Did the review authors use a comprehensive literature search strategy?**	Yes Partial yes No
5. Did the review authors perform study selection in duplicate?	Yes No
6. Did the review authors perform data extraction in duplicate?	Yes No
***7. Did the review authors provide a list of excluded studies and justify the exclusions?**	Yes Partial yes No
8. Did the review authors describe the included studies in adequate detail?	Yes Partial yes No
***9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?**	Yes Partial yes No
10. Did the review authors report on the sources of funding for the studies included in the review?	Yes No
***11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?**	Yes No NA

12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	Yes No NA
***13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?**	Yes No
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes No
***15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?**	Yes No NA
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes No

Citation matrix

No.	Reference	Multiple articles reported as one study	*SR 1*	*SR2*	…
	Number of references				
	Number of studies				
1	*Primary 1*				
2	*Primary2*				
3	…				
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
…					

ANNEX 1. 7. List of Excluded Studies

The publication's full text cannot be obtained by the review team

Reviews withdrawn

1. Nisar, M. I., Jehan, F., Shafiq, Y., Lassi, Z. S., & Zaidi, A. K. (2016). Conjugate vaccines for preventing Haemophilus influenzae type b infections in children under 5 years of age. Cochrane Database of Systematic Reviews, 2016(10). https://www.cochrane.org/CD010377/ARI_conjugate-vaccines-preventing-haemophilus-influenzae-type-b-infections-children-under-5-years-age

2. Jehan, F., Nisar, M. I., Lassi, Z. S., Omer, S. B., & Zaidi, A. K. M. (2017). Oral polio vaccine plus inactivated polio vaccine versus oral polio vaccine alone for reducing polio in children under two years of age. Cochrane Database of Systematic Reviews, 2017(1). https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010857.pub2/full

Protocols without published reviews

3. Chachou, M. J., Mukinda, F. K., Motaze, V., & Wiysonge, C. S. (2015). Electronic and postal reminders for improving immunisation coverage in children: Protocol for a systematic review and meta-analysis. BMJ Open, 5(10), e008310.

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The publication does not include a relevant overall health outcome or disaggregated information by or between population groups.

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ANNEX 1. 8. Primary Study Citation Matrix

No.	Reference	Multiple articles reported as one study	Multiple studies reported in one article	Jarrett et al., 2015 (63)	Lamberti et al., 2016 (79)	Lassi et al., 2016 (60)	Ngocho et al., 2019 (68)	Flórez et al., 2015 (78)	Conde-Agudelo & Diaz-Rossello, 2016 (54)	Cleminson & McGuire, 2016 (53)	Chavers et al., 2018 (74)	Lukusa et al., 2018 (64)	Mureed et al., 2015 (81)	Naugle et al., 2014 (82)	McGuinness et al., 2018 (67)
	Number of references			7	25	10	8	3	12	10	21	6	10	8	6
	Number of studies			7	25	6	8	3	7	6	21	6	10	7	6
1	Aage S, Kiraly N, Costa K, Byberg S, Bjerregaard-Andersen M, Fisker AB, et al. Neonatal vitamin A supplementation associated with increased atopy in girls. Allergy 2015;70(8):985-94. [DOI: 10.1111/all.12641]	Benn 2008													
2	Abdou A., B.E. Munoz, B. Nassirou, B. Kadri, F. Moussa, I. Baarè, J. Riverson, E. Opong, S.K. West How much is not enough? a community randomized trial of a Water and Health Education programme for Trachoma and Ocular C. trachomatis infection in Niger Trop. Med. Int. Health, 15 (2010), pp. 98-104														
3	Abdul Rahman MA, Al-Dabbagh SA, Al-Habeeb QS. Health education and peer leaders' role in improving low vaccination coverage in Akre district, Kurdistan Region, Iraq. East Mediterr Health J. 2013;19(2):125–9.												x		
4	Agoestina T, Humphrey JH, Taylor GA, Usman A, Subardja D, Hidayat S, et al. Safety of one 52-mumol (50,000 IU) oral dose of vitamin A administered to neonates. Bulletin of the World Health Organization 1994;72(6):859-68. [PUBMED: 7867131]	Humphrey 1996													
5	Ahmed AS, Saha SK, Chowdhury MA, Law PA, Black RE, Santosham M, et al. Acceptability of massage with skin barrier-enhancing emollients in young neonates in Bangladesh. Journal of Health, Population, and Nutrition 2007;25(2):236-40. [PUBMED: 17985826]									x					
6	Alam N, Wojtyniak B, Henry FJ, Rahaman MM. Mothers' personal and domestic hygiene and diarrhea incidence in young children in rural Bangladesh. Int J Epidemiol. 1989;18(1):242–7.														
7	Alemayehu M, Koye DN, Tariku A, Yimam K. Prevalence of active trachoma and its associated factors among rural and urban children in Dera Woreda, Northwest Ethiopia: a comparative cross-sectional study. Biomed research international. 2015;2015.														
8	Ali S, Manzoor F, Sahi N, Sattar S. Vaccine refusal: an obstacle to a polio free world. Prof Med J 2010;17(1):145–50			x											
9	Ali SM, Sharma J, Sharma R, Alam S. Kangaroo mother care as compared to conventional care for low birth weight babies. Dicle Medical Journal 2009;36(3):155-60.								x						
10	Andersson N, Cockcroft A, Ansari NM, Omer K, Baloch M, Foster AH, et al. Evidence-based discussion increases childhood vaccination uptake: a randomised cluster controlled trial of knowledge translation in Pakistan. BMC Int Health Human Rights 2009:9.	Andersson 2009		x								x	x		
11	Andersson N, CockcroK A, Ansari NM, Omer K, Losos J, Ledogar RJ, et al. Household cost-benefit equations and sustainable universal childhood immunisation: a randomised cluster controlled trial in south Pakistan [ISRCTN12421731]. BMC Public Health 2005 2005;5:72. [PUBMED: 15985160]	Andersson 2009													

No.	Reference	Morita et al., 2016 (80)	Nelson et al., 2016 (83)	Odentaal et al., 2018 (46)	Gulani et al., 2015 (45)	Yuan et al., 2014 (47)	Willame et al., 2018 (88)	Velazquez et al., 2017 (87)	Thakur et al., 2018 (86)	Smith et al., 2018 (85)	Santos et al., 2016 (84)	Saeterdal et al., 2014 (62)	Oyo-Ita et al., 2016 (61)	Puchalski Ritchie et al., 2019 (71)	Owusu-Addo et al., 2014 (70)
	Number of references	4	15	2	7	3	17	4	4	6	32	3	14	6	7
	Number of studies	3	14	2	6	3	17	4	4	6	31	2	14	6	7
1	Aage S et al. 2015														
2	Abdou A. et al. 2010														
3	Abdul Rahman MA et al. 2013														
4	Agoestina T et al. 1994														
5	Ahmed AS et al. 2007														
6	Alam N et al. 1989	x													
7	Alemayehu M et al. 2015														
8	Ali S et al. 2010														
9	Ali SM et al. 2009														
10	Andersson N et al. 2009											x	x		
11	Andersson N et al. 2005											x			

No.	Reference	Oliver-Williams et al., 2017 (69)	de Oliveira et al., 2016 (55)	Darvesh et al., 2017 (76)	DeAntonio et al., 2019 (77)	Freeman et al., 2017 (66)	Gera et al., 2016 (56)	Imdad et al., 2016 (58)	Haider et al., 2017 (57)	Johri et al., 2015 (59)	Ali et al., 2018 (72)	Augustincic et al., 2015 (51)	Bonner et al., 2015 (73)	Bright et al., 2017 (65)	Clasen et al., 2015 (52)	Crocker-Buque et al., 2017 (75)
	Number of references	24	5	42	13	34	12	10	18	11	2	6	3	28	23	10
	Number of studies	21	5	44	13	33	4	3	4	11	2	3	2	27	21 (29	10
1	Aage S et al. 2015								x							
2	Abdou A. et al. 2010					x										
3	Abdul Rahman MA et al. 2013															
4	Agoestina T et al. 1994								x							
5	Ahmed AS et al. 2007															
6	Alam N et al. 1989			x											x	
7	Alemayehu M et al. 2015					x										
8	Ali S et al. 2010															
9	Ali SM et al. 2009															
10	Andersson N et al. 2009									x				x		
11	Andersson N et al. 2005															

No.	Reference	Multiple articles reported as one study	Multiple studies reported in one article	Jarrett et al., 2015 (63)	Lamberti et al., 2016 (79)	Lassi et al., 2016 (60)	Ngocho et al., 2019 (68)	Flórez et al., 2015 (78)	Conde-Agudelo & Díaz-Rossello, 2016 (54)	Cleminson & McGuire, 2016 (53)	Chavers et al., 2018 (74)	Lukusa et al., 2018 (64)	Mureed et al., 2015 (81)	Naugle et al., 2014 (82)	McGuinness et al., 2018 (67)	Morita et al., 2016 (80)	Nelson et al., 2016 (83)	Odentaal et al., 2018 (46)	Gulani et al., 2015 (45)	Yuan et al., 2014 (47)	Willame et al., 2018 (88)	Velazquez et al., 2017 (87)	Thakur et al., 2018 (86)	Smith et al., 2018 (85)	Santos et al., 2016 (84)	Soeterdal et al., 2014 (62)	Oyo-Ita et al., 2016 (61)	Puchalski Ritchie et al., 2019 (71)	Owusu-Addo et al., 2014 (70)	Oliver-Williams et al., 2017 (69)	de Oliveira et al., 2016 (55)	Darvesh et al., 2017 (76)	DeAntonio et al., 2019 (77)	Freeman et al., 2017 (66)	Gera et al., 2016 (56)	Imdad et al., 2016 (58)	Haider et al., 2017 (57)	Johri et al., 2015 (59)	Ali et al., 2018 (72)	Augustincic et al., 2015 (51)	Bonner et al., 2015 (73)	Bright et al., 2017 (65)	Clasen et al., 2015 (52)	Crocker-Buque et al., 2017 (75)
12	Andrade AL, Minamisava R, Policena G, Cristo EB, Domingues CM, de Cunto Brandileone MC, Almeida SC, Toscano CM, Bierrenbach AL. Evaluating the impact of PCV-10 on invasive pneumococcal disease in Brazil: A time-series analysis. Hum Vaccin Immunother. 2016;12:285–292. doi:10.1080/ 21645515.2015.1117713																															x												
13	Anjum Q, Omair A, Inam SNB, Ahmed Y, Usman Y, Shaikh S, et al. Improving vaccination status of children under five through health education. J Pak Med Assoc. 2004;54(12):610–3.															x																												x
14	Ansari M, Khan Z. Routine immunization coverage in underserved children of Aligarh (India): An effort with UNICEF. J Child Health Care. 2010;14(2):142–50.																																											x
15	Ansari MA, Khan Z, Khan IM. Reducing resistance against polio drops. J R Soc Promot Health 2007;127(6):276–9.			x																																								
16	Arifeen SE, Blum LS, Hoque DM, Chowdhury EK, Khan R, Black RE, et al. Integrated Management of Childhood Illness (IMCI) in Bangladesh: early findings from a cluster-randomised study. Lancet 2004;364(9445):1595-1602	Arifeen 2009																																x										
17	Arifeen SE, Bryce J, Gouws E, Baqui AH, Black RE, Hoque DM, et al. Quality of care for under-fives in first-level health facilities in one district of Bangladesh. Bull WHO 2005;83(4):260-7	Arifeen 2009																																x										
18	Arifeen SE, Hoque DM, Akter T, Rahman M, Hoque ME, Begum K, et al. Effect of the Integrated Management of Childhood Illness strategy on childhood mortality and nutrition in a rural area in Bangladesh: a cluster randomised trial. Lancet 2009;374(9687):393-403.	Arifeen 2009																																x							x			
19	Armah G, Pringle K, Enweronu-Laryea CC, et al. Impact and effectiveness of monovalent rotavirus vaccine against severe rotavirus diarrhea in Ghana. Clin Infect Dis 2016; 62(Suppl 2):S200–7																			x																								
20	Armah GE, Kapikian AZ, Vesikari T, et al. Efficacy, immunogenicity, and safety of two doses of a tetravalent rotavirus vaccine RRV-TV in Ghana with the first dose administered during the neonatal period. J Infect Dis. 2013;208:423–431				x																																							
21	Armah GE, Sow SO, Breiman RF, et al. Efficacy of pentavalent rotavirus vaccine against severe rotavirus gastroenteritis in infants in developing countries in sub-Saharan Africa: a randomised, double-blind, placebo-controlled trial. Lancet. 2010;376:606–614				x																																							
22	Armstrong Schellenberg JR, Adam T, Mshinda H, Masanja H, Kabadi G, Mukasa O, et al. Effectiveness and cost of facility-based Integrated Management of Childhood Illness (IMCI) in Tanzania. Lancet 2004;364(9445):1583-94.	Schellenberg 2004																																x										
23	Arora J, Kumar A, Ramji S. Effect of oil massage on growth and neurobehavior in very low birth weight preterm neonates. Indian Pediatrics 2005;42(11):1092-100. [PUBMED: 16340050]									x																																		
24	Attanasio O, Go´mez LC, Heredia P, Vera-Herna´ndez M (2005) The short-term impact of a conditional cash subsidy on child health and nutrition in Colombia. Report. Centre for the Evaluation of Development Policies, The Institute for Fiscal Studies, London																												x															

No.	Reference	Multiple articles reported as one study	Multiple studies reported in one article	Jarrett et al., 2015 (63)	Lamberti et al., 2016 (79)	Lassi et al., 2016 (60)	Ngocho et al., 2019 (68)	Flórez et al., 2015 (78)	Conde-Agudelo & Díaz-Rossello, 2016 (54)	Cleminson & McGuire, 2016 (53)	Chavers et al., 2018 (74)	Lukusa et al., 2018 (64)	Mureed et al., 2015 (81)	Naugle et al., 2014 (82)	McGuinness et al., 2018 (67)	Morita et al., 2016 (80)	Nelson et al., 2016 (83)	Odendaal et al., 2018 (46)	Gulani et al., 2015 (45)	Yuan et al., 2014 (47)	Willame et al., 2018 (88)	Velazquez et al., 2017 (87)	Thakur et al., 2018 (86)	Smith et al., 2018 (85)	Santos et al., 2016 (84)	Soeterdal et al., 2014 (62)	Oyo-Ita et al., 2016 (61)	Puchalski Ritchie et al., 2019 (71)	Owusu-Addo et al., 2014 (70)	Oliver-Williams et al., 2017 (69)	de Oliveira et al., 2016 (55)	Darvesh et al., 2017 (76)	DeAntonio et al., 2019 (77)	Freeman et al., 2017 (66)	Gera et al., 2016 (56)	Imdad et al., 2016 (58)	Hoider et al., 2017 (57)	Johri et al., 2015 (59)	Ali et al., 2018 (72)	Augustincic et al., 2015 (51)	Bonner et al., 2015 (73)	Bright et al., 2017 (65)	Clasen et al., 2015 (52)	Crocker-Buque et al., 2017 (75)
25	Aung Myo H, Thein H. Prevention of diarrhea and dysentery by hand washing. Trans R Soc Trop Med Hyg. 1989;83(1):128–31																															x												
26	Austin CJ. Investigation of in-house water chlorination and its eHectiveness for rural areas of the Gambia [dissertation]. New Orleans: Tulane University School of Public Health and Tropical Medicine, 1993.																																										x	
27	Authors name not stated. An intervention to improve quality of care in first-level government health facilities. Health and Science Bulletin 2005;3(2):5-11.	Arifeen 2009																																	x									
28	Aziz KM, Hoque BA, Hasan KZ, Patwary MY, Huttly SR, Rahaman MM, Feachem RG. Reduction in diarrhoeal diseases in children in rural Bangladesh by environmental and behavioural modifications. Transactions of the Royal Society of Tropical Medicine and Hygiene. 1990 May;84(3):433-8.	Aziz et al.														x																		x										
29	Aziz KMA, Hoque BA, Huttly S et al. Mirzapur Handpump Project. Final Report, 1989.	Aziz et al.														x																												
30	Bahl R, Bhandari N, Kant S, Molbak K, Ostergaard E, Bhan MK. Effect of vitamin A administered at Expanded Program on Immunization contacts on antibody response to oral polio vaccine. European Journal of Clinical Nutrition 2002;56(4):321-5.	WHO 1998																																		x								
31	Bahl R, Bhandari N, Wahed MA, Kumar GT, Bhan MK, WHO/CHD Immunization-Linked Vitamin A Group. Vitamin A supplementation of women postpartum and of their infants at immunization alters breast milk retinol and infant vitamin A status. Journal of Nutrition 2002;132(11):3243-8.	WHO 1998																																		x								
32	Balakrishnan R, Gopichandran V, Chaturvedi S, Chatterjee R, Mahapatra T, Chaudhuri I. Continuum of care services for maternal and child health using mobile technology - a health system strengthening strategy in low and middle income countries. BMC Med Inform Decis Mak 2016 Jul 07;16:84 [FREE Full text] [CrossRef] [Medline]																													x														
33	Ban HQ, Li T, Shen J et al. Effects of multiple cleaning and disinfection interventions on infectious diseases in children: a group randomized trial in China. Biomed Environ Sci 2015: 28: 779–787.														x																													
34	Banerjee A, Duflo E, Jameel A, Glennerster R, Kothari D. Improving immunisation coverage in rural India: clustered randomised controlled evaluation of immunisation campaigns with and without incentives. Br Med J 2010;340:2220			x																							x											x				x		
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No.	Reference	Multiple articles reported as one study	Multiple studies reported in one article	Jarrett et al., 2015 (63)	Lamberti et al., 2016 (79)	Lassi et al., 2016 (60)	Ngocho et al., 2019 (68)	Flórez et al., 2015 (78)	Conde-Agudelo & Díaz-Rossello, 2016 (54)	Cleminson & McGuire, 2016 (53)	Chavers et al., 2018 (74)	Lukusa et al., 2018 (64)	Mureed et al., 2015 (81)	Naugle et al., 2014 (82)	McGuinness et al., 2018 (67)	Morita et al., 2016 (80)	Nelson et al., 2016 (83)	Odentaal et al., 2018 (46)	Gulani et al., 2015 (45)	Yuan et al., 2014 (47)	Willame et al., 2018 (88)	Velazquez et al., 2017 (87)	Thakur et al., 2018 (86)	Smith et al., 2018 (85)	Santos et al., 2016 (84)	Saeterdal et al., 2014 (62)	Oyo-Ita et al., 2016 (61)	Puchalski Ritchie et al., 2019 (71)	Owusu-Addo et al., 2014 (70)	Oliver-Williams et al., 2017 (69)	de Oliveira et al., 2016 (55)	Darvesh et al., 2017 (76)	DeAntonio et al., 2019 (77)	Freeman et al., 2017 (66)	Gera et al., 2016 (56)	Imdad et al., 2016 (58)	Haider et al., 2017 (57)	Johri et al., 2015 (59)	Ali et al., 2018 (72)	Augustincic et al., 2015 (51)	Bonner et al., 2015 (73)	Bright et al., 2017 (65)	Clasen et al., 2015 (52)	Crocker-Buque et al., 2017 (75)
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374	Yen C, Figueroa JR, Uribe ES, et al. Monovalent rotavirus vaccine provides protection against an emerging fully heterotypic G9P[4] rotavirus strain in Mexico. J Infect Dis 2011; 204:783–6																				x				x																			
375	YouTube. HealthPhoneTM: how immunization protects: completing the immunization cycle protects children URL: https://www.youtube.com/watch?v=Wr-RKyIfFmI [accessed 2017-02-23] [WebCite Cache]																													x														
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ANNEX 1. 9. Description of Included Reviews

Review	Number and type of relevant studies /Number of studies covered in the review	Population and context	Control/Comparison groups	Interventions	Results	Funding of the review	AMSTAR2
(Ali et al., 2018) (72)	2 (before-and-after studies) /48	Children aged 1–59 months in South Asia across sentinel surveillance hospitals in cities of Pakistan and Bangladesh	Pre-introduction period	Introduction of new HiB vaccines into national programs	HiB incidence in children aged 1–59 months declined within two years of national implementation of the vaccine. The studies met two out of three of the quality criteria used in the authors' quality assessment.	None	Critically Low
(Augustincic Polec et al., 2015) (51)	3 (RCT, cluster RCT, controlled before/after study) /10	Women of reproductive age or heads of households with children under 5 living in rural areas in Ghana, Ethiopia, Zambia	Controls received no malaria education/training or received an alternative education intervention	Education intervention delivered through the community on the use of insecticide treated nets (ITNs)	Educational interventions may be effective in increasing under-5 use of ITNs (low certainty; mixed quality and heterogeneity between included studies).	Knowledge Synthesis Grant, CIHR, Canada	High
(Bonner et al., 2015) (73)	3 (retrospective study, matched case-control) /18	Children between 12–60 months in Brazil and Uruguay	Children in the same age group or areas who did not receive vaccination; children before they received vaccination	Catch-up dose of PCV vaccine after its introduction into national programs	Significant vaccine efficacy in either the most prevalent serotype or across serotypes for disease incidence of Invasive Pneumococcal Disease. The studies included in the review were of high quality, but the heterogeneity of the outcomes prevented a meta-analysis.	None	Critically Low
(Bright et al., 2017) (65)	27 (cluster RCT, controlled Before-and-After)	Infants and children under 5 years, healthcare workers involved in immunization	Controls from the same area receiving no intervention, standard care/usual services, or an	Supply-, demand- side or combined interventions to increase access to health services among children aged ≤5 years, including:	For supply-side interventions aiming at improving immunization uptake (9 studies), as many studies found positive effect as those finding no effect.	CBM	Low

