Student thesis

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Effect of Mother Support Groups on nutritional status in children under two years of age in Laisamis village, Kenya.

Trondheim, June 2016

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Forord

Tema for vår hovedoppgave er effekten av Mother Support Groups på ernæringsstatus hos barn under 2 år i Kenya. Vi har tatt utgangspunkt i landsbyen Laisamis, som ligger i det nordlige fylket Marsabit. Datamaterialet har vært samlet inn over 12 måneder fra januar 2015 ved en ernæringsklinikk i tilknytning til Laisamis Catholic Hospital, og etter vår ankomst gjennomførte vi intervjuer samt avsluttende målinger av de involverte i studien. Vi presenterer våre funn i artikkelform ment for publisering i tidsskriftet African Health Sciences (søkbart i PubMed, Web of Science), og ber om at oppgaven unngås offentliggjøring.

Laisamis er en liten landsby på i Marsabit county i det nordre Kenya (se kart), 435 km. nord for Nairobi. Været i området var svært tørt og varmt. Sanitærforhold og infrastruktur var lite utviklet, og vi var vitne til mye fattigdom og underernæring. Opplevelsene av stedet var en stor overgang fra det velutviklede norske samfunnet.

All kommunikasjon i forkant av vårt opphold i Kenya, var gjennom E-post med vår lokale veileder James Kamotho (County Nutrition Officer, Dept. of Health, Marsabit County). Vi ser i ettertid at dette kan ha gjort at visse beskjeder har blitt feiltolket eller oversett. Dermed har enkelte føringer fra protokollen måttet gjennomgå nødvendige forandringer:

- Tittelen på oppgaven var i begynnelsen ment å referere til effekten Mother Support Groups hadde på ernæringsstatus hos underernærte barn under 2 år. Studiepopulasjonen var imidlertid ikke selektert ut ifra underernæring, slik at tittelen på oppgaven gikk bort fra undernæring som utgangspunkt.
- Vi var også innstilt på en dobbelt så stor studiepopulasjon som det vi endte opp med å utforske. Denne endringen kan nok utelukkende tilskrives kommunikasjonssvikt over E-post.

- I intervju-arket som var vedlagt protokollen (appendix 1), spør vi om barnet har hatt sykdommer de siste 12 månedene. Dette spørsmålet ble endret til om barnet har opplevd feber, diaré eller symptomer på lungesykdom de siste 2 ukene før den siste målingen i februar – en nødvendig korrigering siden spørsmålet aldri ble stilt under noen av de foregående målingene forut for vår ankomst. På denne måten kunne vi avdekke om den siste målingen til et bestemt barn ville vært påvirket pga. sykdom.
- I intervjuene har vi spurt om alder på barnets far. Svarene på dette spørsmålet har vi ikke gjengitt i resultatdelen eller tabellene, da det var knyttet stor usikkerhet til dette hos mange av kvinnene vi intervjuet.
- Vi møtte også på utfordringer i forsøket på å intervjue samtlige studiedeltakere, da 9 mødre var bortreist med beitedyr under vårt opphold. Dette er imidlertid justert for i analysen og fremleggelsen av resultatet.

Vi takker Det Medisinske Fakultet ved NTNU for muligheten til å gjennomføre oppgaven. Økonomisk støtte til reise og opphold har vært avgjørende for realiseringen av prosjektet, og vi sitter igjen med en enorm takknemlighet for opplevelsene vi har fått i møte med kenyansk kultur og helsearbeid. Vi håper vårt engasjement gjennom denne hovedoppgaven kan bidra til videre forskning på effekten av Mother Support Groups.

Vi har hatt svært gode opplevelser av vårt opphold i Laisamis. Gjennom den lokale ernæringsfysiologen som var tilknyttet det katolske sykehuset, Martin Njue, har vi fått uvurderlig hjelp til å gjennomføre alle målinger og intervjuer som gjenstod da vi kom. I de 12 månedene før vår ankomst gjennomførte ernæringsfysiolog Mercy Busuru månedlige målinger av alle mødre og barn i studien. Høyde, vekt og andre antropometriske målinger ble nøye nedtegnet i bøker og tabeller, utformet av vår lokale veileder og studieorganisator Mr. James Kamotho. Det var på hans initiativ at studien ble gjennomført. Vi fikk dermed et

omfattende og presist studiemateriale å ta utgangspunkt i da vi ankom Kenya. Vi vil takke alle tre for uvurderlig hjelp med arbeidet.