	/57	services, caregivers and households with children under 5 living in 18 LMIC	alternative or partial intervention	delivering services at or closer to home and service level improvements for the supply-side interventions ;health promotion/education programs, text messages and financial or other incentives for the demand-side interventions.	For demand-side interventions (18 studies), half of the studies found no effect and a third found a positive effect. There was strong variation in the effectiveness and the quality of evidence available for the different types of interventions. The quality of the included studies was generally mixed, with the author urging for caution in the interpretation of the results.		
(Chavers et al., 2018) (74)	21 (case-control studies, time series analysis, observational studies) /51	Children under 5 in 8 Latin American countries (Colombia; El Salvador; Bolivia; Nicaragua; Brazil; Mexico; Panama; Venezuela)	Pre-introduction period	Introduction of new rotavirus vaccines into national programs	Vaccine is effective in reducing acute gastroenteritis morbidity (7 studies) and mortality (14 studies) in children under 5. The authors provided limited information on the quality and design of the studies they included. Children under 1 – the group carrying the greatest burden of rotavirus – benefitting most from vaccine effectiveness High child mortality countries tended to have a lower vaccine effectiveness than those with lower child mortality.	None	Critically low
(Clasen et al., 2015) (52)	21 (RCTs, controlled before-after studies) /55	Households with children <5 years age in rural and urban settings as well as informal settings and refugee camps in 17 countries	Households or communities receiving no intervention or those receiving a 'dummy' intervention.	Improving water quality through water supply infrastructure improvement or point of use improvement such as water treatment and storage	For water supply interventions (4 studies), there was insufficient and mainly very low quality evidence on what may or may not be effective in different settings. For point-of-use interventions (18 studies), some interventions appeared to be protective against diarrhea in children across various settings (low to moderate quality evidence).	Liverpool School of Tropical Medicine, UK; Department for International Development (DFID), UK	High
(Cleminson & McGuire, 2016) (53)	6 (RCTs) /21	Preterm infants in hospital settings in Turkey, Bangladesh, India, Pakistan, Brazil	Preterm infants in hospital settings receiving routine skin care or alternative emollient	Topical application of emollients to prevent invasive infection	None of the meta-analyses show a statistically significant risk difference in the incidence of invasive infections (low to moderate quality evidence). In the meta-analysis comparing either emollient against routine care, the authors also noted moderate to high heterogeneity across studies.	Hull York Medical School and Centre for Reviews and Dissemination, University of York, UK; National Institute of Health Research (NIHR) - Grant (13/89/12);	High

						Eunice Kennedy Shriver National Institute of Child Health and Human Development National Institutes of Health, Department of Health and Human Services, USA -Contract No. HHSN275201100016C	
(Conde-Agudelo & Diaz-Rossello, 2016) (54)	7 (RCTs) /21	Low-birth-weight infants – regardless of gestational age – in hospital settings in India, Colombia, Ecuador and Madagascar	Infants receiving conventional neonatal care or an alternative intervention (late vs. early-onset of the intervention)	Kangaroo mother care (KMC) provided by the parents and/or healthcare professionals	Positive effect of KMC on the risks of severe illness, nosocomial infection/sepsis and lower respiratory tract diseases but no effect on mild/moderate infection and illness or diarrhea risks at six months (moderate, mixed quality evidence, 6 studies). No difference in morbidity between early- and late-onset of KMC (1 high quality trial).	Perinatology Research Branch, Eunice Kennedy Shriver National Institute of Child Health and Human Development/National Institutes of Health/Department of Health and Human Services, Bethesda, MD, and Detroit, MI, and Department of Obstetrics and Gynecology, Wayne State University, Detroit, MI, USA; Departamento de Neonatología del Hospital de Clínicas, Universidad de la República, Montevideo, Uruguay; Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services, USA - Contract No. HHSN275201100016C; National Institute for Health Research, UK - Cochrane Programme Grant (13/89/12)	High

(Crocker-Buque et al., 2017) (75)	10 (RCTs, before-after studies, time series analysis, evaluation, cross-sectional studies) /63	Children or households with children under 5 living in a low-income urban areas, slums, urban poor communities with slum-like characteristics, in Bangladesh, Pakistan, Guatemala, Uganda, Zambia, India	Target population before the intervention or control population from the same area.	Reminder/recalls systems about immunization; outreach services; and parent education about immunization	All studies show varying levels of success (low to moderate quality of the studies available) The authors highlight the need for further research to confirm these findings.	Royal Society of Tropical Medicine and Hygiene	Critically low
(Darvesh et al., 2017) (76)	44 (RCTs, cluster RCTs, quasi-experimental studies with controls) /44	Children under 5 in a community setting in 24 LMICs. Emergency settings, refugee camps or specific sub-populations (e.g. HIV positive people) were excluded	Children under 5 living communities receiving no intervention	Water quality improvement at source and point-of-use, the promotion of handwashing with soap and the safe disposal of excreta	Point-of-use water quality improvement interventions (32 studies) and hand washing promotion with soap (6 studies) reduce the risk of childhood diarrhea. The evidence on water supply interventions at source (5 studies) and safe disposal of excreta (1 study) is insufficient to conclude on an effect of these intervention on diarrhea risks. Overall, low to very low quality of evidence and high heterogeneity of results in the meta-analyses.	Bill & Melinda Gates Foundation (JHU Grant 115,621, Award Number OPP1084423 for the "Development and Use of the Lives Saved Tool (LiST)")	Critically low
(de Oliveira et al., 2016) (55)	5 (controlled before and after studies, interrupted time series studies, case-control study) /22	Children under 5 years old in Brazil, Chile and Peru.	Pre-introduction period	Introduction of PCV-10 vaccines in national childhood immunization programs without any distinction of schedule or catch-up period established in the country	PCV introduction has a positive impact on pneumonia (3 studies) and meningitis (2 studies) mortality rates among under 5-year-old children. PCVs have higher effectiveness on pneumococcal meningitis deaths for younger children (< 12 months of age) – the group with the higher burden of disease - as compared to older children (13 to 23 months old) (2 studies). The authors flag out concerns related to study design, heterogeneity between studies and potential publication bias	Pan American Health Organization and the Sabin Vaccine Institute.	High

(DeAntonio et al., 2019) (77)	13 (observational and intervention studies) /23	Children under 5 living in Brazil, Chile, Uruguay, Argentina, Nicaragua, Panama and Mexico	Pre-introduction å period	Introduction of Hib, rotavirus and PCV vaccines into national programs, with or without catch-up programs	The introduction of these vaccines reduced both the incidence of disease and mortality in children within the age group targeted for vaccination (quality assessment not available). Possible herd protection effects in children under 5 not targeted by the vaccination program from routine Hib and rotavirus vaccine (5 studies). The authors assess the evidence as currently insufficient to confirm such an effect.	GlaxoSmithKline GSK Biologicals SA funded this study (GSK Study identifier: HO-15-16768)	Critically low
(Flórez et al., 2015) (78)	3 (before/after studies, RCT) /19	Mothers and families with children under 5 living in India, Pakistan and Uganda	Target population before the interventions and/or population from neighboring communities receiving no intervention	Preventive health education (hygiene, immunization promotion, child health) intervention to households by community health workers (definitions and characteristics varied according to context)	Such interventions can reduce the risk of disease-specific morbidity in children (2 studies; low to moderate quality evidence) They can improve immunization coverage (one study; high quality evidence). The effectiveness of using these interventions to improve universal coverage of disadvantaged group has been poorly studied.	University of la Sabana	Critically low
(Freeman et al., 2017) (66)	33 (cross-sectional studies, non-randomized controlled trials, RCTs, case-control studies, controlled before-and-after studies) /171	Communities or households with children under 5 in 24 LMICs	Communities receiving no intervention, having no sanitation or lower levels of sanitation	Sanitation interventions which include provision or improvement of sanitation facilities or services (e.g., provision of household latrines or child potties), promotional activities (e.g., behavior change promotion to reduce open defecation) and community interventions, such as provision of sewage and wells	Sanitation has a protective effect against diarrhea (low quality evidence) and trachoma (moderate to high quality evidence) among children under-five (30 studies) but had no effect on STH and hookworm infections (5 studies, very low and low quality of evidence respectively). High heterogeneity found in the meta-analyses.	World Health Organization, made possible through contributions from the UK Department for International Development and the Bill & Melinda Gates Foundation.	Low
(Gera et al., 2016) (56)	4 (cluster RCTs, controlled before and after studies) /4	Healthcare professionals, communities, infants and/or children under 5 years old in India,	Children receiving usual health services without the integrated health care package	Implementing the integrated management of childhood illnesses (IMCI) strategy, including improving health practices at health care facilities (e.g. training), at home	IMCI had little or no effect on immunization coverage for measles or the third dose of diphtheria, pertussis, and tetanus (moderate certainty evidence)	Sitaram Bhartia Institute of Science and Research, India; Department for International Development, UK.	High

		Bangladesh and Tanzania		(e.g. home visits), and in the community			
(Gulani & Sachdev, 2014) (45)	6 (RCTs) /12	Children under 5 in community or healthcare settings in Bangladesh, South Africa, Burkina Faso, India, Chile and Jamaica	Control placebo groups from the same population	Zinc supplements in different forms and dosage given at least once a week for at least four months	No evidence of a difference between zinc supplements and placebo on otitis media cases in children under 5 in community or healthcare settings (5 trials, good quality, with low risk of bias). A potential or definite benefit among healthy or malnourished infants in community or healthcare settings, although the authors raised caution about some of the results due to sample size (3 trials, good quality, with low risk of bias). The review could not assess whether that difference was due to age differences due to lack of comparable, age-stratified data across included studies. The evidence on the effect of zinc supplemented on otitis media in children is mixed.	Sitaram Bhartia Institute of Science and Research, India	High
(Haider et al., 2017) (57)	4 (RCTs) /12	Term neonates up to 28 days after birth in healthcare or community settings, from both rural and urban areas in Guinea-Bissau, Indonesia, Zimbabwe and India. Pre-term and very low-birth weight babies were excluded but the studies were performed in areas with high health needs such as high prevalence of vitamin A deficiency and high risks of HIV.	Neonates receiving placebos	Synthetic vitamin A supplementation, with or without co-interventions, at the concentrations between 24,000 IU and 50,000 IU	The intervention has no significant effect on cause-specific infant mortality (4studies) and morbidity (3 studies) (high quality evidence)	Centre for Global Child Health, The Hospital for Sick Children, Canada; Evidence and Programme Guidance, Department of Nutrition for Health and Development, World Health Organization, Switzerland; Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services, USA - Contract No. HHSN275201100016C	High

(Imdad et al., 2016) (58)	3 (RCTs) /12	Infants under 6 months in urban (2 studies) or undefined (1 study) settings in India, Ghana, Peru, Bangladesh and Indonesia	Infants from the same area or clinic receiving placebo	Synthetic vitamin A supplementation at the concentrations between 25,000 IU and 50,000 IU 3 times within 6 months during vaccination visits	The number of studies in cause-specific mortality and morbidity were small. Vitamin A supplementation has no effect on disease-specific mortality (1 studies, moderate quality evidence) or morbidity (2 studies, low or high quality evidence) in this age group.	Sitaram Bhartia Institute of Science and Research, India; Max Hospital, India; Department of Nutrition for Health and Development, World Health Organization, Switzerland; Child and Adolescent Health Division, World Health Organization, Switzerland; Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services, USA - Contract No. HHSN275201100016C; National Institute for Health Research, UK - Cochrane Programme Grant (13/89/12).	High
(Jarrett et al., 2015) (63)	7 (cluster RCTs, RCT, controlled trial, cohort studies) /181	Parents in low income settings or disadvantaged communities, including parents reluctant to immunization in Pakistan, Nigeria and India. Healthcare workers from primary healthcare centers involved in immunization programs in rural settings in Turkey.	Control groups received either no intervention or routine care.	Strategies addressing vaccine hesitancy (social mobilization; communication tool-based training/ information-based for healthcare workers; non-financial incentives)	All these interventions were found effective at population level, with dialogue-based interventions (e.g. social mobilization, training for health workers) considered most effective. Two types interventions may be effective in addressing disadvantages when properly targeted: social mobilization (4 studies) and non-financial incentives (1 study). Communication tool-based training for health-care workers may not be as effective across all groups. The evidence was of moderate to very low quality.	Bill & Melinda Gates Foundation, with additional support from the Center for Strategic and International Studies, EU Innovative Medicines Initiative (IMI), GSK, National Institute for Health Research (UK), Novartis, and WHO	Moderate

(Johri et al., 2015) (59)	11 (RCTs, cluster RCTs, before and after study) /11	Mothers, caregivers, households with children within the age group targeted by immunization; communities living in low- and middle-income settings and communities with lagging health and social indicators in Zimbabwe, Kenya, Pakistan, India, Bangladesh, Honduras and Ghana	Communities or parents from the same area or going to the same health center receiving no intervention, routine services and/or alternative interventions	Strategies to increase demand for vaccination (education or knowledge translation interventions and/or interventions using financial and non-financial incentives at the individual or community level)	Both educational approaches (7 studies) and use of incentives (4 studies) were effective strategies. Demand-side interventions were associated with significantly higher receipt of vaccines. Educational or knowledge translation interventions had a greater effect than incentives-based interventions. There was considerable heterogeneity in the results and in the quality of the studies included (from low to high risks of biases).	Canadian Institutes for Health Research (299960); Bill & Melinda Gates Foundation (OPP1067851)	High
(Lamberti et al., 2016) (79)	25 (RCTs, observational studies) /48	Children under 5 years of age representative of the general population in four world regions	Healthy children from the same area, children with non-diarrheal illness, children with non-Rotavirus diarrhea or diarrhea-free controls	Introduction of rotavirus vaccines	The three studies assessing the effect of rotavirus vaccination programs on child diarrhea mortality found a reduction of diarrhea mortality in Latin American countries (moderate quality; consistent results across studies). The 22 studies assessing the number of diarrhea episodes of any severity, any cause found a protective efficacy and effectiveness of rotavirus vaccination against rotavirus and all diarrheal outcomes (moderate or high quality). Rotavirus vaccination was efficacious and effective in all MDG regions, but was highest in East/Southeastern Asia, followed by Latin America and the Caribbean, South Asia and sub-Saharan Africa.	Maternal Child Epidemiology Estimation (MCEE) grant from the Bill & Melinda Gates Foundation	Critically low
(Lassi et al., 2016) (60)	6 (RCTs) /6	Children aged from two to 59 months in community or healthcare settings. Most studies occurred in disadvantaged urban areas in Bangladesh, India,	Children receiving a placebo	Daily oral zinc supplementation (with or without other supplements)	Zinc supplementation was significantly associated with reducing the incidence (6 studies) and prevalence (1 study) of pneumonia in children under 5 (low quality evidence). A specific sub-group (HIV positive children, 1 study) showed similar results (low quality evidence) – suggesting a neutral effect on health	Aga Khan University, Pakistan.	High

		Peru and South Africa, with two studies including HIV-affected children.			inequalities based on these characteristics.		
(Lukusa et al., 2018) (64)	6 (RCT, cluster RCT) /6	Parents and guardians in both rural and urban areas in India, Pakistan and Nepal	Caregivers receiving no intervention	Educating caregivers in communities or in health facilities about the importance of childhood vaccination	Educating parents substantially improve in childhood vaccination coverage (moderate certainty evidence). No difference between the effects of community-based (3 studies) and health facility-based (3 studies) education. Quality of the studies was considered high (3 studies) or moderate (3 studies with high risks of bias).	South African Medical Research Council and the National Research Foundation of South Africa (Grant Numbers: 108571 and 106035).	Moderate
(McGuinness et al., 2018) (67)	6 (cluster RCTs) /14	Caregivers, parents and households with children under 5 in urban childcare settings or urban or rural domestic settings in China, Colombia, Bangladesh, Kenya, Peru and Pakistan	Controls with similar sociodemographic characteristics as the intervention groups, from another childcare center or geographic area, receiving standard care practice or alternative interventions	Hygiene education interventions alone or with infrastructure interventions including the provision of hygiene products delivered in childcare, school or domestic settings.	Hygiene intervention can lead to a reduction in ARI illness (5 studies, low quality evidence) and pneumonia incidence (1 study, high quality evidence). The interventions' impact varied according to setting, intervention target and compliance. Hygiene interventions reduced child ARI illness in urban childcare settings (2 studies, low-quality evidence) but not in rural domestic settings (3 studies, low-quality evidence).	National Health and Medical Research Council of Australia (Career Development Fellowship APP1068732 to A.C.C and APP1084351 to K.L., Postgraduate Scholarship APP1115196 to S.L.M.).	Low
(Morita et al., 2016) (80)	4 (pre-/post-evaluation studies) /8	Household with children under 5 years old in rural or urban settings in Bangladesh	Target households before the intervention and/or households from the same area receiving no interventions	Hygiene education with the installation of water and sanitation infrastructure or hygiene education alone.	These interventions are effective in reducing diarrhea incidence (2 studies) and ascariasis prevalence (1 study) but have no effect on morbidity cause by respiratory diseases (1 study). The positive effects found for two of the health outcomes were greater for ambulatory children than for younger ones but the limitations of included studies made it difficult to attribute these effects to the interventions to reduce unsafe disposal of child feces alone (vs. the full WASH intervention).	Johns Hopkins University	Critically low

					There is a lack of evidence on the effectiveness of interventions targeting unsafe child feces disposal.		
(Mureed et al., 2015) (81)	10 (RCTs; Quasi-experimental studies with control groups) /10	Mothers and communities with children of vaccination age in community settings in Pakistan, Nepal, Kenya, Ghana, Malawi, Iraq and India	Details not reported	Professional interventions (e.g. health education and community outreach with or without immunization services) to educate about and improve immunization coverage for 7 childhood cluster diseases.	This type of interventions is effective in increasing vaccination coverage for these diseases, especially for DPT and measle vaccines. It has limited effect for polio or the overall vaccination schedule coverage. Among the 10 studies, 3 were assessed to be high quality studies, 6 as medium quality and 1 low quality	Rachadapisek Sompote Fund for Postdoctoral Fellowship, Chulalongkorn University	Critically low
(Naugle & Hornik, 2014) (82)	7 (Non-randomized controlled trials; Before and after studies) /106	Caregivers in rural or urban communities (studies on immunization) in Bangladesh, Democratic Republic of the Congo, Ecuador, Lesotho, Mexico, Peru and Philippines. The general public in Cameroun (the evaluation was amongst adult over age 15)	Caregivers in neighboring communities receiving no intervention or target caregivers /public before the intervention	Media campaigns at community level, with or without service outreach, to improve immunization coverage. Mass media campaign to improve last night bed net use in children under 5	Mass media campaigns can positively impact selected health behaviors such as bed net use (1 campaign assessed as strong) and immunization (of the campaigns covered, 4 were assessed as strong, 3 moderate, 1 weak) in children under 5 in low- and middle-income countries. Caution about the sample, evaluation design and publication biases affecting the quality and generalizability of the evidence currently available.	USAID and the Annenberg School for Communication	Critically low
(Nelson et al., 2016) (83)	14 (RCTs, before and after studies, cross-sectional studies) /14	Healthcare professionals providing immunization services and/or caregivers of children under 5 in African, Eastern Mediterranean or South-east Asian countries (Pakistan, Ghana, Mozambique, Bangladesh, Philippines, Zambia,	Children before the intervention or children receiving either no intervention or an alternative intervention. One study didn't have a clear comparison group.	Intervention aiming at improving the availability of routine immunization services by healthcare providers, Increasing their utilization by caregivers, or a combination of both types of interventions	All the interventions included are effective in increasing the uptake and/or coverage of childhood immunization in urban settings, with home visits and parental education having the potential to address the disadvantage of high risk or minority groups. Health facility-based interventions are more likely to be effective in urban than rural areas in improving immunization update due to distance, thus creating a risk to increase disparities between these areas (one study).	None	Critically low

		Sudan, Kenya, Brazil and India)			Only five of the studies covered were at low risk of bias.		
(Ngocho et al., 2019) (68)	8 (before/after studies) /8	Children under 5 in African countries (South Africa, Morocco, Gambia, Mozambique, Kenya, and Burkina Faso)	Children before the introduction of the vaccine	Introduction of PCV vaccines in national childhood immunization programs, with or without catch-up doses	Invasive pneumococcal disease declined after the introduction of the vaccine, with the highest decline found in younger children (under 2 years old), the group carrying a higher proportion of pneumococcal infection (studies' quality good to fair). Due to the heterogeneity of the studies, a meta-analysis was not possible.	Fogarty International Center of the National Institutes of Health (Award Number D43TW010138); German Academic Exchange Service (Deutscher Akademischer Austauschdienst-DAAD)	Low
(Odendaal et al., 2018) (46)	2 (cluster RCT; controlled before-after study) /2	Rural, under-resourced communities in Cambodia and Guatemala	Communities receiving no intervention	Contracting out governmental preventive, promotional and/or curative health services to non-governmental service providers	Contracting out to non-governmental provider has little or no effect in immunization uptake of children under 2 y.o. (2 studies, moderate-certainty evidence). Contracting out has little or no effect on the incidence of childhood diarrhea (1 study, low-certainty evidence).	Alliance for Health Policy and Systems Research	High
(Oliver-Williams et al., 2017) (69)	21 (RCTs; observational studies with or without control) /21	Families or caregivers with children within the vaccination age; healthcare professionals involved in vaccination, in LMICs with large numbers of unvaccinated children (Bangladesh, India, Kenya, Malawi, Nigeria, Pakistan, The Philippines, Zambia, Zimbabwe)	Families receiving routine care or alternative intervention. Households or health facilities receiving no intervention; target households before the implementation of the interventions	mHealth interventions such as reminders and information sent to families or caregivers; apps and mobile technologies for healthcare professionals to keep records or facilitate immunization campaigns.	These interventions may be effective in improving vaccine coverage in these countries. Research and evidence quality are still limited and several limitations were identified in the studies covered.	Medical Research Council, British Heart Foundation, and Homerton College, Medic Mobile, Polygeia, UK.	Low
(Owusu-Addo & Cross, 2014) (70)	8 (controlled before and after study; cluster RCTs)	Households from poor and/or disadvantaged groups (e.g. rural population; suffering from	Communities from the same area or neighboring districts receiving no intervention	Conditional cash transfers (CCTs) provided at the community level	CCTs are associated with reduction in morbidities of diarrhea and ARI among under 5-year-old children in Mexico and Colombia (high to moderate quality level evidence, 3 studies).	Not reported	Low

	/16	malnutrition) from Mexico, Columbia, Honduras, Nicaragua and Zimbabwe			CCTs are effective in improving vaccination coverage (5 out of 6 studies, moderate to high quality) among under 5-year-old children in Mexico, Colombia, Honduras, and Nicaragua, although three studies noted that no effect was found in children over 2 years old.		
(Oyo-Ita et al., 2016) (61)	14 (RCTs; cluster RCTs) /14	Healthcare professionals involved in immunization, and caregivers of children under 5 in mainly vulnerable groups or groups and communities with higher health needs in Georgia, Ghana, Honduras, India, Mali, Mexico, Nicaragua, Nepal, Pakistan, Zimbabwe	Controls received routine care or no interventions. One study offered an alternative intervention.	Recipient-oriented interventions (community-based health education, facility-based health education, household monetary incentives), provider-oriented intervention (health professionals training) and health system-oriented interventions (home visits, outreach activities; integration of services; quality improvement) either as single interventions	Community-based or facility-based health education probably improve immunization coverage (6 studies, moderate- to low-certainty evidence). Regular immunization outreach, integration of services and home visit to identify and refer unvaccinated children may improve immunization (4 studies, low-certainty evidence). Household monetary incentives (4 studies, low-certainty evidence) and health professionals training (1 study, low-certainty evidence) may have little or no effect on immunization coverage. The authors note that due to the low quality of the evidence, the actual effect of the interventions may vary substantially.	Vaccines for Africa Initiative, University of Cape Town (CW), South Africa; Norwegian Agency for Development Cooperation (Norad), Norway; Research Council of Norway, Norway.	High
(Puchalski Ritchie et al., 2019) (71)	6 (cluster RCTs) /18	HIV-positive mothers and their infants in South Africa, Kenya, Mozambique and Nigeria	HIV-positive mothers and their infants receiving with no intervention or usual care	Integration of PMTCT with other healthcare services, service quality improvement and outreach to in improve uptake and retention of HIV-positive mothers and their infants in these services	One outreach intervention increased service HIV prophylaxis uptake in infants (low quality evidence). The remainder of interventions had no significant effect or decreased infant prophylaxis uptake. The majority of studies were of moderate to high risk of bias. Heterogeneity of interventions and outcome reported limited both comparison across studies and intervention categories, as well as opportunities for meta-analysis.	KT Canada Strategic Training Initiative in Health Research Fellowship award; Canada Research Chair in Knowledge Translation and Quality of Care; National Institute of Mental Health (Grant K99 MH104154-01A1); National Institute of Allergy and Infectious Diseases (P30 AI50410 and R01 AI131060-01).	Low
(Saeterdal et al., 2014) (62)	2 (cluster RCTs)	Communities in poor resource settings with low	Communities receiving no interventions	Interventions by trained community members aimed at disseminating	Interventions aimed at communities to inform and educate about childhood vaccination may improve the	Norwegian Research Council for the 'Communicate to	High

	/2	immunization rates in India and Pakistan		vaccination information and build awareness about childhood vaccination such as community meetings; information campaign using printed materials (brochures and pamphlets), electronic media (audio recordings)	immunization status of children (low certainty evidence). The interventions were too heterogenous to be combined in a meta-analysis.	vaccinate' (COMMVAC) project	
(Santos et al., 2016) (84)	31 (cross-sectional, case-control study, cohort and ecological studies) /215	Children under 5 years old in hospital and/or community settings in Latin American countries (Argentina, Brazil, Mexico, Venezuela, Bolivia, El Salvador, Nicaragua and Panama)	Pre-introduction period	Introduction of rotavirus vaccines in national childhood immunization programs, including universal rotavirus immunization	Decrease in the proportion of rotavirus infections and morbidity of any severity in the postvaccine era compared to the pre-vaccine period. Universal immunization led to a reduction of rotavirus mortality in infants (12 studies). The studies' quality was not reported.	Edital MCTI/CNPq N° 14/2013 (#471747/2013-0) and Edital MEC/MCTI/CAPES/CNPQ/ FAPS - PVE 2014 (#400723/2014-0).	Critically low
(Smith et al., 2018) (85)	6 (cohort studies, before and after studies without a control, controlled observational studies) /28	Children under 5 and their caregiver or families in healthcare or community settings in rural and urban areas in Sub-Saharan African countries (Tanzania, Kenya, Zambia, Zimbabwe, South Africa and Swaziland).	Children and families receiving no intervention or routine care	Integrating HIV services with immunization services or post-partum care	Such integration of HIV services has either a positive or a neutral effect on immunization uptake and increased the uptake of HIV treatment prophylaxis (fair to good quality of evidence). However, in one study immunization uptake increased in urban sites but decreased in rural sites, suggesting a detrimental effect of the intervention on health inequalities (poor quality of evidence). These differences were attributed to clients' stigma and discrimination concern, amplified in the rural sites.	Global Health Fellows Program-II, USA	Critically low
(Thakur et al., 2018) (86)	4 (RCTs, cohort study) /53	Households with children under 5 in rural settings in Kenya, Peru, Malawi and Guatemala	Households from the same or neighboring community using traditional stoves	Improved cookstoves (biomass fuel cookstove improvements) to reduce morbidity due to household air pollution	There was no significant change in pediatric acute respiratory infections and severe pneumonia (strong evidence).	Intermediate Fellowship by the Wellcome Trust DBT India Alliance (Clinical and Public Health Research Fellowships); Netherlands Lung Foundation (4.2.14.063JO) and the Erasmus MC.	Low

(Velazquez et al., 2017) (87)	4 (case-control studies) /13	Infants in Latin American countries (Brazil, El Salvador and Nicaragua)	Pre-introduction period	Introduction of rotavirus vaccines (RV5 and RV1) in national childhood immunization programs	Both vaccines were found effective against more severe rotavirus gastroenteritis in children under 5 presenting at a health facility. The author did not provide information on the quality of the case-control studies.	GlaxoSmithKline Biologicals SA	Critically low
(Willame et al., 2018) (88)	17 (case-control studies) /29	Infants in Ghana, Malawi, Zambia, Brazil, Columbia, El Salvador, Guatemala, Botswana, Moldova, South Africa, Bolivia, Armenia, Mexico	Pre-introduction period	Introduction of a specific brand of rotavirus vaccine (Rotarix©) in immunization programs	The vaccine was effective in reducing gastroenteritis morbidity in children younger than 5 across various geographic and economic settings (strong evidence) There are differences between country income groups (4 studies) and a higher vaccine effectiveness in children under 1 year old compared to children between 1 and 5 (5 studies). The review excluded low quality studies.	GlaxoSmithKline Biologicals S.A.	Critically low
(Yuan et al., 2014) (47)	3 (cohort studies and repeated cross-sectional study) /22	among infants living in households with different socio-economic or demographic characteristics in Bangladesh, South Africa, Zambia	Target population before the intervention, infants from the same cohort with different characteristics or non-vaccinated controls.	Outreach immunization services to increase measles immunization rates	Immunization outreach campaigns can reduce inequalities in immunization rates across different levels of education, living area and distance to health facilities - suggesting a positive effect on health inequalities.	e Swedish International Development Cooperation Agency (Sida)	Low

ANNEX 2. E4HE LESOTHO – INTERVIEW GUIDE

Empowerment for Health Equity
Using economic empowerment to promote equity in child health in Lesotho
A case study of the Child Grant Program

Interview Guide

Authors: Elodie Besnier, Virginia Kotzias, Kathryn Beck.

This guide aims to support and guide interviewers in their collection of information for the project E4HE - Using economic empowerment to promote equity in child health in Lesotho. The full methodology for the E4HE Lesotho project can be found in the research protocol.

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Before the interview

- Send a short description of the project with the invitation, with reminders if necessary (see Annex 1-2 for templates, Protocol for strategy and timing)
- Once scheduled, send a calendar marker (Annex 3) with the NSD Information letter and consent form (Annex 4). Make sure that the informant signed the NSD consent form (see Annex 4). **No interview can take place unless this form is signed.**
- Get the SU-ISS recorder and batteries
- Test the recorder, make sure it works
- Prepare your interview transcript file (Annex 6): add your name; the date of the interview and the code assigned to the informant (**no name**)

Introduction

- Introduce yourself
- Thank the informant, show appreciation
- Confirm that the informant has time (if they have a limited amount of time, prioritize key questions)
- Make sure that the informant is in a quiet, comfortable environment, and that there are no technical issues (sound, video, internet connection)
- Present the objective of the work. Make clear that we are focusing on the early phases (until 2013) and that the informant is speaking in their professional capacity (as [position] of x organization]
- Remind the informant that the interview will be recorded
- Ask if the informant has any questions before you begin
- Notify the informant that you are starting the recording

(See Annex 7 for an example of introductory speech)

For planners and managers

Questions to planners and managers

First of all, I would like to have an overview of the CGP and your role in it, during Phase 1 and Phase 2 (April 2009- end of 2013).

Part A. Context and definitions

In this part, let the informant talk (only probe if a key information is missing)

- AQ1. Can you describe your own role in the CGP, in your own words?

[*Note: make sure that the informant provides approximative dates or phases of the project they were involved in, and record any change in their role during the period described*]

- AQ2. In your role as [role], how would you describe the CGP?
    - Probe: what were its goals?
    - Probe: How would you describe a typical CGP recipient household? [*Be attentive to generic terms such as "vulnerable"; "welfare"; "wellbeing"; "deserving"; "empowering"- make sure to clarify what the respondent means by those*]
    - Probe: More than half of the recipients were female-headed households. Were these households specifically targeted by design?
    - Probe: How were these goals achieved? What kinds of activities were planned to help the program reach these goals?
    - Probe: What do you think the main achievements/success of the CGP were? Were the program's goals achieved?

[*Insist on the mechanisms: how the program was supposed to reach its objectives. Make sure to get clear* ***definitions*** *of objectives, concepts or any key words, especially for any words related to health equity and empowerment. Be attentive to generic terms such as "vulnerable"; "welfare"; "wellbeing"; "deserving"; "empowering"- make sure to clarify what the respondent means by those*]

- AQ3. As the [role], can you describe the role of [institution] in the CGP?

- Probe: What did [institution] expect from the CGP? What was [institution] trying to achieve with the CGP?

Thank you for this overview of the CGP. Now I would like to go into more details for some goals/objectives and impacts of the program during Phase 1 and Phase 2 (April 2009- end of 2013). Let's start with health.

Part B. "health equity" in the CGP

[*Note: start with elements or words brought up by the informants in the previous part*]

- BQ1. What do you think of when talking about health equity?
  - Probe: What does "health equity" mean to you?
  - Follow-up: What would [health equity meaning - reformulate the phrase given in BQ1] mean in the context of the CGP?

[*Note: if the informant struggles with this question, leave it aside and come back to it at the end of part B, after discussing specific elements of child health*]

- BQ2a. You said that the CGP aimed to [*rephrase the goals mentioned by the informant*] during Phases 1 and 2. Was the CGP designed or expected to impact the **health** of the children receiving CGP transfers?
  - Probe: Did this objective evolve or change over time (between 2009 and 2013)? How so?
  - Follow-up: What kind of child health outcomes was the CGP targeting?
    - Probe: [*If the informant struggles to understand the question, give some examples*] For example, did the CGP aim to affect e.g. death or sickness specific childhood diseases, access to /expenditure for child health services, immunization coverage, child nutrition, ownership of a Bukana card or birth certificate?
  - Follow-up: Were there any health targets or benchmarks the CGP was designed to reach or contribute to?

[*Let the informant speak, see how they – themselves – instinctively refer to children in eligible households only or children in the whole community; what they instinctively talked about when you say "health". Then, go into the specific questions for each role*]

- BQ3a. As the [role], how important do you think was improving [name health outcomes/issues] of children receiving CGP transfers in the overall strategy/ program planning of the CGP Phases 1 or 2?

- Probe: How does this (importance) compare with the program's economic or education objectives? (Was it more, less, or equally important?) [*Introduce comparison with the main goals: e.g. improving health vs. reducing poverty, to better understand how health fit in the program and how important it was for the informant*]
- Probe. Did the importance of this objective evolve or change over time (between 2009 and 2013)? How so?

- BQ4a. Was the CGP, during Phases 1 and 2, designed or expected to impact the health of children in the whole targeted community (including children from households **not** receiving these transfers)?
  - If no: Why not?
  - If yes: Why?
  - Follow-up: How was the CGP expected to impact the health of children in the whole targeted community?
    - Probe: for example, would it go through the increase in money available alone or were other changes triggered by the program also expected to contribute?

[*If the respondent struggled to answer BQ1, please ask the following questions*]

- BQ1bis. Based on what we have just discussed, what do you think health equity means in the context of the CGP?

Thank you very much for these explanations. Now, I would like to discuss in further details the economic objectives, processes and impacts of the CGP. As a reminder, we are focusing on the period between 2009-2013, namely Phase 1 and Phase 2 of the program.

[*If you are already over 35 min of interview, please offer the opportunity of a break by reading the following statement instead*]

Thank you very much for these explanations. Before we continue, would you like to take a short break?

[*break*]

Are you ready to proceed? [answer] Now, I would like to discuss in further details the economic objectives, processes and impacts of the CGP. As a reminder, we are focusing on the period between 2009-2013, namely Phase 1 and Phase 2 of the program.

Part C. "economic empowerment" in the CGP

First, I would like to ask you about some general definitions.

- CQ1. What do you think of when talking about economic empowerment?
    - Follow-up: Does women's economic empowerment differ from this definition?
    - Follow-up: What would [economic empowerment meaning - reformulate the phrase given in CQ1] mean in the context of the CGP? [*Pay attention to potential difference between "empowerment" and "empowering"*]

- CQ2. Were gender issues taken into account in the design of the CGP?
    - Probe: Were issues affecting women or female-headed households taken into account in the design of the CGP? Were issues affecting men or male-headed households taken into account in the design of the CGP?
    - Probe: were gender equality imperatives taken into account in the design of the CGP?
    - Follow-up: how so? Why not?

Thank you for these explanations. Now, I would like to discuss some economic processes in more details.

I. ***Empowerment as Resources and agency***

First, I'd like you to tell me a little more about the CGP's program design and its effect on household decision-making and spending.

- CQ3.The CGP is described as an unconditional program [*households that were selected didn't need to meet certain targets to maintain their eligibility*]. Why was it designed that way?
    - Probe: Why make the transfer unconditional rather than conditional? What reasons or elements were taken into account in making that decision?
    - Follow-up: [If the respondent mentions soft conditionalities, messaging] when did this feature become part of the program?

[*Pay attention to any mention of soft conditionalities, messaging, community control, recipients' autonomy and agency*]

- CQ4a. Did the CGP aim to change decision-making within the households that received CGP funds?
    - Probe: Was the objective to change **who** makes spending decisions in the households or **what** the spending decision was?
    - Probe: For example, was supporting the role of specific members of the households (e.g. female members) part of the program's objectives?
    - Probe: Was this objective part of its initial design or did it become part of the program's content during implementation?

[*Make notes on the decision makers and their gender but also the influencers of the decision: who was involved, who had the final words, did the CGP create/relax tensions within the household regarding spending decision*]

- CQ5. How did the CGP's design or implementation affect how recipients spent the funds they received?
    - Probe: Did the choice of the person collecting the CGP affect the way it was spent?
    - Probe: Several information sources about the CGP mentions messages from the authorities on how households were to spend the transfers they received. Can you comment on how this messaging might have affected how households spent their CGP funds?
    - Probe: Was this messaging part of the program's design from the start?
    - Probe: This evaluation also mentions the oversight of community members over these households, to make sure they did not 'misspend' the CGP transfers. Do you think that this might have affected how households spent their CGP funds? How so?

- CQ6. Did the program affect decision-making in households that **did not** receive the CGP?
    - Probe: were there any changes in the patterns of spending in non-recipient households as a result of the CGP?
    - Probe: were there any changes in who took part in spending decisions in non-recipient households as a result of the CGP?
    - Follow-up: Why? Why not?
    - Follow-up: if yes, was changing decision making within the households that did not receive the CGP an important effect of the program, in your opinion as [role]?

[*Clarify whether the informant clearly link these changes to the CGP, or if they were simply happening at the same time, without clear connection*]

I would also like to ask you about potential softer effects of the CGP.

- CQ7. How was the CGP designed/expected to affect the self-esteem of the recipients (e.g. how they see themselves)?
    - Follow-up: How important was this objective compared to the other objectives?

[*For CQ9, make sure to note what effect/objective the informant uses as a comparison: is it a core elements or a peripheric one*]

- CQ8. In your opinion, have any of these changes in [*mention the resource and agency changes identified by informant*] affected the health of children in recipient households? Of children in the community as a whole?

Now I would like to ask you about some of the broader impacts of the CGP in the communities included in the program and how they were achieved.

II. ***Empowerment as Achievements***

Let's begin with how the CGP may have affected the relations between people in the targeted communities and the socio-economic position of CGP recipients during the program's Phases 1 and 2. I would like to begin with economic interactions and exchange in the communities included in the program.

- CQ9a. How was the **economic** inclusion of the households receiving CGP transfer in the community discussed during the planning of the program?
    - Probe: [*If the informant struggles to understand what this question refers to, give the following examples*] For example, was the CGP expected to affect recipients' labor participation to the community's economy, their lending/borrowing capacity, their inclusion in formal or informal economic associations and networks (e.g. funeral society, credit or grocery schemes, sharecropping)?
    - Probe: what were the expected effect of the CGP on these outcomes?
    - Follow-up: If the issue was discussed,
        - Was the CGP expected to affect female- vs. male-headed households differently in this regard?
        - Has this objective changed or been revised over time?
    - Follow-up: If the issue was **not** discussed,
        - Were there any questions during design and planning about the CGP leading to certain recipients reducing their economic activities as a result

of the transfer? If so, please describe these issues. [*Take careful notes about potential gender differences regarding these concerns, and the type of language used when describing them – positive vs. negative description*]
        - How were those issues addressed in the CGP design and planning?
    - Follow-up: How important did you/your institutions assess this objective/risk of [*depending on how the informant phrases the issue*] to be during the program planning ?

- CQ10a. Was the CGP expected to affect economic interactions and participation to economic networks and activities amongst households that ***did not*** receive CGP transfers?
    - Probe: If so, how? To what extent?
    - Follow-up: How important was this objective?

Thank you for these explanations. Now I would like to ask about social interactions in the community, further to the development of the CGP.

- CQ 11a. How was **the social inclusion** of households receiving CGP transfer discussed during the planning of the program? For example, how the program could/should their participation to public life and meetings, their contacts with other members of their community (e.g. tensions or harmony with members of the community not receiving CGP transfers).
    - Probe: What were the expected effects?
    - Follow-up: If the issue was discussed,
        - Was the CGP expected to affect female- vs. male-headed households differently in this regard?
        - Has this objective changed or been revised over time?
    - Follow-up: If the issue was not discussed, why?
    - How important did you/your institutions think this objective/risk of [*depending on how the informant phrases the issue*] was during the program planning? [*Make sure to note what objective/risk the informant uses as a comparison: is a core elements or a peripheric one*]

- CQ12a. How was the CGP expected to affect **the overall social cohesion** in the communities where the program was implemented?
    - Probe: [*If the informant struggles to understand what this question refers to, give the following examples*] For example, how the program might/should affect the

participation of all/various members of the community to public life and meetings, contacts within the community (e.g. tensions or harmony).
    - Probe: What were the expected effects?
    - Follow-up: If the issue was discussed, were certain groups or households expected to benefit more than others? [*Make sure to note any mention of gender or socio-economic status of the groups described*]
    - Follow-up: If the issue was discussed, How important was this objective? [*Make sure to note what effect the informant use as a comparison: is a core elements or a peripheric one*]
    - Follow-up: If no, why?

Finally, I would like to discuss if and how the CGP affected the overall socio-economic structure of the communities included in the CGP and the status of the CGP recipients in it.

- CQ13a. Was the CGP designed to change the **social or economic structure of the communities** covered by the CGP?
    - Probe: For example, the hierarchy of the community, who has a voice, who has power or authority in the community?
    - Follow-up: If yes, how? [*Focus on mechanism, pathways through which planners and managers thought this change would happen*]

- CQ14a. How was the **socio-economic status** of the households receiving the CGP expected to change further to the program?
    - Probe: Were they expected to rise in the social or economic hierarchy? To have a stronger influence or power in the community?
    - Follow-up: If yes, how? [*Focus on mechanism, pathways through which planners and managers thought this change would happen*]
        - Was this change expected to affect female- vs. male-headed households equally?

Many thanks for discussing how the CGP was expected to affect the social and economic structures of the communities covered by the program.

Part D. Final remarks

[*Clarification question – clarifications should be preferably asked as the interview progresses. However, if needed and if time allows, now is the time to ask for them*] Before we finish this discussion, I would like to go back to some interesting elements you've raised: ……. [*reformulate*

the element you'd like to clarify or potential contradictions in the informant's answers, to make sure you've understood what the informant meant]

- DQ1. Is there anything we haven't discussed today that you think it is important for us to know?

- DQ2. We have discussed today the [planning/management] of the CGP. Is there anyone else in your institution or in another organization you think we should talk to?

[*Make sure to spell the name, position and affiliation correctly and get at least one email address*]

- DQ3. In light of the themes we have discussed today, are there any documents or materials that you think we should review?

[*Clarify the list of any documents mentioned during the interview, secure access to it*]

For implementers; M&E and research

Questions to implementers, M&E and research

First of all, I would like to have an overview of the CGP and your role in it, during Phase 1 and Phase 2 (April 2009- end of 2013).

Part A. Context and definitions

In this part, let the informant talk (only probe if a key information is missing)

- AQ1. Can you describe your own role in the CGP, in your own words?

[*Note: make sure that the informant provides approximative dates or phases of the project they were involved in, and record any change in their role during the period described*]

- AQ2. In your role as [role], how would you describe the CGP?
    - Probe: what were its goals?
    - Probe: How would you describe a typical CGP recipient household? [*Be attentive to generic terms such as "vulnerable"; "welfare"; "wellbeing"; "deserving"; "empowering" - make sure to clarify what the respondent means by those*]
    - Probe: More than half of the recipients were female-headed households. Were these households specifically targeted by the CGP?
    - Probe: How were these goals achieved? What kinds of activities were planned to help the program reach these goals?
    - Probe: What do you think the main achievements/success of the CGP were? Were the program's goals achieved?

[*Insist on the mechanisms: how the program was supposed to reach its objectives. Make sure to get clear* ***definitions*** *of goals/objectives, concepts or any key words, especially for any words related to health equity and empowerment. Be attentive to generic terms such as "vulnerable"; "welfare"; "wellbeing"; "deserving"; "empowering"- make sure to clarify what the respondent means by those*]

- AQ3. As the [role], can you describe the role of [institution] in the CGP?
    - Probe: What did [institution] expect from the CGP? What was [institution] trying to achieve with the CGP?

Thank you for this overview of the CGP. Now I would like to go into more details for some goals and impacts of the program during Phase 1 and Phase 2 (April 2009- end of 2013). Let's start with health.