Vi vil avslutningsvis rette en stor takk til vår veileder ved NTNU, Berit Rostad, førsteamanuensis ved Institutt for Samfunnsmedisin. Hun har gitt tydelige og nødvendige føringer gjennom hele hovedoppgaveprosessen, særlig under arbeidet med å skrive artikkel. Hennes erfaring med samfunnsmedisinsk forskning har gitt oss uvurderlig og fornøden støtte.

Vedlagt selve oppgaven er også spørreskjema, informasjonsskriv, samtykkeskjema og kart over området.

Trondheim 06.06.16

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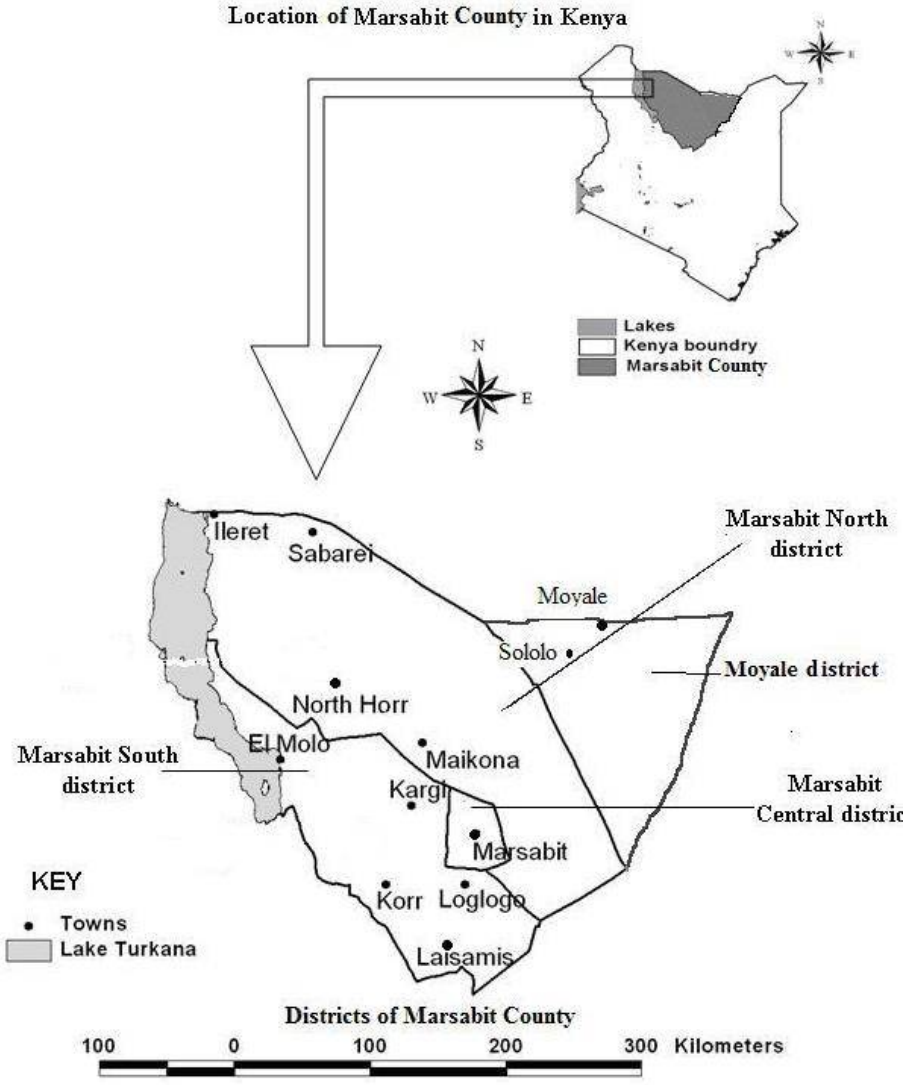
Håvard-Amund Viervoll	Mattias Undlien

Kart over Laisamis



Effect of Mother Support Groups on nutritional status in children under two years of age in Laisamis village, Kenya.