Part B. "health equity" in the CGP

[*Note: start with elements or words brought up by the informants in the previous part*]

- BQ1. What do you think of when talking about health equity?
    - Probe: What does "health equity" mean to you?
    - Follow-up: What would [health equity meaning - reformulate the phrase given in BQ1] mean in the context of the CGP?

[Note: if the informant struggles with this question, leave it aside and come back to it at the end of part B, after discussing specific elements of child health]

- BQ2b. The evaluation of the CGP explored the effects of the program on selected child health outcomes amongst the recipients. Were there any targets or benchmarks these effects were measured against?
    - Probe: In comparison to other children in their communities (those not receiving CGP transfer) for example? Or in comparison to a national average or policy target?
    - Probe: Did these targets/benchmarks evolve or change over time (between 2009 and 2013)? How so?

- BQ3b. As the [role], how important do you think was improving [name health outcomes/issues] in the children receiving CGP transfers in the CGP Phases 1 or 2?
    - Probe: How does this (importance) compare with the program's economic or education objectives? (Was it more, less, or equally important?) [*Introduce comparison with the main objectives: e.g. improving health vs. reducing poverty, to better understand how health fit in the program and how important it was for the informant*]
    - Probe: Was the improvement of [name health outcomes/issues] in the children receiving CGP transfers an important area of focus during the [implementation/M&E/research of/on] the CGP
    - Probe. Did the importance of this element evolve or change over time (between 2009 and 2013)? How so?

- BQ4b. Did the CGP impact the health of children in the whole targeted community (including children from households not receiving these transfers)?
    - If no: Why not?
    - If yes: Why?
    - Follow-up: How did the CGP impact the health of children in the whole targeted community?
        - Probe: for example, was it simply due to the increase in money available or did other changes triggered by the program also contribute?

[If the respondent struggled to answer BQ1, please ask the following questions]

- BQ1bis. Based on what we have just discussed, what do you think health equity means in the context of the CGP?

Thank you very much for these explanations. Now, I would like to discuss in further details the economic objectives, processes and impacts of the CGP. As a reminder, we are focusing on the period between 2009-2013, namely Phase 1 and Phase 2 of the program.

[*If you are already over 35 min of interview, please offer the opportunity of a break by reading the following statement instead*]

Thank you very much for these explanations. Before we continue, would you like to take a short break?

[*break*]

Are you ready to proceed? [answer] Now, I would like to discuss in further details the economic objectives, processes and impacts of the CGP. As a reminder, we are focusing on the period between 2009-2013, namely Phase 1 and Phase 2 of the program.

Part C. "economic empowerment" in the CGP

First, I would like to ask you about some general definitions.

- CQ1. What do you think of when talking about economic empowerment?
    - Probe: Does women's economic empowerment differ from this definition?
    - Probe: What would [economic empowerment meaning - reformulate the phrase given in CQ1] mean in the context of the CGP? [*Pay attention to potential difference between "empowerment" and "empowering"*]

- CQ2. Were gender issues taken into account in the [implementation/M&E/Research of/on] the CGP?
    - Probe: Were issues affecting women or female-headed households taken into account in the design of the CGP? Were issues affecting men or male-headed households taken into account in the design of the CGP?
    - Probe: were gender equality imperatives taken into account in the design of the CGP?
    - Follow-up: how so? Why not?

Thank you for these explanations. Now, I would like to discuss some economic processes in more details.

I. ***Empowerment as Resources and agency***

First, I'd like you to tell me a little more about the CGP's program design and its effect on household decision-making and spending.

- CQ3.The CGP is described as an unconditional program [*households that were selected didn't need to meet certain targets to maintain their eligibility*]. Why was it designed that way?
    - Probe: Why make the transfer unconditional rather than conditional? What reasons or elements were taken into account in making that decision?
    - Follow-up: [If the respondent mentions soft conditionalities, messaging] when did this feature become part of the program?

[*Pay attention to any mention of soft conditionalities, messaging, community control, recipients' autonomy*]

- CQ4. Did the CGP affect how households that received CGP funds spent their income?
    - Probe: Why? Why not?
    - Follow-up: if yes, to **what** extent? How?
        - Probe: Can you comment on how the program's messaging (on how the transfer should be spent) might have affected these decisions? Would the households' decisions have been different without it?
        - Probe: Was this messaging part of the program's design from the start?
        - Probe: Do you think that the oversight of community members on recipients' spending might have affected how households spent their CGP funds? How so?

- CQ5b. Did the CGP change **who** makes spending decisions in the households receiving these transfers?
    - Follow-up. If yes, how?
        - Probe: Did the choice of the person collecting the CGP affect the way it was spent?
        - Probe: Did the messaging included in the program affect who was involved in the spending decisions?
        - Probe: Did specific members of the households (e.g. female members) benefit more from these changes?
    - Follow-up. If no, why?

[*Make notes on the decision makers and their gender but also the influencers of the decision: who was involved, who had the final words, did the CGP create/relax tensions within the household regarding spending decision*]

- CQ6. Did the program affect decision making in households that **did not** receive the CGP?
    - Probe: were there any changes in the patterns of spending in non-recipient households as a result of the CGP?
    - Probe: were there any changes in who took part in spending decisions in non-recipient households as a result of the CGP?
    - Follow-up: Why? Why not?
    - Follow-up: if yes, was changing decision making within the households that did not receive the CGP an important effect of the program?

[*Clarify whether the informant clearly link these changes to the CGP, or if they were simply happening at the same time, without clear connection*]

I would also like to ask you about potential softer effects of the CGP.

- CQ7. In the 2013 evaluation, the CGP was found to improve the self-esteem of some recipients. Was this a widespread effect of the CGP?
    - Probe: Did all recipient households experience this effect? [*Make note of any mention of gender differences*]
    - Follow-up: Why/Why not?

- CQ8. How important was this change compared to the other effects of the CGP?

[*For CQ8, make sure to note what effect/objective the informant uses as a comparison: is a core elements or a peripheric one*]

- CQ9. In your opinion, have any of these changes in [*mention the resource and agency changes identified by informant*] affected the health of children in recipient households? Of children in the community as a whole?

Now I would like to ask you about some of the broader impacts of the CGP in the communities included in the program and how they were achieved.

II. ***Empowerment as Achievements***

Let's begin with how the CGP may have affected the relations between people in the targeted communities and the socio-economic position of CGP recipients during the program's Phases 1 and 2. I would like to begin with economic interactions and exchange in the communities included in the program.

- CQ10. Looking at the effect of the program on the economic inclusion of households receiving CGP transfer, did the program affect female- vs. male-headed households differently in this regard?
    - Probe: [*If the informant struggles to understand what this question refers to, give the following examples*] For example, did the CGP affect these types of households differently regarding the recipients' labor participation to the community's economy, their lending/borrowing capacity, their inclusion in formal or informal economic associations and networks (e.g. funeral society, credit or grocery schemes, sharecropping)?
    - Follow-up: If yes, How important was this impact? [*Make sure to note what effect the informant use as a comparison: is a core elements or a peripheric one*]
    - Follow-up: If no, why?

- CQ11. Did the CGP affect economic interactions and participation to economic networks and activities amongst households that **did not** receive CGP transfers?
    - Probe: If so, how? To what extent?
    - Follow-up: If yes, how important was this impact?

Thank you for these explanations. Now I would like to ask about social interactions in the community, further to the development of the CGP.

- CQ 12. Looking at the social inclusion of households receiving CGP transfer (e.g. participation to public life and meetings, their contacts with other members of their community) did the CGP affect female- vs. male-headed households differently in this regard?
    - Follow-up: If yes, How important was this impact? [*Make sure to note what effect the informant use as a comparison: is a core elements or a peripheric one*]
    - Follow-up: If no, why?

- CQ13. How did the CGP affect the **overall social cohesion** in the communities where the program was implemented? For example, the participation of all/various members of the community to public life and meetings, contacts within the community (e.g. tensions or harmony).
    - Follow-up: if yes, did certain groups or households benefit more than others? Why? [*Make sure to note any mention of gender or socio-economic status of the groups described*]
    - Follow-up: How important was this impact?

Finally, I would like to discuss if and how the CGP affected the overall socio-economic structure of the communities included in the CGP and the status of the CGP recipients in it.

- CQ14. Did the CGP change the **social or economic structure of communities** covered by the CGP?
    - Probe: For example, the hierarchy of the community, who has a voice, who has power in the community?
    - Probe: If so, how big was this change?

- CQ15. How did the **socio-economic status** of the households receiving the CGP change further to the program?
    - Probe: Did they rise in the social or economic hierarchy? Or get a stronger influence, authority or power in the community?
    - Follow-up: If yes, how important was this impact? [*Focus on not only on size but also on what group(s) they gain on, where there any "loosers" in this process*]
        - Did this change affect female- vs. male-headed households equally?

[*Note whether this was a measured impact or a perceived impact – how people in the community felt about this issue*]

Many thanks for discussing how the CGP affected social and economic issues in the targeted communities.

Part D. Final remarks

[*Clarification question – clarifications should be preferably asked as the interview progresses. However, if needed and if time allows, now is the time to ask for them*] Before we finish this discussion, I would like to go back to some interesting elements you've raised: ……. [*reformulate the element you'd like to clarify or potential contradictions in the informant's answers, to make sure you've understood what the informant meant*]

DQ1. Is there anything we haven't discussed today that you think it is important for us to know?

DQ2. We have discussed today the [implementation/M&E/research] of the CGP. Is there anyone else in your institution or in another organization you think we should talk to?

[*Make sure to spell the name, position and affiliation correctly and get at least one email address*]

DQ3. In light of the themes we have discussed today, are there any documents or materials that you think we should review?

[*Clarify the list of any documents mentioned during the interview, secure access to it*]

Concluding the interview

(see template speech, Annex 8)

- Thank the informant
- Say that you are stopping the recording
- Ask permission to follow-up by email if anything is unclear or if you can't find the document suggested
- Briefly explain the next steps, and when they can expect to hear from us with results
- Make sure they know how to contact us if needed
- Notify the informant that you are stopping the recording
- Make sure to write down any final points they might make after you've stopped recording

After the interview

- Check your notes for any after thoughts, or need for clarification
- Save the recording on the OneDrive with the name following this format: informantcode_date_InterviewerInitials; **test it, make sure it works**!
- Make a list of the documents you need to obtain from the informants or find online
- Send a thank you email to informant within 24h (see Annex 9) with a summary of how the information will be used in the project, the contact details of the research team and information on when and how the project findings will be available.

Annex

- Annex 1: Invitation email and project description
- Annex 2: Reminder emails
- Annex 3: Confirmation and calendar marker
- Annex 4: NSD Information letter and consent form.
- Annex 5: Pre-meeting reminder
- Annex 6: Interview transcript file
- Annex 7: Exemplar introductory speech
- Annex 8: Exemplar closing speech
- Annex 9: Thank you and follow up email

Annex 1: Invitation email and project description

Dear XXX

We would like to invite you to take part in the research project Empowerment for Health Equity (E4HE Lesotho), a case study of Lesotho's Child Grant Program (CGP).

This research project aims to better understand the potential for cash transfer programs like the CGP to reduce disparities in child health in the targeted communities through the economic empowerment of vulnerable groups (especially women). As part of this research, we would like to capture how program stakeholders understood and applied selected elements related to child health and economic processes in the early phases of the CGP (2009-2013).

Your role as [role] in these early phases of the CGP make your point of view particularly valuable to this research. Hence, **we would like to interview you at your earliest convenience** via video call (e.g. Zoom, Skype) or on the phone about the [project phase] of CGP. The interview should last for about an hour.

This project is led by researchers from the Centre for Global Health Inequalities Research (CHAIN) at the Norwegian University of Science and Technology (NTNU), in collaboration with UNICEF Lesotho country office. The identities of the interviewees will be protected and all responses will be kept strictly confidential, in line with the guidelines of the Norwegian Center for research data.

Please do not hesitate to contact us if you have any questions about this project or our plans for the interviews. Your participation is vital to the success of this effort, and we look forward to hearing from you soon.

Sincerely,

[Signature]

Annex 2: Reminder emails

Dear XXX,

Further to my email on [date], I would like to invite you to take part in the research project Empowerment for Health Equity (E4HE Lesotho), a case study of Lesotho's Child Grant Program (CGP). We would like to schedule a one-hour call with you in the coming weeks.

Please let me know what days or times would be most convenient for you for such a conversation. Allow me to reiterate that all your answers will be anonymized and your identity protected.

Please don't hesitate to contact me if you have any questions about this study or about this request, or would like to confirm your participation in the study.

Thank you for your time.

Looking forward to hearing from you soon.

Sincerely,

[Signature]

Annex 3: Confirmation and calendar marker

Dear XXX

Thank you for agreeing to take part in the Empowerment for Health Equity (E4HE Lesotho).

As discussed by email, I will ask you about selected elements related to child health and economic processes in the early phases of the CGP. The interview will last for about one hour. All responses will be considered confidential. Quotes and findings will not be attributed to any specific individual.

The details to join this call can be found below. I am also attaching an information letter describing how your data will be stored and used. Please review this document carefully, and **sign and return the last page (consent form) to us**.

[Call details]

Annex 4: NSD Information letter and consent form.

Are you interested in taking part in the research project *Empowerment for Health Equity (E4HE Lesotho)*?

This is an inquiry about participation in a research project where the main purpose is to understand how cash transfers can affect disparities in child health through economic empowerment of vulnerable groups. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project

Using the early phases of the CGP as a case study, this research project aims to better understand the potential for cash transfer programs to reduce disparities in child health in the targeted communities through the economic empowerment of vulnerable groups, especially women. As part of this research, we would like to capture how program stakeholders understood and applied selected elements related to child health and economic processes in the early phases of the CGP (2009-2013).

The findings of this project will help

- Support the continued success of CGP by better understanding the relationship between CT programs, economic empowerment and health equity.
- Build the global evidence base on the effect of CT programs on child health inequalities and the contribution of economic empowerment strategies to health equity outcomes.
- Develop methods and tools to assess the health equity impact of CT programs that can be replicated/adapted to other similar programs.

Who is responsible for the research project?

This project is led by researchers from the Centre for Global Health Inequalities Research (CHAIN) at the Norwegian University of Science and Technology (NTNU), in collaboration with UNICEF Lesotho country office.

Why are you being asked to participate?

We are reaching out to staff (team leader, operation manager and/or analyst) and organizations involved in the planning, management, implementation, monitoring & evaluation, and post-evaluation of the early phases of the CGP (2009 to 2013).

Your role as [role] in these early phases of the CGP make your point of view particularly valuable to this research.

What does participation involve for you?
We will interview you about your role, your understanding of the CGP in its early phases and selected elements related to child health and economic processes in the context of the program. The interview will last about one hour. We would like to record these interviews, to facilitate writing up the transcripts. However, you may refuse such recording.
At the end of the project, the study' findings will be shared with you in writing and/or as part of a Lessons Learned event.

Participation is voluntary
Participation in this project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you choose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data
We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the European General Data Protection Regulation and Personal Data Act).
Only the project leader and research assistant will have access to the personal data (e.g. name, email, interview recording)
Personal data will be kept on the project leader's OneDrive university cloud service. We will replace your name and contact details with a code. The list of names, contact details, and respective codes will be stored separately from the rest of the collected data.
Quotes and findings will not be attributed to any specific individual in the project's publications.

What will happen to your personal data at the end of the research project?
The project is scheduled to end in December 2021.Personal data will be saved for one year after this date, to allow the verification of relevant information while the project's academic outputs are under review and the results are being disseminated to you and other stakeholders. During this period, your personal data will remain securely stored as described above. Only the project leader will have access to this data at this point. Any other data (e.g. transcripts) will be anonymized to insure confidentiality.

After this period, all personal data (names, contact details, recording) will be deleted.

Your rights
So long as you can be identified in the collected data, you have the right to:
- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?

We will process your personal data based on your consent.

Based on an agreement with the Norwegian University of Science and Technology, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:

- The Norwegian University of Science and Technology via Elodie Besnier (elodie.besnier@ntnu.no)
- Our Data Protection Officer: Rune Dahl, rune.dahl@ntnu.no, +47 73591637
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Project Leader

Elodie Besnier
elodie.besnier@ntnu.no
PhD candidate
Department of Sociology and Political Science / Centre for Global Health Inequalities Research (CHAIN)
Faculty of Social and Educational Sciences
Norwegian University of Science and Technology (NTNU)
Trondheim, Norway

Consent form

I have received and understood information about the project *E4HE Lesotho* and have been given the opportunity to ask questions. I give consent:

- ☐ to participate in *the interviews*
- ☐ for my personal data to be stored after the end of the project for a year, during the publication and dissemination of the project's results

I give consent for my personal data to be processed until 31 December 2022.

(Signed by participant, date)

Annex 5: Pre-meeting reminder

Dear XXX

Thank you for agreeing to take part in the Empowerment for Health Equity (E4HE Lesotho).

We are looking forward to speaking with you on [date]. Myself and x [e.g. research assistant] will be on the call with you. We would like to record the interview, to make it easier to transcribe. You may refuse such recording.

As previously mentioned, we will ask you about selected elements related to child health and economic processes in the early phases of the CGP. The interview will last for about one hour. All responses will be considered confidential. Quotes and findings will not be attributed to any specific individual.

The details to join this call can be found below. [*If the informant hasn't sent the consent form yet*: I am also attaching an information letter describing how your data will be stored and used. Please remember to review this information letter attached carefully, and sign and return the consent form on the last page to us.]

Sincerely,

[Signature]

Attch: Information letter and consent form.

[Call details]

Annex 6: Interview transcript file

Date of the interview	yyyy.mm.dd
Interviewer's name	
Note taker's name	
Interviewee ID code	
Program cycle(s) covered	
Role(s) covered	
Interviewee's organization	
Was the interview recorded?	Yes/No
Transcript's latest update	yyyy.mm.dd

Style guide:

- Spelling should follow American English. Syntaxes and sentences' structures shouldn't be modified
- Mark pauses as "…"
- If anything is unclear, can't be heard in the recording, note [unclear] and write up the meaning of the sentence *in italic* as closely as possible to the recoding.
- Emphasized words should be in **bold**.
- Any relevant contextual clues, noises or body language (for video calls) should be mentioned under "Observation/Note"

Question	*Time in the recording*
Answer	*Observations/Note*
Question	*Time in the recording*
Answer	*Observations/Note*
Question	*Time in the recording*
Answer	*Observations/Note*
Question	*Time in the recording*
Answer	*Observations/Note*
Question	*Time in the recording*
Answer	*Observations/Note*

Question	*Time in the recording*
Answer	*Observations/Note*
Question	*Time in the recording*
Answer	*Observations/Note*
…..	
End of recording	
Notes on comments made after the recording ended	

Documents obtained	
Document to ask for	
Additional contact	Added to the contact list (do not include the names in the transcript)

Are there clarifications needed?	
Memo: please right any thoughts or key ideas inspired by this interview	

Annex 7: Exemplar introductory speech

Good morning/afternoon [name and title]. Can you hear/see me fine? [answer/fix if needed]. My name is [name] and I am [role] at the Centre for Global Health Inequalities Research (CHAIN) at the Norwegian University of Science and Technology (NTNU). How are you today?

Thank you very much for agreeing to talk to us. As we mentioned by email, we would like to talk to you about the work you did at [institution] on Lesotho's Child Grant Program (CGP) during the **early phases** of this program (from the start in 2009 until 2013). This case study is part of the research project Empowerment for Health Equity (E4HE Lesotho). For this research, we are talking to the different stakeholders involved in the program to discuss how you understand certain ideas, objectives, how they fit into the program, etc. Your point of view is absolutely essential to this research and we really appreciate your time.

Interviews last for about an hour, is that ok?

[if the informant has less time] We understand, we will keep it short then. [focus on key questions identified prior to the interview]

[if the informant is fine with this] That's great.

Before we start, I would like to go over some of the logistics. We have your consent form from [date]. We would like to record this interview to make it easier to transcribe. No one outside the research team will have access to these recordings and all other materials (e.g. transcripts, quotes) will be anonymized. Can I start the recording now?

Let's get started.

Do you have everything you need at hand before we begin? Do you have any questions?

Annex 8: Exemplar closing speech

Thank you so much for these answers and contacts, [name and title]. Having your insights is incredibly helpful. I am going to stop the recording now.

In the coming weeks, we will look for the documents you mentioned and continue interviews with other stakeholders. Can we contact you by email if we have any problems finding these documents? Or if we have a follow-up question?

We will share with you the results of this research in writing and you will also be invited to presentations of these findings. Until then, please don't hesitate to contact us if you have any questions. You have my email address [read out email address]. Before we conclude, is there anything you'd like to add or ask?

Annex 9: Thank you and follow up email

Dear xxx

We'd like to thank you again for your time and insights. These discussions are essential to this research and we greatly appreciate you sharing your point of view with us.

As mentioned, no one outside the research team will have access to the recordings or any other details that can identify you. All other materials (e.g. transcripts, quotes) will be anonymized.

Once the research is completed, we will share with you the results by email. You may also be invited to presentations of these findings. Until then, please don't hesitate to contact us if you have any questions.

Thank you and kind regards

[Signature with contact details]

ANNEX 3. CGP EVALUATION HOUSEHOLD QUESTIONNAIRES

The following modules are extracted from the baseline and follow-up household questionnaires used in the evaluation of the CGP. The full questionnaires can be found on the Transfer project website: https://transfer.cpc.unc.edu/countries/lesotho/#instruments

Respondent Details—Baseline

HOUSEHOLD QUESTIONNAIRE

MIS CODE

Interview Details

	♦ ***Supervisor/Interviewer**: Complete*	Name	Code
HH0 Q1	*District*		
HH0 Q2	*Community Council*		
HH0 Q3	*Cluster Code*		
HH0 Q4	*Village Name*		
HH0 Q5	*Type of household*	*A* *B*	
HH0 Q6	*Ecological Zone*	(LOWLANDS=1, FOOTHILLS=2, MOUNTAINS=3, SENQU RIVER VALLEY=4)	
HH0 Q7	Full name of household head (name and surname)		

HH0 Q8	**OUTCOME OF FIRST VISIT**		01 = Completed 02 = Entire household absent outside the area for extended period of time 03 = Refused 04 = Household not found 05 = Household lives outside the area 06 = Postponed 07 = No household member at home or no competent respondent at home at time of visit 08 = Partial 77 = Other (specify) _____
	OUTCOME OF SECOND VISIT		
	OUTCOME OF THIRD VISIT		

	Date: dd/mm/yyyy	**Time at start:** hh/mm	**Time at finish:** hh/mm	**Main Respondent Roster ID Code:**	**Interviewer ID Code**
HH0 Q9					

HH0 Q10	**Supervisor:** **Finalized Quality Control** (evening check)**?**	01 = Yes 02 = No	
HH0 Q11	**Supervisor:** **Assign Serial Questionnaire Number** (link ed with the respondent/replacement list)		
HH0 Q12	**Supervisor:** Any additional quality control?	Yes, sat in interview 11 Yes, spot checked 12 No 02	

Fieldworker signature when completed:

Supervisor signature when checked:

Respondent Details—Follow-Up

HOUSEHOLD QUESTIONNAIRE

Interview Details

ID CODE

	♦ *Supervisor/Interviewer:* *Complete*	Name	Code
HH0 Q1	*District*		
HH0 Q2	*Community Council*		
HH0 Q3	*Cluster Code*		
HH0 Q4	*Village Name*		
HH0 Q5	*Type of household*	*A OR B*	
HH0 Q6	*Ecological Zone*	(LOWLANDS=1, FOOTHILLS=2, MOUNTAINS=3, SENQU RIVER VALLEY=4)	
HH0 Q7	Full name of household head (name and surname)		

HH0 Q7b	**DYNAMIC CODES**		01 = Same household (ALL or most of the children from BL still live in household)	
			02 = 1st split (first household some children from BL have moved to)	►where is it located?
			03 = 2nd split (second household some children from BL have moved to)	►where is it located?
			04 = 3rd split (third household some children from BL have moved to)	►where is it located?
			09 = New household (the whole household/ALL or most of the children from BL moved to a different household)	►where is it located?
			00= No children from baseline live in the household	►where are they located?

HH0 Q8	**OUTCOME OF FIRST VISIT**	01 = Completed 02 = Entire household absent outside the area for extended period of time 03 = Refused 04 = Postponed 05 = No household member at home or no competent respondent at home at time of visit 06 = Partial 07 = Household not found or lives outside the cluster (location UNKNOWN) 08 = Household lives outside the cluster (location KNOWN) ►where? _____ 00 = Interview not administered – no children live in the household 77 = Other (specify) _____	**INTERVIEWER'S COMMENTS:**
	OUTCOME OF SECOND VISIT		
	OUTCOME OF THIRD VISIT		

HH0 Q9	**Date**: dd/mm/yyyy	**Time at start:** hh/mm	**Time at finish:** hh/mm	**Main Respondent Roster ID Code:** / **Interviewer ID Code**

HH0 Q10	**Supervisor:** **Finalized Quality Control** (evening check)?	01 = Yes 02 = No	
HH0 Q11	**Supervisor:** **Assign Serial Questionnaire Number** (linked with the respondent/replacement list)		
HH0 Q12	**Supervisor:** Any additional quality control?	11= Yes, sat in interview 12= Yes, spot checked 02= No	

Fieldworker signature when completed:

Supervisor signature when checked:

Demographic Information—Baseline

CGP Household Survey
Section HH1: Household roster & Demographic Information

We are now going to be asking some questions about your whole household, including some information on members who only live with you occasionally. These questions include information on education, access to grants, health and labour.
For this section, we would like to talk to the head of the household or an adult who knows about the household. We would like to know about each person who belongs to this household and does not have another family, even if they may be away for long periods of time to work, receive education or visit relatives. ***Household membership criteria is:***

a) member does not have another family AND
b) member has lived under this "roof" or within the same compound/homestead/stand at least 15 days during the last 12 months OR arrived here in the last 15 days and this is now usual residence AND
c) member shares food from a common source with other household members when present

ID code	What is this person's name?	What sex is [_____]?	How old is [_____]?	What is [_____]'s relationship to the current head of the household?	What is [_____]'s current marital status?	♦ **Interviewer:** *Is [_____] someone who has been hired by the household (paid in cash or in kind)?*	Has [_____] resided here at least 4 nights on average per week in the **last 4 weeks**?	Where does [_____] live when away from the household?	What is the highest educational qualification obtained by [_____]?	♦ **Interviewer:** *Ask **ONLY** children 10-19* What was [__]'s primary school pass grade?	Does [__] have a valid passport?
	1. *List name of all individuals who meet membership criteria above* 2. *List household head first* 3. *List the name of all household members, preferably in decreasing age order* 4. *CHECK that no babies or small children have been omitted*	01 = Male 02 = Female	*Use conversion table (K) provided in Code sheet* *If under 1 year, write 00.*	*See code sheet for Relationship codes (e)*	*See code sheet for Marital status (a)* *For babies and children under 5, use code 05, Never married*	01 = Yes 02 = No	01 = Yes ► HH1 Q9 02 = No *(Those who answer no will be '**non-resident HH members**' for the rest of interview)*	01 This village 02 Neighbouring village 03 Closest town 04 Maseru 05 Elsewhere in Lesotho 06 Another country 77 Other 99 DK	*Record completed grades, not current grade* *See code sheet for Maximum Education Attended **(g)***	*Record grade* *01 = 1st* *02 = 2nd* *03 = 3rd* *99 = DK* *97 = Not attending or have not completed primary school*	01 = Yes 02 = No 99 = DK
	HH1 Q1	HH1 Q2	HH1 Q3	HH1 Q4	HH1 Q5	HH1 Q6	HH1 Q7	HH1 Q8	HH1 Q9	HH1 Q10	HH1 Q11
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											

♦ Only children 0-17								♦ Only children 0-36 months		
ID code	Is the biological mother of [_____] alive?	Is [_____] 's biological mother a member of this household?	Who? ***Interviewer:*** *Write the roster ID of the biological mother of [_____]*	Is the biological father of [____] alive?	Is [_____] 's biological father a member of this household?	Who? ***Interviewer*** *Write the roster ID of the biological father of [_____]*	Who is currently the main caregiver of [_____]? ***Interviewer:*** *write roster ID or 888 if someone from outside of the household*	Does [__] have a birth certificate? Can I see it? ***Interviewer:*** *Ask to see the birth certificate*	Does [__] have a Bukana health card? Can I see it? ***Interviewer:*** *Ask to see the Bukana card*	♦ ***Interviewer:*** *Check birth certificate or Bukana card. Confirm [____]'s age and amend the answer in HH1Q3 if needed*
	01 = Yes 02 = No ► **HH1 Q15** 93 = DK - Wedlock ► **HH1 Q15** 99 = DK ► **HH1 Q15**	01 = Yes 02 = No ► **HH1 Q15**		01 = Yes 02 = No ► **HH1 Q18** 93 = DK - Wedlock ► **HH1 Q18** 99 = DK ► **HH1 Q18**	01 = Yes 02 = No ► **HH1 Q18**		*The **main caregiver** is the main person responsible for making sure that this child is fed, bathed, goes to school, helped with homework, taken care of when child is ill, etc.*	11 = Yes, available 12 = Yes, not available 21 = No, in process of getting one 22 = No, not in process 99 = DK	11 = Yes, available 12 = Yes, not available ► **Next section** 02 = No ► **Next section** 99 = DK ► **Next section**	01 = age confirmed
	HH1 Q12	HH1 Q13	HH1 Q14	HH1 Q15	HH1 Q16	HH1 Q17	HH1 Q18	HH1 Q19	HH1 Q20	HH1 Q21
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										

Demographic Information—Follow-Up

	What is this person's name?	How old is [_____]? *Ask for ID documents and compute the age in completed years.*	What sex is [_____]?	♦ ***Interviewer***: *Is [_____] a household member available in…*	♦ ***Interviewer***: Ask the respondent why the household composition has changed from 2 years ago
	Interviewer ***Copy all household members from the tracking sheet (members of this household 2 years ago)*** ***Add any new members to the bottom.*** ***It is VERY important that the original LINE NUMBERS of baseline household members are maintained.***	*Use conversion table (a) provided in Code sheet* *If under 1 year, write 00.*	01 = Male 02 = Female	01 = Baseline only 02 =Follow up only 03= Both baseline and follow up ► **Next Person**	01= Dead 02= Split 03= Work 04= Marriage 05= Studies 06= Birth 77= Other (specify)
	HH1 Q1.	HH1 Q2. a	HH1 Q3. a	HH1 Q3b	HH1 Q3c
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

ID code	♦ *Interviewer* *What is this person's name?*	♦ *Interviewer* *How old is [_____]?*	What is [_____]'s relationship to the current head of the household?	What is [_____]'s current marital status?	♦ *Interviewer: Is [_____] someone who has been hired by the household (paid in cash or in kind)?*	Has [_____] resided here at least 4 nights on average per week in the **last 4 weeks**?	Where does [_____] live when away from the household?	What is the highest educational qualification obtained by [_____]?	♦ *Interviewer ask ONLY children aged 10-19* What was [__]'s primary school pass grade?	Does [__] have a valid passport?
			See code sheet for Relationship codes (b)	*See code sheet for Marital status (c)* *For babies and children under 5, use code 05, Never married*	01 = Yes 02 = No	01 = Yes ► HH1 Q9 02 = No *Those who answer no will be **'non-resident HH members'** for the rest of interview.*	01= This village 02= Neighbouring village 03= Closest town 04= Maseru 05= Elsewhere in Lesotho 06= Another country 77= Other (specify) 99= DK	*Record completed grades, not current grade* *See code sheet for Maximum Education Attended (d)*	*Record grade* 01 = 1st 02 = 2nd 03 = 3rd 99 = DK 97 = Not attending or have not completed primary school	01 = Yes 02 = No 99 = DK
			HH1 Q4.	HH1 Q5.	HH1 Q6.	HH1 Q7.	HH1 Q8.	HH1 Q9.	HH1 Q10.	HH1 Q11
01										
02										
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12										
13										
14										
15										

			♦ Children aged 0-17							♦ Children aged 0-6	
ID code	♦ ***Interviewer*** *What is this person's name?*	♦ ***Interviewer*** *How old is [__] ?*	Is the biological mother of [_____] alive?	Is [___] 's biological mother a member of this household?	Who? ***Interviewer*** *Write the ID code of the biological mother of [____]*	Is the biological father of [___] alive?	Is [__] 's biological father a member of this household?	Who? ***Interviewer*** *Write the ID code of the biological father of [___]*	Who is currently the main caregiver of [____]? ***Interviewer:*** *write roster ID or 888 if someone from outside of the household*	Does [__] have a birth certificate? Can I see it? ***Interviewer:*** *Ask to see the birth certificate*	Does [__] have a Bukana health card? Can I see it? ***Interviewer:*** *Ask to see the Bukana card*
			01 = Yes 02 = No ► **HH1 Q15** 93 = DK – out of Wedlock ► **HH1 Q15** 99 = DK ► **HH1 Q15**	01 = Yes 02 = No ► **HH1 Q15**		01 = Yes 02 = No ► **HH1 Q18** 93 = DK – out of Wedlock ► **HH1 Q18** 99 = DK ► **HH1 Q18**	01 = Yes 02 = No ► **HH1 Q18**		*The **main caregiver** is the main person responsible for making sure that this child is fed, bathed, goes to school, helped with homework, taken care of when child is ill, etc.*	11 = Yes, available 12 = Yes, not available 21 = No, in process of getting one 22 = No, not in process 99 = DK	11 = Yes, available 12 = Yes, not available 02 = No 99 = DK
			HH1 Q12.	HH1 Q13.	HH1 Q14.	HH1 Q15.	HH1 Q16.	HH1 Q17.	HH1 Q18.	HH1 Q19.	HH1 Q20.
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											

			♦ Children aged 0 - 6							♦ Children aged 1-6
			If the Bukana card is available, use it to complete the following information							
ID code	♦ ***Interviewer*** *What is this person's name?*	♦ ***Interviewer*** *How old is [____]?*	♦ ***Interviewer:*** *Use Bukana card to complete the following information on [__]'s weight from the growth monitoring chart* ♦ ***Interviewer:*** *If there is no weight recorded for the specific month, take an average of the closest available higher and lower month. Birth weight at the front of Bukana card or above growth chart*					♦ ***Interviewer:*** *How many points/stars are recorded in the graph between...*		♦ ***Interviewer:*** *Has [_____] received FULL immunisation?* ♦ ***Interviewer:*** *Child is fully immunized if you can count 9 dates in the Bukana card in table 1 to 5.*
			Weight recorded in Bukana at __ months (kg, include as many decimal places as available). 888 = Too young 999 = No data point to average from 777 = Growth monitoring chart not in use					...0 and 1? 888 = Too young 777 = Growth monitoring chart not in use	... 1 and 2? 888 = Too young 777 = Growth monitoring chart not in use	01=Yes 02=No
			0 months	6 months	12 months	18 months	24 months	HH1b Q2	HH1b Q3	HH1b Q4
			HH1b Q1							
01			.	.	.	.	.			
02			.	.	.	.	.			
03			.	.	.	.	.			
04			.	.	.	.	.			
05			.	.	.	.	.			
06			.	.	.	.	.			
07			.	.	.	.	.			
08			.	.	.	.	.			
09			.	.	.	.	.			
10			.	.	.	.	.			
11			.	.	.	.	.			
12			.	.	.	.	.			
13			.	.	.	.	.			
14			.	.	.	.	.			
15			.	.	.	.	.			

Household Health Module—Baseline

Section HH2: Household Health of Resident Members and children (0-17) (See Question HH1Q7)

ID code	♦ **RESIDENT** adults + **ALL** CHILDREN 0-17 (resident and non resident)														
	Does [__] have any physical or mental disability (blind, crippled, etc.)?	Who is the main caregiver of [____]?	How do you rate [___]'s health?	Has [____] been continuously ill for at least three months over the **last 12 months**? *(eg. With tuberculosis, asthma, epilepsy, etc..)*	What chronic illness does [____] suffer from?			Did [____] consult a health care provider (including nurse, chemist or traditional healer) about his/her health during the **last 3 months**?	What type of health care provider did [____] seek? Include all health providers consulted during the **last 3 months**.			♦ **FOR INTERVIEWER ONLY**: Has the respondent indicated that this person is HIV/AIDs positive?
	01 = Yes 02 = No ►**HH2 Q3**	**Interviewer**: *Write roster ID*; 888 if someone from outside of the household; 999 if no caregiver	01 = Good 02 = Fair 03 = Poor	01 = Yes 02 = No ► **HH2 Q6**	***Interviewer:*** *List up to 3* *See code sheet (c)* *1st*	*2nd*	*3rd*	01 = Yes 02 = No ► **HH2 Q8** 99 = DK ► **HH2 Q8**	***Interviewer:*** *List up to 3* *See code sheet (b)* *1st*	*2nd*	*3rd*	***Interviewer:*** *to be filled at any point in the interview if HIV/AIDS is mentioned* 01 = Yes 02 = No
	HH2 Q1	HH2 Q2	HH2 Q3	HH2 Q4	HH2 Q5			HH2 Q6	HH2 Q7			HH2 Q8
01												
02												
03												
04												
05												
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08												
09												
10												
11												
12												
13												
14												
15												

Household Health Module—Follow-Up

			♦ **RESIDENT** adults + **ALL** CHILDREN 0-17 (resident and non-resident)							
ID code	♦ ***Interviewer*** *What is this person's name?*	♦ ***Interviewer*** *How old is [____]?*	Does [__] have any physical or mental disability (blind, crippled, etc.)?	Who is the main caregiver of [____]?	How do you rate [___]'s health?	Has [____] been continuously ill for at least three months over the **last 12 months**? *(E.g. With tuberculosis, asthma, epilepsy, etc.)*	What chronic illness does [____] suffer from?	Did [____] consult a health care provider (including nurse, chemist or traditional healer) about his/her health during the **last 3 months**?	What type of health care provider did [____] seek? *(Include all health providers consulted during the **last 3 months**.)*	♦ **FOR INTERVIEWER ONLY:** *Has the respondent indicated that this person is HIV/AIDs positive?*
			01 = Yes 02 = No ► HH2 Q3	***Interviewer:*** *Write roster ID* 888 = Someone from outside of the household 999 = No caregiver	01 = Good 02 = Fair 03 = Poor	01 = Yes 02 = No ► HH2 Q6	***Interviewer:*** *List up to 3* *See code sheet type of chronic illnesses (e)* *1st 2nd 3rd*	01 = Yes 02 = No ► HH2 Q8 99 = DK ► HH2 Q8	***Interviewer:*** *List up to 3* *See code sheet for type of health care provider (f)* *1st 2nd 3rd*	***Interviewer:*** *to be filled at any point in the interview if HIV/AIDS is mentioned* 01 = Yes 02 = No
			HH2 Q1	HH2 Q2	HH2 Q3	HH2 Q4	HH2 Q5	HH2 Q6	HH2 Q7	HH2 Q8
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										

Section HH3: Child health

ID code	♦ ALL CHILDREN AGED 0-6													♦ ALL CHILDREN AGED 0-36 MONTHS					
	Over the **last 30 days**, has [__] suffered from any illness (e.g. fever, diarrhoea, throat infection, etc)?	What was this illness? (list up to three) ***Interviewer:*** *PROMPT*			How many of the **last 30 days** was [___] ill?	Have you spent any money on healthcare for [___] during the last **3 months** (including transport)?	How much did you spend for [___] on each of the following during the **last 3 months**? Prompt MALOTI						Have you ever had too little money to access healthcare treatment for [___] during the **last 3 months**?	♦ ***Interviewer:*** *If the Bukana care is available, use it to complete the following information on [__] weight from the growth monitoring chart* ♦ ***Interviewer:*** *If there is not weight recorded for the specific month, take an average of the closest available higher and lower month.*					♦ ***Interviewer*** *How many points/stars are recorded in the graph between 0 and 24 months?*
	01 = Yes 02 = No ► **HH3 Q4**	01 = Fever 02 = Prolonged fever 03 = Diarrhoea 04 = Flu or cold 05 = Persistent cough 06 = Unhealed sores 07 = Mouth or throat infection 08 = Short of breath 09 = Ear infection 10 = Stomach ache/ Vomit 11 = Worms 12 = Polio 13 = Nose bleed 14 = Skin rash 77 = Other (specify)			*Number of Days*	01 = Yes 02 = No ► **HH3 Q6** 99 = DK ► **HH3 Q6**	*Doctor/nurse / consultation fees*	*Other fees (inpatient, overnight stay, etc.)*	*Additional medication (not in consultation fees)*	*Tests (e.g. x-ray)*	*Transport*	*Other*	01 = Yes 02 = No 03 = Has not needed healthcare	*Weight recorded in Bukana at __ months (kg, include as many decimal paces as available).* 888 = Too young 999 = No data point to average from 777 = Bukana not available or growth monitoring chart not in use					*777 if Burkana not available*
														0 months	6 months	12 months	18 months	24 months	
	HH3 Q1	HH3 Q2 *1st*	*2nd*	*3rd*	HH3 Q3	HH3 Q4	HH3 Q5						HH3 Q6	HH3 Q7					HH3 Q8
01							M	M	M	M	M	M		.	.	.	.	.	
02							M	M	M	M	M	M		.	.	.	.	.	
03							M	M	M	M	M	M		.	.	.	.	.	
04							M	M	M	M	M	M		.	.	.	.	.	
05							M	M	M	M	M	M		.	.	.	.	.	
06							M	M	M	M	M	M		.	.	.	.	.	
07							M	M	M	M	M	M		.	.	.	.	.	
08							M	M	M	M	M	M		.	.	.	.	.	
09							M	M	M	M	M	M		.	.	.	.	.	
10							M	M	M	M	M	M		.	.	.	.	.	
11							M	M	M	M	M	M		.	.	.	.	.	
12							M	M	M	M	M	M		.	.	.	.	.	
13							M	M	M	M	M	M		.	.	.	.	.	
14							M	M	M	M	M	M		.	.	.	.	.	
15														.	.	.	.	.	

Section HH3: Child Health

			♦ Children aged 0-6												
ID code	♦ *Interviewer* *What is this person's name?*	♦ *Interviewer* *How old is [____]?*	Over the **last 30 days**, has [__] suffered from any illness (e.g. fever, diarrhoea, throat infection, etc.)?	What was this illness? *Interviewer: PROMPT*			How many of the **last 30 days** was [___] ill?	Have you spent any money on healthcare for [___] during the last **3 months** (including transport)?	How much did you spend for [___] on each of the following during the **last 3 months**? *Interviewer: PROMPT* *Amount in MALOTI* *'0' if none*						Have you ever had too little money to access healthcare treatment for [___] during the **last 3 months**?
			01 = Yes 02 = No ► **HH3 Q4**	*List up to 3* *See code sheet for illness categories (g)*			*Number of Days*	01 = Yes 02 = No ► **HH3 Q6** 99 = DK ► **HH3 Q6**	*Doctor/nurse / consultation fees*	*Other fees (inpatient, overnight stay, etc.)*	*Additional medication (not in consultation fees)*	*Tests (e.g. x-ray)*	*Transport*	*Other*	01 = Yes 02 = No 03 = Has not needed healthcare 04 = Service needed was free of charge
			HH3 Q1.	HH3 Q2.			HH3 Q3.	HH3 Q4.	HH3 Q5.						HH3 Q6.
				1st	*2nd*	*3rd*									
01									M	M	M	M	M	M	
02									M	M	M	M	M	M	
03									M	M	M	M	M	M	
04									M	M	M	M	M	M	
05									M	M	M	M	M	M	
06									M	M	M	M	M	M	
07									M	M	M	M	M	M	
08									M	M	M	M	M	M	
09									M	M	M	M	M	M	
10									M	M	M	M	M	M	
11									M	M	M	M	M	M	
12									M	M	M	M	M	M	
13									M	M	M	M	M	M	
14									M	M	M	M	M	M	
15									M	M	M	M	M	M	

Section HH6: Land

HH6 Q1		HH6 Q2		HH6 Q3	
Did your household **own or cultivate** any land in the past 12 months? This includes all plots, **including kitchen / garden plots**, owned, shared-out, shared-in rented-in, rented-out, by the household in the previous 12 months. 01 Yes 02 No ► **SECTION HH8**		Do you have a kitchen /garden plot? 01 Yes 02 No		How many other plots do you own or cultivate all together? *(exclude the kitchen/garden plots)*	N fields:

	What is the area of this plot?	Is the plot irrigated?	What is your tenure on this plot?	What type of arrangement do you have on this plot for the current season ?	What is the principal use of this land for the current season?	How would you classify the main soil type?	What is the slope of the plot?	Is there any erosion on this plot?	Who is primarily responsible for the management & decisions of this plot?
Plot ID	*ACRES* *For small plots less than 0.5 acres where exact size is unknown, mark 888* *Don't know (larger than 0.5 acres) 999*	01 Yes 02 No	01 Owned 02 Rented in ► HH6 Q8 03 Borrowed or free-leased in ► HH6 Q8 04 Communal ► HH6 Q8 05 Sharecropped in ► HH6 Q8 77 Other ► HH6 Q8	01 Used by the household 02 Sharecropped out 03 Rented out 04 Lent or free-leased out 05 Not in use ► HH6 Q9 77 Other	01 Crop/vegetables 02 Grazing/pasture 03 Forestry 04 Kitchen/garden plot 05 Orchard 77 Other	01 Loam 02 Clay 03 Sandy 77 Other	01 Flat 02 Slight 03 Steep	01. None 02. Mild 03 Severe 99 DK	*Write roster ID* *If someone outside the household, mark 88*
	HH6 Q4	HH6 Q5	HH6 Q6	HH6 Q7	HH6 Q8	HH6 Q9	HH6 Q10	HH6 Q11	HH6 Q12
All kitchen/ Garden Plots	.				**04**				
Field 1	.								
Field 2	.								
Field 3	.								
Field 4	.								
Field 5	.								
Field 6	.								
Field 7	.								