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Abstract

Background: To deal with the ongoing malnutrition problem in many parts of Kenya, the government has initialized preventive actions such as mother support groups to improve health and nutrition among children. Few studies have evaluated the effectiveness of such interventions as mother support groups.

Objective: This study aimed at determining how mother support groups affect the nutrition status of children under 2 years of age.

Methods: A total of 41 children participated. Anthropometric measurements were made once a month on the children during 12 months. Medical history, nutrition status and socioeconomic factors were collected by interviews with the mothers. The children were divided into two groups; one mother support group and one not in support group depending on their mother's assigned group.

Results: Nutritional status estimated by mean Z-score was significantly better among children in the MSG than in the non-support group (P=0.001). There was a significant increase in the number of children with severe acute malnutrition among the children not in support group compared to children in the mother support group (P=0.040). The mean height (P=0.001) and mean weight (P=0.0281) were significantly higher among children in the non-support group compared to the children in the mother support group.

Conclusion: Mother support groups may have a beneficial effect on the nutritional status among children under 2 years of age. Cases of severe acute malnutrition may be reduced in children whose mothers attend mother support groups.

Keywords: Mother support groups, child nutrition, breastfeeding, Kenya

Introduction

Malnutrition is an underlying cause in more than 50 % of all morbidity in children, often referred to as the malnutrition-infection complex.[1] The importance of sufficient nutrition was recognized in the Millennium Development Goals (MDG) and in the current Sustainable Developments Goal number 2, to end hunger and improve nutrition.[2] Approximately one third of all deaths before the age of five is attributed to malnourishment.[3] Malnutrition in the first two years of life can have critical consequences for health throughout life. Despite succeeding in reducing child mortality in the world by nearly 50 %, some areas of the world are still lagging behind.[4]

Kenya is among the countries with the highest child mortality rate in the world.[5] The country did not meet the MDG number 1; to halve the proportion of underweight children.[6] An annual health and nutrition survey in Laisamis sub-county from September 2015, "The Smart Study", showed that 32.7 % of children 6-59 months of age were underweight, that 25.9 % were stunted and that 23.7 % were wasted.[7] The latter, reported as Global Acute Malnutrition (GAM), increased to 23.7 % in September 2015 from a percentage of 18.2 in July 2014.[7] These discouraging numbers are attributed to chronic food insecurity due to erratic rainfall and prolonged dry spells, as well as sub-optimal child care and feeding practices.[7] The latter factors have raised the need for nutrition surveillance, nutritional care as well as supplementary feeding programs for malnourished children.

Recent research has shown that breastfeeding is an optimal way of providing ideal nutrition in infants, for healthy growth and development. WHO recommend that all infants should be fed exclusively on breast milk from birth to 6 months of age.[8] Implementing proper breastfeeding and complimentary feeding regiments are crucial to improving health and nutrition in young

children, and gives substantial long-term benefits for the rest of the lifespan.[9] According to the 2008-09 Kenya Demographic and Health Survey, only 32 % of Kenyan babies are exclusively breastfed up to the age of six months.[10]

Mother Support Groups (MSGs) are part of the national strategy of improving infant and young child nutrition in Kenya, where groups of women either pregnant or with children under 5 years of age learn about the importance of breastfeeding and nutrition by means of health education, demonstrations and discussions.[11] Further, the women support each other and share experiences complementary to health services. The groups are closely linked with health facilities providing nutritional assistance.[11] It is important to evaluate the effectiveness of these groups in order to ensure the best possible allocation of resources. To our knowledge there are few studies on such interventions as the MSG programme and its effect on improved nutrition status in children. Against this background, our study aimed at determining how MSGs affect the nutrition status of children under 2 years of age in Laisamis village, Kenya.