Land Module—Follow-Up

Section HH6: Land

HH6 Q1		HH6 Q2		HH6 Q3	
Did your household **own or cultivate** any land in the past 12 months? *This includes all plots, **including kitchen / garden plots**, owned, shared-out, shared-in, rented-in, rented-out, by the household in the past 12 months.* 01= Yes 02 =No ► **SECTION HH8**		Do you have a kitchen /garden plot? 01= Yes 02= No		How many other plots/fields do you own or cultivate all together? *(exclude the kitchen/garden plots)*	*Number of fields:*

	What is the area of this plot?		Is the plot irrigated?	What is your tenure on this plot?	What type of arrangement do you have on this plot for the current season ?	What is the principal use of this land for the current season?	How would you classify the main soil type?	What is the slope of the plot?	Is there any erosion on this plot?	Who is primarily responsible for the management & decisions of this plot?
Plot ID	01= Acres (international) 02= M^2 (Square meters) 03= Hectares 888 =DK for small plots less than 0.5 acres or 2000 M^2 where exact size is unknown 999 = DK (larger than 0.5 acres or 2000 M^2)		01= Yes 02= No	01= Owned 02= Rented in ► **HH6 Q8** 03= Borrowed or free-leased in ► **HH6 Q8** 04= Communal ► **HH6 Q8** 05= Sharecropped in ► **HH6 Q8** 77= Other ► **HH6 Q8**	01= Used by the household 02= Sharecropped out 03= Rented out 04= Lent or free-leased out 05= Not in use ► **HH6 Q9** 77= Other	01= Crop/vegetables 02= Grazing/pasture 03= Forestry 04= Kitchen/garden plot 05= Orchard 77= Other	01= Loam 02= Clay 03= Sandy 77= Other	01= Flat 02= Slight 03= Steep	01=. None 02= Mild 03= Severe 99= DK	*Write roster ID* *If someone outside the household, mark 88*
	Area	Unit								
	HH6 Q4	HH6 Q4b	HH6 Q5	HH6 Q6	HH6 Q7	HH6 Q8	HH6 Q9	HH6 Q10	HH6 Q11	HH6 Q12
All kitchen/ Garden Plots	.					**04**				
Field 1	.									
Field 2	.									
Field 3	.									
Field 4	.									
Field 5	.									
Field 6	.									
Field 7	.									

Housing Characteristics Module—Baseline

Section HH12: Housing characteristics and ownership of assets

We will now ask some questions about your house and assets, including some questions on distances from key locations.

HH12 Q1	♦ *Interviewer: Indicate the type of all dwellings that the household occupies*	01 = Rontabole/Mathule 02 = Heisi 03 = Polata 04 = Lelaene 05 = Optaka 06 = Apartment house 07 = Temporary structure 77 = Other	*Type*	*Number*
HH12 Q2	Is the main dwelling you currently live in....?	01 = Owned and paid off 02 = Owned and not paid off 03 = Free government house 04 = Rented 05 = Free lease (from friends or family) - "looking after" 06 = Traditionally owned 07 = Occupied 77 = Other (specify)		
HH12 Q3	What is the household's main source of water?	01 = Piped water on premises 02 = Piped community water 03 = Catchment's tank 04 = Public well 05 = Private well 06 = Covered spring 07 = Uncovered spring 08 = River 09 = Borehole 77 = Other (specify)		
HH12 Q4	What is the main material of the households floor? *Interviewer: If more than one house, refer to the main one (best quality)*	01 = Mud / earth / raw stone 02 = Wood planks 03 = Parquet or polished wood 04 = Vinyl or asphalt strips 05 = Ceramic tiles 06 = Brick tiles 07 = Cement 08 = Carpet 77 = Other (specify)		
HH12 Q5	What is the main material of the households walls? *Interviewer: If more than one house, refer to the main one (best quality)*	01 = Cane/tree trunks 02 = Sod 03 = Stone with mud 04 = Plywood 05 = Cardboard 06 = Refused wood 07 = Cement 08 = Stone with lime/cement 09 = Bricks 10 = Cement blocks 11 = Wood planks/shingles 77 = Other		
HH12 Q6	Does the household have access to electricity?	01 = Yes 02 = No		
HH12 Q7	Does your household own any of the following items that are in working condition? *Interviewer: Prompt*	A. Cell phone: 01 = Yes, 02 = No		
		B. Lounge suite: 01 = Yes, 02 = No		

Housing Characteristics Module—Follow-Up

Section HH12: Housing characteristics and ownership of assets

We will now ask some questions about your house and assets, including some questions on distances from key locations.

HH12 Q1	♦ *Interviewer: Indicate the type of all dwellings that the household occupies*	01 = Rontabole/Mathule 02 = Heisi 03 = Polata 04 = Lelaene 05 = Optaka 06 = Apartment house 07 = Temporary structure 77 = Other	*Type*	*Number*
HH12 Q1b	How many rooms are in your household? (Including kitchen and bathroom)?	*Write a number* ***Interviewer:** Rooms divided by a curtain should be counted as two rooms AND all dwellings should be included.*		
HH12 Q2	Is the main dwelling you currently live in….?	01 = Owned and paid off 02 = Owned and not paid off 03 = Free government house 04 = Rented 05 = Free lease (from friends or family) - "looking after" 06 = Traditionally owned 07 = Occupied 77 = Other (specify) _____		
HH12 Q3	What is the household's main source of water?	01 = Piped water on premises 02 = Piped community water 03 = Catchment's tank 04 = Public well 05 = Private well 06 = Covered spring 07 = Uncovered spring 08 = River 09 = Borehole 77 = Other (specify)_____		
HH12 Q4	What is the main material of the household's floor? *Interviewer: If more than one house, refer to the main one (best quality)*	01 = Mud / earth / raw stone 02 = Wood planks 03 = Parquet or polished wood 04 = Vinyl or asphalt strips 05 = Ceramic tiles 06 = Brick tiles 07 = Cement 08 = Carpet 77 = Other (specify) _____		
HH12 Q5	What is the main material of the household's walls? *Interviewer: If more than one house, refer to the main one (best quality)*	01 = Cane/tree trunks 02 = Sod 03 = Stone with mud 04 = Plywood 05 = Cardboard 06 = Refused wood 07 = Cement 08 = Stone with lime/cement 09 = Bricks 10 = Cement blocks 11 = Wood planks/shingles 77 = Other		
HH12 Q5b	What type of roof does the main room in your house have? *Allow only one option*	01= Thatch grass 02= Wood 03= Corrugated iron sheets 04= Brick tiles 05= Metal (Harvey) tiles 06= Asbestos sheets 77= Other (specify) _____		

Food Security Module—Baseline

Sections HH13: Food security

Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months.

HH13 Q1	In the **last 12 months**, were there months in which you did not have enough food to meet your household's needs?	01= Yes 02 = No ► **HH13 Q3**		
HH13 Q2	How was food availability in your household during each of the **last 12 months**? Was it sufficient, in some shortage, or in extreme shortage? WORK BACKWARD FROM THE PREVIOUS MONTH	01= Sufficient 02 = In some shortage 03 = In extreme shortage	Jun May Apr Mar Feb Jan Dec Nov Oct Sep Aug Jul	
HH13 Q3	During the **last 3 months**, did you or any adult household member have to eat a smaller meal than you felt you needed because there was not enough food?	01= Yes 02 = No		
HH13 Q4	During the **last 3 months**, did you or any adult household member have to eat fewer meals in a day because there was not enough food?	01= Yes 02 = No		
HH13 Q5	During the **last 3 months**, did you or any adult household member go to sleep at night hungry because there was not enough food?	01= Yes 02 = No		
HH13 Q6	During the **last 3 months**, did any child (0-17) have to eat a smaller meal than s/he felt you needed because there was not enough food?	01= Yes 02 = No		
HH13 Q7	During the **last 3 months**, did any child (0-17) have to eat fewer meals in a day because there was not enough food?	01= Yes 02 = No		
HH13 Q8	During the **last 3 months**, did any child (0-17) go to sleep at night hungry because there was not enough food?	01= Yes 02 = No		

Food Security Module—Follow-Up

Sections HH13: Food security

Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months.

HH13 Q1	In the **last 12 months**, were there months in which you did not have enough food to meet your household's needs?	01= Yes 02 = No ► **HH13 Q3**		
HH13 Q2	How was food availability in your household during each of the **last 12 months**? Was it sufficient, in some shortage, or in extreme shortage? *WORK BACKWARD FROM THE PREVIOUS MONTH*	01= Sufficient 02 = In some shortage 03 = In extreme shortage	Jun May Apr Mar Feb Jan Dec Nov Oct Sep Aug Jul	
HH13 Q3	During the **last 3 months**, did you or any adult household member have to eat a smaller meal than you felt you needed because there was not enough food?	01= Yes 02 = No 97= N/A		
HH13 Q4	During the **last 3 months**, did you or any adult household member have to eat fewer meals in a day because there was not enough food?	01= Yes 02 = No 97= N/A		
HH13 Q5	During the **last 3 months**, did you or any adult household member go to sleep at night hungry because there was not enough food?	01= Yes 02 = No 97= N/A		
HH13 Q6	During the **last 3 months**, did any child (0-17) have to eat a smaller meal than s/he felt you needed because there was not enough food?	01= Yes 02 = No 97= N/A		
HH13 Q7	During the **last 3 months**, did any child (0-17) have to eat fewer meals in a day because there was not enough food?	01= Yes 02 = No 97= N/A		
HH13 Q8	During the **last 3 months**, did any child (0-17) go to sleep at night hungry because there was not enough food?	01= Yes 02 = No 97= N/A		

ANNEX 4. SUPPLEMENTARY MATERIAL—PAPER 2

Annex 4.1. Variables included in the model: definitions and data sources

Table S1. Description of variables included in the model

Health outcomes and determinants of interest	Variable's label : Definition	Data source
Dependent variables – child health outcomes		
Under-5 mortality rate	Child mortality (logged): The child mortality rate per 1,000 livebirths represents the risk for a child to die before their fifth birthday.	GBD 2017 Health-related SDGs dataset (Global Burden of Disease Collaborative Network, 2018b)
Child malnutrition	Stunting (logged): Stunting prevalence represents the percentage of children under 5 years of age with low height-for-age compared to international child growth standards.	GBD 2017 Health-related SDGs dataset (Global Burden of Disease Collaborative Network, 2018b)
Child immunisation	DPT3 coverage (logged): The fraction of children born in a given country-year who have received three doses of vaccines against diphtheria, pertussis and tetanus (DPT).	GBD 2017 covariates estimates (Global Burden of Disease Collaborative Network, 2018a)
Independent variable		
Women's political empowerment	Women's Political Empowerment Index (WPEI): "A process of increasing capacity for women, leading to greater choice, agency, and participation in societal decision-making" (Sundström et al., 2017, p. 232). The WPEI score ranges from 0 to 1. It is built by averaging three indices, aggregated from the scores provided by country experts for nine indicators covering various aspects of women's civil liberties, civil society participation and political participation collected over 170 countries for the period from 1900 until 2016.	V-Dem database (Coppedge et al., 2018; Pemstein et al., 2018; Sundström et al., 2015, 2017)
Control variables		
Step one – socio-economic and political context variables		
Economic growth	GDP per capita in constant 2010 US$ (logged): gross domestic product per capita in constant 2010 U.S. dollars	World Bank's World Development Indicators (The World Bank, 2018b)
Level of democratisation	Electoral democracy index: the existence of a democratic regime and democratic values in a country as well as their effective implementation. This index relies on the aggregation of indexes and indicators covering key markers of electoral democracy such as	V-Dem database (Coppedge et al., 2018; Pemstein et al., 2018)

	freedoms of association and expression, the electoral process, the election of key officials and the share of the population having the right to vote. It is designed as a progressive scale, thus avoiding a dichotomous approach to democracy (Coppedge et al., 2018; Teorell et al., 2016).	
Population density	Population density (logged): people per square kilometre of land area.	World Bank's World Development Indicators (The World Bank, 2018b)
Stability	Civil wars with over 25 deaths per year: the number of years of civil war with over 25 deaths per year. Years since last civil war: the number of years of peace since the last civil war Both indicators are used in parallel.	Uppsala Conflict Data Program/ Peace Research Institute Oslo (UCDP/PRIO) Armed Conflict Dataset (Gleditsch et al., 2002; Pettersson et al., 2019)
Step two – women's socio-economic position and empowerment variables		
Maternal education	Mean level of maternal education attainment (in year per capita)	GBD 2017 covariates estimates (Global Burden of Disease Collaborative Network, 2018a)
Women's labour participation	Female labour force participation rate (linearly interpolated)	United Nations Development Programme's Human Development Indices.(UNDP, 2018)
Countries' income and development levels		
Countries' income levels	Countries' income classification according to the World Bank: the classification of the world's economies according to their gross national income (GNI) per capita. In 1990 (our reference year), low-income countries were defined as economies under or equal US$ 610, middle-income countries as economies between US$ 611 and 7 620, and high-income countries as economies above US$ 7,620 GNI per capita.	World Bank's historical classification of Country and Lending Groups (The World Bank, 2018a).

Countries' development levels	Countries listed as Least Developed Countries (LDC) by the UN: a classification that not only reflects countries' low-income but also several structural vulnerabilities and barriers to development	United Nations (UNDESA, 2010)
Robustness tests		
Access to healthcare	Healthcare equality scale: the degree to which quality basic healthcare is guaranteed to all so that adult citizens are able to exercise their political rights.(Coppedge et al., 2018; Pemstein et al., 2018)	V-Dem database (Coppedge et al., 2018; Pemstein et al., 2018)
Governance	The political corruption index: how pervasive political corruption in the public sector, the executive, legislative and judicial branches is. This index goes from 0 to 1 and is built by averaging six different indices reflecting corruption in the four different fields and at different levels (Coppedge et al., 2018; McMann et al., 2016).	V-Dem database (Coppedge et al., 2018; Pemstein et al., 2018)
WPEI components		
Women's choice (civil liberties)	Women's civil liberties index: reflects women's ability to make decisions and have meaningful rights of domestic movement, private property, freedom from forced labour and access to justice.	V-Dem database (Coppedge et al., 2018; Sundström et al., 2015, 2017)
Women's agency (civil society participation)	Women's civil society participation index: reflects women's rights and ability to express themselves, organise and take part in discussing political issues, civil society organizations, and being represented amongst journalists.	V-Dem database (Coppedge et al., 2018; Sundström et al., 2015, 2017)
Women's political participation	Women's political participation index: the representation of women in formal political positions in the legislature and gender equality in the overall distribution of power.	V-Dem database (Coppedge et al., 2018; Sundström et al., 2015, 2017)

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Annex 4.2. WPEI and child health outcomes, random and fixed effect regressions using the Newey-West method and the Driscoll and Kraay methods for estimating the standard errors

Table S2a. Model development for child mortality

Child Mortality	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression
Model development	Step 1	Step 1	Step 2	Step 2
WPEI	-0.166* [-0.336,0.004]	-0.166*** [-0.287,-0.044]	-0.070 [-0.238,0.098]	-0.070 [-0.189,0.049]
GDP per capita in current 2010$	-0.232*** [-0.271,-0.193]	-0.232*** [-0.265,-0.199]	-0.225*** [-0.265,-0.184]	-0.225*** [-0.266,-0.183]
Electoral democracy index	-0.029 [-0.119,0.060]	-0.029 [-0.101,0.042]	-0.054 [-0.139,0.030]	-0.054* [-0.112,0.004]
Civil wars with over 25 deaths per year	0.035*** [0.016,0.054]	0.035*** [0.022,0.049]	0.038*** [0.020,0.057]	0.038*** [0.024,0.053]
Years since last civil war	-0.001* [-0.002,0.000]	-0.001*** [-0.001,-0.000]	-0.001* [-0.002,0.000]	-0.001*** [-0.001,-0.000]
Population density	0.086*** [0.022,0.149]	0.086* [-0.007,0.178]	0.174*** [0.108,0.239]	0.174*** [0.091,0.256]
Mean maternal education attainment			-0.069*** [-0.087,-0.051]	-0.069*** [-0.081,-0.057]
Female labour force participation rate			-0.000 [-0.002,0.002]	-0.000 [-0.001,0.001]
Observations	4059	4059	4032	4032
Number of countries	162	162	161	161

95% confidence intervals in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S2b. Model development for child stunting prevalence

Stunting	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression
Model development	Step 1	Step 1	Step 2	Step 2
WPEI	-0.258*** [-0.377,-0.139]	-0.258*** [-0.378,-0.139]	-0.163*** [-0.269,-0.057]	-0.163*** [-0.271,-0.055]
GDP per capita in current 2010$	-0.153*** [-0.177,-0.129]	-0.153*** [-0.181,-0.125]	-0.146*** [-0.170,-0.122]	-0.146*** [-0.178,-0.115]
Electoral democracy index	0.088** [0.019,0.156]	0.088** [0.009,0.166]	0.075** [0.015,0.134]	0.075** [0.016,0.134]
Civil wars with over 25 deaths per year	-0.015** [-0.029,-0.000]	-0.015** [-0.027,-0.003]	-0.011* [-0.023,0.002]	-0.011** [-0.021,-0.000]
Years since last civil war	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]
Population density	-0.017 [-0.062,0.027]	-0.017 [-0.091,0.057]	0.087*** [0.043,0.131]	0.087** [0.008,0.165]
Mean maternal education attainment			-0.084*** [-0.097,-0.070]	-0.084*** [-0.089,-0.079]
Female labour force participation rate			-0.001 [-0.002,0.001]	-0.001 [-0.002,0.000]
Observations	4059	4059	4032	4032
Number of countries	162	162	161	161

95% confidence intervals in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S2c. Model development for immunisation coverage

DPT3 immunisation	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression	Newey-West standard error, fixed effect regression	Driscoll and Kraay standard error, fixed effect regression
Model development	Step 1	Step 1	Step 2	Step 2
WPEI	0.168** [0.040,0.296]	0.168*** [0.075,0.261]	0.219*** [0.092,0.346]	0.219*** [0.114,0.324]
GDP per capita in current 2010$	0.048* [-0.003,0.100]	0.048** [0.002,0.095]	0.051** [0.001,0.101]	0.051** [0.013,0.089]
Electoral democracy index	-0.021 [-0.106,0.064]	-0.021 [-0.087,0.046]	-0.029 [-0.111,0.053]	-0.029 [-0.078,0.020]
Civil wars with over 25 deaths per year	-0.075*** [-0.103,-0.048]	-0.075*** [-0.106,-0.045]	-0.073*** [-0.100,-0.047]	-0.073*** [-0.104,-0.043]
Years since last civil war	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]
Population density	0.362*** [0.284,0.440]	0.362*** [0.294,0.430]	0.436*** [0.357,0.515]	0.436*** [0.381,0.491]
Mean maternal education attainment			-0.049*** [-0.064,-0.034]	-0.049*** [-0.068,-0.030]
Female labour force participation rate			-0.004*** [-0.006,-0.002]	-0.004*** [-0.005,-0.003]
Observations	4059	4059	4032	4032
Number of countries	162	162	161	161

95% confidence intervals in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Annex 4.3. Correlation matrix

Table S3. Pairwise correlation matrix

Variables	Child mortality	Stunting	DPT3 coverage	WPEI	GDP per capita in constant 2010US$	Electoral democracy index	Civil wars with over 25 deaths per year	Years since last civil war	Population density	Mean maternal education attainment	Female labour force participation	Health equality	Political corruption index
Child mortality	1.000												
Stunting	0.894*	1.000											
DPT3 coverage	-0.619*	-0.492*	1.000										
WPEI	-0.577*	-0.617*	0.413*	1.000									
GDP per capita in constant 2010US$	-0.881*	-0.862*	0.488*	0.499*	1.000								
Electoral democracy index	-0.575*	-0.628*	0.375*	0.807*	0.581*	1.000							
Civil wars with over 25 deaths per year	0.271*	0.267*	-0.293*	-0.251*	-0.264*	-0.229*	1.000						
Years since last civil war	-0.502*	-0.463*	0.354*	0.385*	0.486*	0.335*	-0.549*	1.000					

Population density	-0.260*	-0.210*	0.218*	0.136*	0.136*	0.071*	-0.038*	0.109*	1.000			
Mean maternal education attainment	-0.884*	-0.813*	0.592*	0.606*	0.790*	0.551*	-0.259*	0.489*	0.140*	1.000		
Female labour force participation rate	0.181*	0.108*	-0.095*	0.200*	-0.237*	0.033*	-0.082*	0.079*	-0.045*	-0.080*	1.000	
Health equality	-0.768*	-0.765*	0.538*	0.568*	0.724*	0.541*	-0.294*	0.484*	0.147*	0.725*	-0.003	1.000
Political corruption index	0.677*	0.737*	-0.427*	-0.618*	-0.705*	-0.684*	0.251*	-0.478*	-0.081*	-0.581*	-0.033*	-0.716*	1.000

*** shows significance at the .05 level**

Annex 4.4. Descriptive statistics

Table S4. Summary descriptive table of included variables

Variables	Observations	Mean	Standard Deviation	Min	Max
Dependent variables					
Child Mortality	5292	48.031	51.099	1.884	475.408
Stunting	5292	23.609	17.11	1.03	63.397
DPT3 coverage	5292	.807	.192	.088	.999
Independent variable					
WPEI	4264	.693	.191	.092	.965
Control variables					
Step one: socio-economic and political context variables					
GDP per capita in current 2010$	5088	12047.54	17932.17	115.794	144000
Electoral democracy index	4421	.521	.266	.016	.947

Civil wars with over 25 deaths per year	5265	.146	.354	0	1
Years since last civil war	5265	27.437	18.965	0	56
Population density	5397	258.224	1308.238	1.406	19347.5
Step two – women's socio-economic position and empowerment variables					
Mean maternal education attainment	5292	8.381	3.806	.452	15.388
Female labour force participation rate	2136	51.082	16.119	6	90.8

Countries' income and development levels					
Countries income classification according to the World Bank	5488	[categorical variable]	[categorical variable]	[categorical variable]	[categorical variable]
Countries listed as LDC by the UN	5488	[categorical variable]	[categorical variable]	[categorical variable]	[categorical variable]
Robustness tests					
Healthcare equality	4446	.722	1.437	-3.16	3.991
Political corruption index	4422	.523	.284	.009	.969
WPEI components					
Women's civil liberties index	4446	.678	.251	.004	.987
Women's civil society participation index	4752	.69	.21	.025	.976
Women political participation index	4698	.772	.23	.067	1

Annex 4.5. Robustness tests' results by countries' income and development levels

Table S5a. WPEI and child health outcomes, fixed effect regressions by World Bank's income group with robustness test

	Child mortality				Stunting				DPT3 coverage			
	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag
HIC#WPEI	-1.118*** [-1.519,-0.717]	-1.192*** [-1.600,-0.784]	-1.118*** [-1.457,-0.778]	-1.192*** [-1.539,-0.845]	-0.014 [-0.393,0.364]	-0.043 [-0.427,0.341]	-0.014 [-0.417, 0.388]	-0.043 [-0.434, 0.348]	-0.751*** [-0.923,-0.578]	-0.697*** [-0.850,-0.545]	-0.751*** [-0.918,-0.583]	-0.697*** [-0.853,-0.542]
MIC#WPEI	0.082* [-0.015,0.180]	0.060 [-0.043, 0.163]	0.082* [-0.006, 0.170]	0.060 [-0.029, 0.149]	-0.350*** [-0.489,-0.210]	-0.360*** [-0.508,-0.212]	-0.350*** [-0.526,-0.173]	-0.360*** [-0.547,-0.173]	0.021 [-0.102, 0.144]	0.042 [-0.080, 0.163]	0.021 [-0.095,0.137]	0.042 [-0.088, 0.171]
LIC#WPEI	-0.232*** [-0.392,-0.073]	-0.228*** [-0.395,-0.062]	-0.232*** [-0.321,-0.144]	-0.228*** [-0.317,-0.139]	0.118** [0.023,0.212]	0.114** [0.016,0.211]	0.118* [-0.007,0.242]	0.114* [-0.017,0.244]	0.480*** [0.293,0.667]	0.492*** [0.302,0.681]	0.480*** [0.271,0.689]	0.492*** [0.288,0.695]
GDP per capita in current 2010$	-0.221*** [-0.261,-0.180]	-0.227*** [-0.269,-0.184]	-0.221*** [-0.268,-0.174]	-0.227*** [-0.274,-0.179]	-0.146*** [-0.177,-0.115]	-0.148*** [-0.180,-0.116]	-0.146*** [-0.191,-0.102]	-0.148*** [-0.194,-0.102]	0.043** [0.007,0.079]	0.046** [0.011,0.082]	0.043* [-0.004,0.089]	0.046** [0.004,0.088]
Electoral democracy index	-0.016 [-0.063, 0.031]	-0.058** [-0.114,-0.003]	-0.016 [-0.056, 0.024]	-0.058* [-0.122, 0.005]	0.077*** [0.030,0.124]	0.069** [0.012,0.125]	0.077*** [0.044,0.110]	0.069*** [0.027,0.111]	-0.051** [-0.102,-0.000]	-0.042* [-0.085, 0.001]	-0.051** [-0.095,-0.007]	-0.042* [-0.093, 0.008]
Civil wars with over 25 deaths per year	0.039*** [0.025,0.052]	0.038*** [0.023,0.053]	0.039*** [0.024,0.053]	0.038*** [0.022,0.054]	-0.008 [-0.019,0.004]	-0.008 [-0.019,0.003]	-0.008* [-0.016,0.000]	-0.008* [-0.016,0.000]	-0.069*** [-0.099,-0.038]	-0.069*** [-0.100,-0.038]	-0.069*** [-0.102,-0.036]	-0.069*** [-0.102,-0.036]
Years since last civil war	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]
Population density	0.189*** [0.090,0.289]	0.199*** [0.108,0.289]	0.189*** [0.068,0.311]	0.199*** [0.088,0.309]	0.037 [-0.041,0.115]	0.037 [-0.040,0.115]	0.037 [-0.072,0.146]	0.037 [-0.074,0.148]	0.382*** [0.326,0.438]	0.384*** [0.328,0.439]	0.382*** [0.342,0.422]	0.384*** [0.343,0.424]
Mean maternal education attainment	-0.074*** [-0.083,-0.065]	-0.076*** [-0.085,-0.067]	-0.074*** [-0.083,-0.065]	-0.076*** [-0.085,-0.066]	-0.076*** [-0.082,-0.069]	-0.076*** [-0.082,-0.070]	-0.076*** [-0.085,-0.067]	-0.076*** [-0.085,-0.067]	-0.044*** [-0.066,-0.021]	-0.043*** [-0.065,-0.021]	-0.044*** [-0.072,-0.015]	-0.043*** [-0.070,-0.016]
Female labour force participation rate	0.000 [-0.001,0.001]	-0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	-0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	-0.003*** [-0.004,-0.001]	-0.003*** [-0.004,-0.001]	-0.003*** [-0.004,-0.002]	-0.003*** [-0.004,-0.002]
Healthcare equality	-0.010 [-0.027,0.006]		-0.010** [-0.019,-0.001]		-0.006 [-0.016,0.004]		-0.006 [-0.015,0.004]		0.012 [-0.006,0.029]		0.012 [-0.004,0.028]	
Political corruption index	0.109** [0.007,0.211]		0.109** [0.016,0.202]		0.019 [-0.025, 0.064]		0.019 [-0.031, 0.069]		-0.016 [-0.098,0. 066]		-0.016 [-0.089, 0.057]	
Observations	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032
Number of countries	161	161	161	161	161	161	161	161	161	161	161	161

95% confidence intervals in brackets; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S5b. WPEI and child health outcomes, fixed effect regressions for LDC and non-LDC countries with robustness test

	Child mortality				Stunting				DPT3 coverage			
	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag	Robustness test	Main model	Robustness test, 10-year lag	Main model, 10-year lag
Non-LDC countries# WPEI	0.089*** [0.023,0.154]	0.065* [-0.008,0.137]	0.089*** [0.054,0.124]	0.065*** [0.028,0.101]	-0.313*** [-0.463,-0.162]	-0.326*** [-0.483,-0.170]	-0.313*** [-0.490,-0.135]	-0.326*** [-0.508,-0.144]	-0.028 [-0.143,0.088]	-0.019 [-0.132,0.094]	-0.028 [-0.141,0.085]	-0.019 [-0.138,0.100]
LDC countries# WPEI	-0.330*** [-0.559,-0.101]	-0.317*** [-0.548,-0.087]	-0.330*** [-0.480,-0.180]	-0.317*** [-0.461,-0.173]	0.151** [0.036,0.266]	0.137** [0.029,0.245]	0.151** [0.008,0.293]	0.137* [-0.002,0.276]	0.658*** [0.456,0.859]	0.656*** [0.453,0.859]	0.658*** [0.410,0.905]	0.656*** [0.419,0.893]
GDP per capita in current 2010$	-0.215*** [-0.252,-0.178]	-0.222*** [-0.261,-0.183]	-0.215*** [-0.259,-0.171]	-0.222*** [-0.266,-0.178]	-0.148*** [-0.180,-0.115]	-0.150*** [-0.183,-0.117]	-0.148*** [-0.195,-0.101]	-0.150*** [-0.197,-0.102]	0.043** [0.009,0.078]	0.046** [0.012,0.080]	0.043* [-0.003,0.090]	0.046** [0.004,0.088]
Electoral democracy index	-0.007 [-0.054,0.040]	-0.056* [-0.115,0.003]	-0.007 [-0.046,0.031]	-0.056* [-0.121,0.009]	0.081*** [0.035,0.127]	0.077*** [0.022,0.132]	0.081*** [0.039,0.123]	0.077*** [0.031,0.122]	-0.040 [-0.089,0.009]	-0.026 [-0.068,0.016]	-0.040* [-0.081,0.001]	-0.026 [-0.078,0.027]
Civil wars with over 25 deaths per year	0.033*** [0.019,0.047]	0.033*** [0.018,0.048]	0.033*** [0.019,0.047]	0.033*** [0.018,0.048]	-0.004 [-0.017,0.008]	-0.004 [-0.017,0.008]	-0.004 [-0.015,0.006]	-0.004 [-0.015,0.006]	-0.064*** [-0.096,-0.032]	-0.064*** [-0.096,-0.031]	-0.064*** [-0.099,-0.029]	-0.064*** [-0.099,-0.028]
Years since last civil war	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.001]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]
Population density	0.209*** [0.110,0.307]	0.219*** [0.127,0.312]	0.209*** [0.091,0.326]	0.219*** [0.111,0.328]	0.033 [-0.050,0.116]	0.031 [-0.051,0.113]	0.033 [-0.081,0.147]	0.031 [-0.084,0.147]	0.358*** [0.303,0.412]	0.355*** [0.301,0.408]	0.358*** [0.314,0.401]	0.355*** [0.310,0.399]
Mean maternal education attainment	-0.072*** [-0.084,-0.061]	-0.075*** [-0.086,-0.063]	-0.072*** [-0.085,-0.060]	-0.075*** [-0.087,-0.062]	-0.077*** [-0.084,-0.070]	-0.077*** [-0.084,-0.071]	-0.077*** [-0.086,-0.068]	-0.077*** [-0.087,-0.068]	-0.040*** [-0.060,-0.020]	-0.039*** [-0.059,-0.020]	-0.040*** [-0.066,-0.015]	-0.039*** [-0.064,-0.015]
Female labour force participation rate	-0.001 [-0.002,0.001]	-0.001 [-0.002,0.000]	-0.001 [-0.002,0.001]	-0.001 [-0.002,0.000]	0.000 [-0.001,0.001]	-0.000 [-0.001,0.001]	0.000 [-0.001,0.001]	-0.000 [-0.001,0.001]	-0.003*** [-0.004,-0.001]	-0.003*** [-0.004,-0.001]	-0.003*** [-0.004,-0.002]	-0.003*** [-0.004,-0.002]
Healthcare equality	-0.010 [-0.026,0.006]		-0.010** [-0.020,-0.001]		-0.009* [-0.019,0.001]		-0.009** [-0.017,-0.001]		0.004 [-0.012,0.021]		0.004 [-0.011,0.019]	
Political corruption index	0.131** [0.032,0.230]		0.131*** [0.045,0.217]		0.006 [-0.048,0.059]		0.006 [-0.058,0.070]		-0.039 [-0.119,0.042]		-0.039 [-0.107,0.029]	

Observations	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032	4032
Number of countries	161	161	161	161	161	161	161	161	161	161	161	161

95% confidence intervals in brackets; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Annex 4.6. WPEI components and child health outcomes

Table S6a. WPEI components and child health outcomes: robustness test with additional variables, fixed effect regressions

	Child Mortality			Stunting			DPT3 coverage		
	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression
Women's civil liberties index	-0.066* [-0.142,0.010]			-0.060 [-0.163,0.042]			0.179*** [0.118,0.240]		
Women's civil society participation index		0.008 [-0.076,0.093]			0.041** [0.002,0.080]			-0.004 [-0.135,0.127]	
Women's political participation			-0.031 [-0.074,0.012]			-0.062*** [-0.097,-0.027]			0.096** [0.011,0.182]
GDP per capita in current 2010$	-0.218*** [-0.258,-0.179]	-0.218*** [-0.259,-0.177]	-0.223*** [-0.261,-0.186]	-0.142*** [-0.170,-0.113]	-0.141*** [-0.171,-0.111]	-0.143*** [-0.169,-0.117]	0.047*** [0.020,0.073]	0.047*** [0.017,0.076]	0.044*** [0.018,0.070]
Electoral democracy index	-0.025 [-0.109,0.059]	-0.048 [-0.114,0.018]	-0.040 [-0.104,0.025]	0.064** [0.002,0.126]	0.034* [-0.002,0.070]	0.060*** [0.027,0.094]	0.010 [-0.046,0.065]	0.068* [-0.003,0.138]	0.032 [-0.028,0.092]
Civil wars with over 25 deaths per year	0.038*** [0.025,0.052]	0.040*** [0.026,0.054]	0.041*** [0.027,0.054]	-0.009 [-0.020,0.002]	-0.007 [-0.018,0.004]	-0.008 [-0.019,0.003]	-0.078*** [-0.108,-0.049]	-0.083*** [-0.113,-0.054]	-0.082*** [-0.112,-0.052]
Years since last civil war	-0.001** [-0.001,-0.000]	-0.001** [-0.001,-0.000]	-0.000* [-0.001,0.000]	-0.001*** [-0.001,-0.001]	-0.001*** [-0.001,-0.001]	-0.001*** [-0.001,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]
Population density	0.176*** [0.088,0.264]	0.176*** [0.086,0.267]	0.187*** [0.092,0.283]	0.087** [0.008,0.166]	0.087** [0.005,0.169]	0.093** [0.004,0.181]	0.469*** [0.411,0.528]	0.468*** [0.407,0.528]	0.500*** [0.419,0.580]
Mean maternal education attainment	-0.068*** [-0.079,-0.058]	-0.068*** [-0.079,-0.058]	-0.058*** [-0.071,-0.045]	-0.085*** [-0.089,-0.081]	-0.086*** [-0.091,-0.081]	-0.080*** [-0.084,-0.076]	-0.048*** [-0.067,-0.030]	-0.049*** [-0.065,-0.033]	-0.054*** [-0.074,-0.034]
Female labour force participation rate	-0.000 [-0.002,0.001]	-0.000 [-0.002,0.001]	-0.000 [-0.002,0.001]	-0.001** [-0.002,-0.000]	-0.001** [-0.002,-0.000]	-0.001** [-0.002,-0.000]	-0.004*** [-0.005,-0.003]	-0.004*** [-0.006,-0.003]	-0.004*** [-0.005,-0.003]
Healthcare equality	-0.013 [-0.030,0.004]	-0.016* [-0.033,0.000]	-0.014 [-0.031,0.003]	-0.007 [-0.017,0.003]	-0.011** [-0.020,-0.003]	-0.008 [-0.019,0.002]	0.007 [-0.008,0.021]	0.015** [0.000,0.030]	0.012 [-0.003,0.027]
Political corruption index	0.068 [-0.021,0.157]	0.061 [-0.031,0.153]	0.077 [-0.018,0.173]	0.039** [0.002,0.076]	0.033 [-0.015,0.081]	0.043* [-0.004,0.089]	0.059 [-0.044,0.162]	0.077 [-0.020,0.175]	0.061 [-0.040,0.162]
Observations	4153	4153	4121	4153	4153	4121	4153	4153	4121
Number of countries	161	161	161	161	161	161	161	161	161

95% confidence intervals in brackets; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S6b. WPEI components and child health outcomes: robustness test with additional variables, fixed effect regressions with 10-year lag

	Child Mortality			Stunting			DPT3 coverage		
	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression	Women's civil liberties regression	Women's civil society participation regression	Women's political participation regression
	10-year lag	10-year lag	10-year lag	10-year lag	10-year lag	10-year lag	10-year lag	10-year lag	10-year lag
Women's civil liberties index	-0.066** [-0.120,-0.012]			-0.060* [-0.127,0.006]			0.179*** [0.144,0.214]		
Women's civil society participation index		0.008 [-0.040,0.057]			0.041* [-0.002,0.084]			-0.004 [-0.166,0.159]	
Women's political participation			-0.031*** [-0.053,-0.008]			-0.062*** [-0.105,-0.020]			0.096** [0.003,0.190]
GDP per capita in current 2010$	-0.218*** [-0.260,-0.177]	-0.218*** [-0.261,-0.175]	-0.223*** [-0.262,-0.185]	-0.142*** [-0.184,-0.100]	-0.141*** [-0.185,-0.097]	-0.143*** [-0.182,-0.104]	0.047*** [0.014,0.080]	0.047** [0.009,0.084]	0.044*** [0.013,0.075]
Electoral democracy index	-0.025 [-0.105,0.055]	-0.048* [-0.104,0.007]	-0.040 [-0.099,0.019]	0.064** [0.007,0.121]	0.034* [-0.007,0.074]	0.060*** [0.031,0.089]	0.010 [-0.030,0.049]	0.068* [-0.006,0.141]	0.032 [-0.007,0.072]
Civil wars with over 25 deaths per year	0.038*** [0.025,0.052]	0.040*** [0.026,0.055]	0.041*** [0.027,0.055]	-0.009** [-0.018,-0.001]	-0.007* [-0.015,0.001]	-0.008** [-0.015,-0.001]	-0.078*** [-0.110,-0.047]	-0.083*** [-0.116,-0.051]	-0.082*** [-0.113,-0.051]
Years since last civil war	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.000** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.000]	-0.001*** [-0.001,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]	-0.002*** [-0.003,-0.001]
Population density	0.176*** [0.069,0.283]	0.176*** [0.065,0.288]	0.187*** [0.073,0.302]	0.087 [-0.025,0.199]	0.087 [-0.029,0.202]	0.093 [-0.031,0.216]	0.469*** [0.428,0.510]	0.468*** [0.422,0.513]	0.500*** [0.403,0.596]
Mean maternal education attainment	-0.068*** [-0.079,-0.057]	-0.068*** [-0.080,-0.057]	-0.058*** [-0.071,-0.045]	-0.085*** [-0.090,-0.081]	-0.086*** [-0.092,-0.080]	-0.080*** [-0.085,-0.075]	-0.048*** [-0.071,-0.026]	-0.049*** [-0.068,-0.030]	-0.054*** [-0.078,-0.030]
Female labour force participation	-0.000 [-0.002,0.001]	-0.000 [-0.002,0.001]	-0.000 [-0.002,0.001]	-0.001 [-0.003,0.000]	-0.001 [-0.002,0.000]	-0.001 [-0.003,0.000]	-0.004*** [-0.005,-0.003]	-0.004*** [-0.006,-0.003]	-0.004*** [-0.005,-0.003]

rate									
Healthcare equality	-0.013*** [-0.022,-0.003]	-0.016*** [-0.027,-0.005]	-0.014*** [-0.023,-0.004]	-0.007 [-0.017,0.003]	-0.011*** [-0.018,-0.005]	-0.008* [-0.018,0.001]	0.007 [-0.004,0.018]	0.015* [-0.000,0.031]	0.012** [0.001,0.023]
Political corruption index	0.068 [-0.015,0.151]	0.061 [-0.032,0.154]	0.077 [-0.016,0.171]	0.039* [-0.005,0.082]	0.033 [-0.022,0.087]	0.043* [-0.007,0.092]	0.059 [-0.057,0.176]	0.077 [-0.022,0.177]	0.061 [-0.036,0.158]
Observations	4153	4153	4121	4153	4153	4121	4153	4153	4121
Number of countries	161	161	161	161	161	161	161	161	161

95% confidence intervals in brackets

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ANNEX 5. SUPPLEMENTARY MATERIAL—PAPERS 3 AND 4

Annex 5.1. List of Stakeholder and Program Webpages Manually Searched Between November 2020 and January 2021, as Part of the Desk Review.

1. Transfer project: https://transfer.cpc.unc.edu/
2. UNICEF: https://www.unicef.org/
3. UNICEF Innocenti: https://www.unicef-irc.org/
4. FAO PtoP: http://www.fao.org/economic/ptop/home/en/
5. FAO: http://www.fao.org/home/en/
6. Ministry of Social Development, Government of Lesotho: https://www.gov.ls/ministry-of-social-development/
7. UNC CPC: https://www.cpc.unc.edu/
8. European Commission: https://ec.europa.eu/info/index_en
9. Delegation of the European Union to Lesotho: https://eeas.europa.eu/delegations/lesotho_en
10. DFID: https://devtracker.fcdo.gov.uk/; https://www.gov.uk/government/organisations/foreign-commonwealth-development-office
11. UN's Central Emergency Response Fund (CERF): https://cerf.un.org/
12. Ayala Consulting: http://ayalaconsulting.us/index.php/en/
13. World Vision: https://www.wvi.org/
14. Oxford Policy Management : https://www.opml.co.uk/
15. Sechaba Consultants [website no longer available]
16. Economic Policy Research Institute (EPRI): https://epri.org.za/

ANNEX 6. SUPPLEMENTARY MATERIAL—PAPER 5

Annex 6.1. Baseline Balance

Table A1a. Baseline balance between eligible and non-eligible households at baseline

	(1) Non-eligible		(2) Eligible		t-test Difference
	N	Mean/SE	N	Mean/SE	(1)-(2)
Male-headed households	202	0.728	510	0.547	0.181***
		[0.031]		[0.022]	
Adult education achievement	229	0.318	537	0.297	0.021
		[0.015]		[0.009]	
Households own or cultivate land in the past year	229	0.904	537	0.872	0.032
		[0.020]		[0.014]	
Households have access to a piped water supply source	229	0.537	537	0.529	0.008
		[0.033]		[0.022]	
Children <3y.o. have a bukana card	229	0.738	537	0.613	0.125***
		[0.029]		[0.021]	
Children in the Household have a birth certificate	229	0.188	537	0.143	0.044
		[0.026]		[0.015]	
Has received a cash transfer/public assistance in the last year	229	0.135	536	0.101	0.035
		[0.023]		[0.013]	
Adults in the Household have a passport	227	0.700	531	0.467	0.233***
		[0.030]		[0.022]	
Live in treatment areas	229	0.541	537	0.579	-0.038
		[0.033]		[0.021]	
No child illness in the last 30 days	229	0.552	537	0.608	-0.055
		[0.031]		[0.020]	
Healthcare Spending on children in the last 3 months	229	0.250	529	0.189	0.061**
		[0.027]		[0.016]	
Self-assessed child health status	225	0.946	533	0.906	0.039*
		[0.014]		[0.012]	
No child going to bed hungry in the last 3months	229	0.782	537	0.659	0.122***
		[0.027]		[0.020]	

No child eating fewer meals in the last 3months	229	0.550 [0.033]	537	0.285 [0.019]	0.265***
No child eating smaller meals in the last 3months	229	0.520 [0.033]	537	0.270 [0.019]	0.250***

The value displayed for t-tests are the differences in the means across the groups.
***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A1b. Baseline balance between food-insecure and food-secure households at baseline

	(1) Food insecure households		(2) Food Secure households		t-test Difference
	N	**Mean/SE**	**N**	**Mean/SE**	**(1)-(2)**
Male-headed households	460	0.543 [0.023]	252	0.698 [0.029]	-0.155***
Adult education achievement	487	0.294 [0.010]	279	0.319 [0.013]	-0.025
Households own or cultivate land in the past year	487	0.869 [0.015]	279	0.903 [0.018]	-0.035
Households have access to a piped water supply source	487	0.534 [0.023]	279	0.527 [0.030]	0.007
Children <3y.o. have a bukana card	487	0.643 [0.022]	279	0.663 [0.028]	-0.020
Children in the Household have a birth certificate	487	0.144 [0.016]	279	0.179 [0.023]	-0.035
Has received a cash transfer/public assistance in the last year	486	0.093 [0.013]	279	0.143 [0.021]	-0.051**
Adults in the Household have a passport	480	0.481	278	0.633	-0.152***

		[0.023]		[0.029]	
Live in treatment areas	487	0.546 [0.023]	279	0.606 [0.029]	-0.060
Eligible to CGP	487	0.789 [0.019]	279	0.548 [0.030]	0.240***
No child illness in the last 30 days	487	0.557 [0.021]	279	0.651 [0.027]	-0.095***
Healthcare Spending on children in the last 3 months	483	0.212 [0.017]	275	0.199 [0.023]	0.013
Self-assessed child health status	481	0.911 [0.012]	277	0.931 [0.015]	-0.021
No child going to bed hungry in the last 3months	487	0.526 [0.023]	279	0.993 [0.005]	-0.467***
No child eating smaller meals in the last 3months	487	0.023 [0.007]	279	0.907 [0.017]	-0.884***

The value displayed for t-tests are the differences in the means across the groups.
***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A1c. Baseline balance between female-headed (FHH) and male-headed households (MHH) at baseline

	(1) **FHH**		**(2)** **MHH**		**t-test** **Difference**
	N	**Mean/SE**	**N**	**Mean/SE**	**(1)-(2)**
Adult education achievement	286	0.339 [0.011]	426	0.271 [0.011]	0.068***
Households own or cultivate land in the past year	286	0.857	426	0.897	-0.040

		[0.021]		[0.015]	
Households have access to a piped water supply source	286	0.531 [0.030]	426	0.542 [0.024]	-0.011
Children <3y.o. have a bukana card	286	0.594 [0.029]	426	0.681 [0.023]	-0.086**
Children in the Household have a birth certificate	286	0.150 [0.021]	426	0.157 [0.018]	-0.007
Has received a cash transfer/public assistance in the last year	285	0.154 [0.021]	426	0.094 [0.014]	0.060**
Adults in the Household have a passport	282	0.401 [0.029]	424	0.583 [0.024]	-0.182***
Live in treatment areas	286	0.531 [0.030]	426	0.594 [0.024]	-0.062*
Eligible to CGP	286	0.808 [0.023]	426	0.655 [0.023]	0.153***
No child illness in the last 30 days	286	0.593 [0.027]	426	0.595 [0.022]	-0.002
Healthcare Spending on children in the last 3 months	284	0.162 [0.020]	420	0.239 [0.020]	-0.077***
Self-assessed child health status	282	0.924 [0.015]	422	0.910 [0.013]	0.013
No child going to bed hungry in the last 3months	286	0.692 [0.027]	426	0.702 [0.022]	-0.010
No child eating fewer meals in the last 3months	286	0.266 [0.026]	426	0.413 [0.024]	-0.147***
No child eating smaller meals in the last 3months	286	0.238 [0.025]	426	0.404 [0.024]	-0.166***

The value displayed for t-tests are the differences in the means across the groups.
***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Annex 6.2. Robustness Test by Districts

Outcomes are coded so that positive score means good nutrition and health in children under 6 years

Table A2a DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Child illness

No child illness in the last 30 days	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	-0.154**	-0.079	-0.049	-0.064	-0.108*
	(0.070)	(0.072)	(0.070)	(0.072)	(0.064)
Eligible	0.048	0.006	0.034	0.018	0.017
	(0.060)	(0.063)	(0.061)	(0.063)	(0.056)
Follow-up	-0.078	-0.032	-0.001	-0.060	-0.045
	(0.071)	(0.077)	(0.070)	(0.073)	(0.064)
Elig*F-up	0.010	0.016	-0.034	-0.023	-0.009
	(0.084)	(0.089)	(0.086)	(0.088)	(0.076)
Area_Treat*F-up	0.089	0.035	0.012	0.009	0.023
	(0.092)	(0.098)	(0.091)	(0.093)	(0.083)
Area_Treat*Eligible	0.125	0.048	0.012	0.035	0.070
	(0.082)	(0.085)	(0.084)	(0.086)	(0.076)
Area_Treat*Eligible*F-up	-0.032	0.042	0.086	0.083	0.057
	(0.110)	(0.115)	(0.111)	(0.113)	(0.100)
Constant	0.598***	0.604***	0.581***	0.615***	0.613***
	(0.050)	(0.052)	(0.050)	(0.052)	(0.046)
Observations	1,224	1,186	1,144	1,108	1,466
R-squared	0.019	0.006	0.005	0.007	0.009

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2b. DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Healthcare spending for children

Healthcare Spending on children in the last 3 months	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	0.104*	0.131**	0.058	0.094	0.107*
	(0.060)	(0.064)	(0.061)	(0.061)	(0.056)
Eligible	-0.040	0.023	0.000	-0.002	0.008
	(0.048)	(0.052)	(0.052)	(0.051)	(0.046)
Follow-up	0.136**	0.109*	0.065	0.117*	0.115**
	(0.060)	(0.062)	(0.055)	(0.062)	(0.054)
Elig*F-up	-0.079	-0.102	-0.095	-0.071	-0.092
	(0.069)	(0.073)	(0.067)	(0.075)	(0.064)
Area_Treat*F-up	-0.171**	-0.184**	-0.124	-0.123	-0.146**
	(0.078)	(0.082)	(0.078)	(0.085)	(0.073)
Area_Treat*Eligible	-0.102	-0.174**	-0.051	-0.085	-0.121*
	(0.068)	(0.074)	(0.073)	(0.073)	(0.065)
Area_Treat*Eligible*F-up	0.176*	0.193**	0.080	0.063	0.127
	(0.090)	(0.095)	(0.092)	(0.100)	(0.085)
Constant	0.190***	0.196***	0.212***	0.192***	0.191***
	(0.040)	(0.043)	(0.042)	(0.042)	(0.038)
Observations	1,218	1,179	1,140	1,101	1,458
R-squared	0.020	0.013	0.011	0.012	0.012

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2c. DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Self-assessed health status

Self-assessed child health status	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	-0.017	-0.003	-0.017	0.013	-0.002
	(0.032)	(0.027)	(0.033)	(0.036)	(0.027)
Eligible	-0.006	-0.040	-0.034	-0.005	-0.019
	(0.027)	(0.028)	(0.031)	(0.034)	(0.026)
Follow-up	-0.065	-0.051	-0.044	-0.028	-0.032
	(0.040)	(0.037)	(0.038)	(0.044)	(0.034)
Elig*F-up	0.022	0.058	0.067	0.010	0.017
	(0.048)	(0.046)	(0.046)	(0.053)	(0.042)
Area_Treat*F-up	-0.020	-0.055	0.005	-0.037	-0.059
	(0.059)	(0.054)	(0.055)	(0.060)	(0.051)
Area_Treat*Eligible	-0.025	-0.007	-0.021	-0.070	-0.040
	(0.041)	(0.038)	(0.045)	(0.047)	(0.036)
Area_Treat*Eligible*F-up	0.052	0.044	-0.006	0.073	0.081
	(0.069)	(0.065)	(0.067)	(0.072)	(0.060)
Constant	0.949***	0.961***	0.948***	0.929***	0.955***
	(0.022)	(0.020)	(0.022)	(0.028)	(0.020)
Observations	1,216	1,179	1,140	1,103	1,458
R-squared	0.010	0.009	0.007	0.007	0.009

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2d. DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Nutrition

Not going to bed hungry in the last 3months	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	0.041	0.042	0.048	0.009	0.042
	(0.061)	(0.066)	(0.061)	(0.064)	(0.057)
Eligible	-0.131**	-0.159**	-0.174***	-0.160***	-0.117**
	(0.058)	(0.062)	(0.060)	(0.061)	(0.054)
Follow-up	-0.035	0.065	-0.024	-0.079	-0.020
	(0.058)	(0.056)	(0.054)	(0.058)	(0.054)
Elig*F-up	0.039	-0.005	0.144**	0.109	0.033
	(0.073)	(0.073)	(0.070)	(0.076)	(0.067)
Area_Treat*F-up	-0.008	-0.034	0.035	0.066	0.027
	(0.079)	(0.082)	(0.076)	(0.083)	(0.073)
Area_Treat*Eligible	0.036	0.046	0.051	0.059	0.013
	(0.076)	(0.082)	(0.078)	(0.081)	(0.071)
Area_Treat*Eligible*F-up	0.061	0.106	-0.018	-0.010	0.060
	(0.098)	(0.101)	(0.096)	(0.104)	(0.090)
Constant	0.767***	0.740***	0.771***	0.776***	0.755***
	(0.046)	(0.050)	(0.046)	(0.048)	(0.044)
Observations	1,223	1,185	1,144	1,107	1,465
R-squared	0.017	0.035	0.034	0.019	0.020

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2e. DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Nutrition (cont.)

Not eating fewer meals in the last 3months	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	0.000	0.067	0.007	-0.037	0.029
	(0.074)	(0.077)	(0.075)	(0.077)	(0.068)
Eligible	-0.300***	-0.274***	-0.383***	-0.303***	-0.287***
	(0.063)	(0.066)	(0.063)	(0.067)	(0.058)
Follow-up	-0.140**	-0.091	-0.157***	-0.105	-0.122**
	(0.062)	(0.069)	(0.055)	(0.071)	(0.060)
Elig*F-up	0.208***	0.184**	0.258***	0.178**	0.192***
	(0.077)	(0.084)	(0.073)	(0.085)	(0.073)
Area_Treat*F-up	-0.017	-0.045	0.024	-0.002	-0.009
	(0.091)	(0.098)	(0.085)	(0.098)	(0.085)
Area_Treat*Eligible	0.096	-0.003	0.097	0.130	0.053
	(0.086)	(0.089)	(0.086)	(0.090)	(0.079)
Area_Treat*Eligible*F-up	0.050	0.096	0.047	0.012	0.063
	(0.109)	(0.117)	(0.106)	(0.117)	(0.102)
Constant	0.535***	0.519***	0.578***	0.553***	0.531***
	(0.054)	(0.057)	(0.054)	(0.057)	(0.051)
Observations	1,224	1,186	1,144	1,108	1,466
R-squared	0.037	0.043	0.067	0.033	0.040

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2f. DDD model results for child-level outcomes in household-level analysis, excluding one district at a time: Nutrition (cont.)

Not eating smaller meals in the last 3months	Excluding Maseru (1)	Excluding Leribe (2)	Excluding Berea (3)	Excluding Mafeteng (4)	Excluding Qacha's Nek (5)
Treatment areas	0.015	0.004	0.022	-0.008	0.015
	(0.074)	(0.078)	(0.075)	(0.078)	(0.068)
Eligible	-0.271***	-0.272***	-0.359***	-0.269***	-0.276***
	(0.063)	(0.065)	(0.063)	(0.067)	(0.058)
Follow-up	-0.163***	-0.117*	-0.181***	-0.092	-0.153**
	(0.061)	(0.069)	(0.054)	(0.070)	(0.060)
Elig*F-up	0.194**	0.199**	0.258***	0.150*	0.200***
	(0.075)	(0.083)	(0.071)	(0.085)	(0.073)
Area_Treat*F-up	-0.024	0.014	0.037	-0.037	0.013
	(0.089)	(0.094)	(0.085)	(0.096)	(0.083)
Area_Treat*Eligible	0.062	0.043	0.077	0.108	0.052
	(0.086)	(0.089)	(0.086)	(0.090)	(0.079)
Area_Treat*Eligible*F-up	0.063	0.022	0.013	0.021	0.035
	(0.108)	(0.113)	(0.105)	(0.116)	(0.100)
Constant	0.500***	0.506***	0.542***	0.513***	0.510***
	(0.054)	(0.057)	(0.055)	(0.058)	(0.051)
Observations	1,224	1,186	1,144	1,108	1,466
R-squared	0.034	0.034	0.061	0.028	0.035

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Annex 6.3. Subgroup Analyses

Table A3a. DDD model results for child-level outcomes in household-level analysis by food security status at baseline.

Outcomes are coded so that positive score means good nutrition and health in children under 6 years

	Households where children **had to** eat fewer meals in the last 3 months at baseline (0)			Households where children **did not** have to eat fewer meals in the last 3 months at baseline (1)		
	Illness in the last 30 days	**Healthcare Spending in the last 3 months**	**Self-assessed health status**	**Illness in the last 30 days**	**Healthcare Spending in the last 3 months**	**Self-assessed health status**
Area_Treatment/Control	-0.192**	0.165**	-0.062	-0.010	0.052	0.037
	(0.091)	(0.075)	(0.045)	(0.082)	(0.076)	(0.034)
Eligible	0.046	0.063	-0.038	0.041	-0.086	0.003
	(0.076)	(0.055)	(0.031)	(0.086)	(0.070)	(0.044)
Follow-up	0.035	0.198***	-0.096*	-0.106	0.049	-0.000
	(0.090)	(0.066)	(0.052)	(0.086)	(0.077)	(0.044)
Elig*F-up	-0.088	-0.192**	0.092	0.062	0.020	-0.028
	(0.101)	(0.076)	(0.059)	(0.127)	(0.107)	(0.061)
Area_Treat*F-up	0.070	-0.234**	0.115	0.004	-0.093	-0.154**
	(0.115)	(0.096)	(0.074)	(0.112)	(0.101)	(0.065)
Area_Treat*Eligible	0.132	-0.172**	0.030	0.023	-0.050	-0.092
	(0.103)	(0.084)	(0.053)	(0.112)	(0.095)	(0.056)
Area_Treat*Eligible*F-up	0.061	0.205*	-0.110	-0.035	0.076	0.198**
	(0.130)	(0.108)	(0.083)	(0.159)	(0.133)	(0.088)
Constant	0.569***	0.146***	0.961***	0.626***	0.230***	0.941***
	(0.067)	(0.047)	(0.024)	(0.058)	(0.053)	(0.030)
Observations	976	972	970	562	558	560
R-squared	0.018	0.014	0.005	0.015	0.016	0.025

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3b. DDD model results for child-level outcomes in household-level analysis by gender of the head of the households.

Outcomes are coded so that positive score means good nutrition and health in children under 6 years

	Female-headed households			Male-headed households		
	Illness in the last 30 days	**Healthcare Spending in the last 3 months**	**Self-assessed health status**	**Illness in the last 30 days**	**Healthcare Spending in the last 3 months**	**Self-assessed health status**
Area_Treatment/Control	-0.056	-0.048	0.057	-0.123	0.126*	-0.015
	(0.126)	(0.087)	(0.035)	(0.079)	(0.071)	(0.040)
Eligible	-0.051	0.021	-0.002	0.085	-0.001	-0.017
	(0.092)	(0.070)	(0.043)	(0.073)	(0.063)	(0.038)
Follow-up	-0.043	0.141*	-0.064	0.014	0.072	-0.008
	(0.103)	(0.083)	(0.059)	(0.085)	(0.073)	(0.046)
Elig*F-up	0.079	-0.084	0.036	-0.158	-0.086	0.009
	(0.118)	(0.098)	(0.070)	(0.104)	(0.087)	(0.057)
Area_Treat*F-up	0.020	-0.005	-0.072	0.027	-0.152	-0.042
	(0.151)	(0.133)	(0.095)	(0.105)	(0.092)	(0.063)
Area_Treat*Eligible	0.089	0.019	-0.104**	0.020	-0.133	-0.026
	(0.141)	(0.099)	(0.049)	(0.096)	(0.085)	(0.053)
Area_Treat*Eligible*F-up	-0.045	-0.101	0.128	0.136	0.210*	0.031
	(0.170)	(0.148)	(0.107)	(0.130)	(0.109)	(0.078)
Constant	0.624***	0.162***	0.943***	0.605***	0.216***	0.941***
	(0.079)	(0.059)	(0.035)	(0.060)	(0.051)	(0.030)
Observations	572	570	568	852	846	848
R-squared	0.002	0.026	0.010	0.016	0.011	0.008

Table A3b. (cont.)

	Female-headed households			Male-headed households		
	Going to bed hungry in the last 3months	**Eating fewer meals in the last 3months**	**Eating smaller meals in the last 3months**	**Going to bed hungry in the last 3months**	**Eating fewer meals in the last 3months**	**Eating smaller meals in the last 3months**
Area_Treatment/Control	0.061	0.000	-0.015	0.033	-0.003	-0.020
	(0.112)	(0.138)	(0.137)	(0.070)	(0.084)	(0.084)
Eligible	-0.134	-0.276***	-0.266***	-0.157**	-0.287***	-0.262***
	(0.090)	(0.095)	(0.094)	(0.072)	(0.077)	(0.078)
Follow-up	-0.152*	-0.091	-0.091	0.051	-0.153**	-0.203***
	(0.088)	(0.109)	(0.109)	(0.070)	(0.075)	(0.071)
Elig*F-up	0.153	0.147	0.167	0.024	0.267***	0.256***
	(0.107)	(0.122)	(0.120)	(0.089)	(0.098)	(0.094)
Area_Treat*F-up	0.061	-0.205	-0.205	-0.030	0.073	0.112
	(0.141)	(0.159)	(0.159)	(0.091)	(0.102)	(0.097)
Area_Treat*Eligible	0.023	0.076	0.080	0.059	0.112	0.115
	(0.128)	(0.148)	(0.146)	(0.092)	(0.101)	(0.102)
Area_Treat*Eligible*F-up	0.031	0.366**	0.304*	0.056	-0.154	-0.168
	(0.162)	(0.177)	(0.175)	(0.116)	(0.130)	(0.127)
Constant	0.758***	0.455***	0.424***	0.763***	0.559***	0.542***
	(0.075)	(0.087)	(0.087)	(0.056)	(0.065)	(0.065)
Observations	572	572	572	851	852	852
R-squared	0.027	0.066	0.051	0.027	0.029	0.025

ANNEX 7. SPILLOVER ANALYSIS ON LESOTHO'S CHILD GRANTS PROGRAM: SUPPLEMENTARY MATERIAL

Table A7a. Baseline Balance Between Non-Eligible Households in Control and Treatment Areas

	(1) Control		(2) Treatment		t-test Difference
	N	Mean/SE	N	Mean/SE	(1)-(2)
Male-headed households	92	0.641	110	0.800	-0.159**
		[0.050]		[0.038]	
Adult education achievement	105	0.351	124	0.290	0.061**
		[0.022]		[0.021]	
Households own or cultivate land in the past year	105	0.905	124	0.903	0.002
		[0.029]		[0.027]	
Households have access to a piped water supply source	105	0.505	124	0.565	-0.060
		[0.049]		[0.045]	
Children <3 years old have a bukana card	105	0.752	124	0.726	0.027
		[0.042]		[0.040]	
Children in the household have a birth certificate	105	0.229	124	0.153	0.075
		[0.041]		[0.032]	
Has received a cash transfer/public assistance in the last year	105	0.105	124	0.161	-0.057
		[0.030]		[0.033]	
Adults in the household have a passport	104	0.692	123	0.707	-0.015
		[0.045]		[0.041]	
No child illness in the last 30 days	105	0.602	124	0.510	0.092
		[0.045]		[0.043]	
Healthcare spending on children in the last 3 months	105	0.196	124	0.295	-0.099*
		[0.037]		[0.040]	
Self-assessed child health status	104	0.949	121	0.944	0.005
		[0.020]		[0.019]	

No child going to bed hungry in the last 3months	105	0.762 [0.042]	124	0.798 [0.036]	-0.036
No child eating fewer meals in the last 3 months	105	0.543 [0.049]	124	0.556 [0.045]	-0.014
No child eating smaller meals in the last 3 months	105	0.514 [0.049]	124	0.524 [0.045]	-0.010

The value displayed for t-tests are the differences in the means across the groups.

***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A7b. Difference-in-Difference Estimates for Child-Level Health Outcomes Amongst Noneligible Households in Household-Level Analysis, Controlling for the Gender of the Head of the Household and Adult Education Achievement.

	(1)	(2)	(3)	(4)	(5)	(6)
	No child illness in the last 30 days	Healthcare Spending on children in the last 3 months	Self-assessed child health status	Not going to bed hungry in the last 3months	Not eating fewer meals in the last 3months	Not eating smaller meals in the last 3months
Area_Treat*F-up	0.034	-0.133*	-0.038	0.020	0.008	0.031
	(0.086)	(0.075)	(0.053)	(0.076)	(0.087)	(0.084)
Treatment areas	-0.107	0.088	-0.001	0.031	-0.002	-0.016
	(0.067)	(0.057)	(0.031)	(0.059)	(0.071)	(0.071)
Follow-up	-0.006	0.097*	-0.028	-0.022	-0.130**	-0.163***
	(0.066)	(0.056)	(0.037)	(0.056)	(0.062)	(0.061)
Gender of the head of the Households	-0.018	0.064	0.003	0.077	0.142**	0.138**
	(0.060)	(0.049)	(0.030)	(0.055)	(0.061)	(0.059)
Adult education achievement	0.071	-0.054	0.066	0.156*	0.212*	0.207*
	(0.111)	(0.096)	(0.065)	(0.082)	(0.121)	(0.122)
Constant	0.600***	0.173***	0.918***	0.661***	0.363***	0.345***
	(0.072)	(0.057)	(0.040)	(0.065)	(0.078)	(0.077)

Observations	404	404	400	403	404	404
R-squared	0.012	0.014	0.015	0.017	0.040	0.045

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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