Methods

Study centre

This descriptive comparative study was carried out at the out-patient and out-reach clinic at Laisamis Catholic Hospital, Kenya, from January 2016 until March 2017. The research was done in cooperation with the clinic, which offered services to people living in Laisamis village.

Study population

The study population consists of children under 2 years of age in Laisamis, but enrolled in the study at age of ≤ 6 months and attending the clinic's nutrition centre. Pregnant women and mothers with children under six months of age were invited to participate in the study. All women asked to participate accepted the invitation. The study population was divided into two groups; an intervention group consisting of children whose mothers participated in MSGs, and a group of children whose mothers did not. Both groups got standardized treatment (including supplementary feeding if defined malnourished) and counselling. The clinic nutritionist together with community health workers recruited the two groups by selecting women from two different parts of the village, thus the two groups were based on the area they lived. This was done so that the mothers easily could meet in their support group, as walking is the only affordable means of transportation. The support group met twice a month, headed by a peer mother, herself an experienced breastfeeding mother, to assist, inform and discuss with the mothers the importance of breastfeeding, child care and nutrition (the latter by lectures from a nutritionist). The group was limited to 20 mothers, since normal MSGs are designed to contain between 12 and 20 mothers. Additional 12 mothers were

interviewed in order to provide additional background information on mothers benefiting from the nutrition services. Informed consent was obtained from all participating mothers.

Study material and measures

Interviews based on a structured questionnaire was used to obtain health, nutrition and socioeconomic information about the children and their families. The interviews were carried out with the children's mothers in February 2016. Every month from January 2015 to February 2016 nutritional status was assessed by measuring height, weight and mid upper arm circumference (MUAC) of the participating children. The children's height was measured lying down on a length board with a movable foot board. Weight was measured on a standard weighing scale. MUAC was measured with a tape measure. Subsequently, Z-score was calculated based on the height and weight measurements. Moderate acute malnutrition (MAM) was defined as Z-score ≤ -2 but > -3 SD, while severe acute malnutrition (SAM) was defined as Z-score cut-off-point of ≤ -3 SD low weight-for-height of reference population, according to UNICEF and WHO's definition.[12] Any diarrhea, fever or acute respiratory illness last two weeks were registered during interviews in February 2016.

Statistical analysis

Descriptive statistics of children and mothers stratified by attendance in MSG or not, is presented in numbers and percentages. The analysis of the data is corrected for time participated. Differences between the groups were assessed by applying chi-squared test. Student's t-test were used to assess differences in mean weight, height, MUAC and Z-score. Statistical significance was set at $P < 0.05$. Analyses were performed using SPSS statistics (version 19, SPSS INC., Chicago, IL) and Stata Statistical Software (Release 14, StataCorp. 2015, College Station, TX: StataCorp LP).

Results

41 children constituted the two groups, 20 mothers to each group. Many of the study families were nomadic pastoralists, regularly traveling long distances to fresh pastures with their livestock. Thus, many were unreachable for parts of the study period. Because of this, only 31 of the mothers were available for interview at the end of the study period. Some of the mothers were in the grazing fields with their children for a few months during the study period, thus some measurements are missing as a result.

Table 1 presents socio-demographic characteristics of mothers in MSG, mothers not in support group and regular beneficiaries (other mothers) of nutritional services of Laisamis Catholic Hospital. There were more mothers under 25 years and fewer mothers between 25-30 years among the regular beneficiaries than in the two study groups. There were few differences in marital status, in fact only one mother in the non-support group reported being unmarried. Of mothers in all three groups, most (72.1 %) had no education (not shown in table). There was a somewhat higher proportion of mothers without any education in the MSG when compared to the other two groups. 60.5 % of all mothers reported being housewives (not shown in table). Fewer of the mothers not in support group reported having manual work, when compared to the other two groups. In general, the fathers had more education than the mothers, and more of them were working; 38.1 % were self-employed, 33.3 % were nomadic pastoralists and 28.5 % had other or no work reported by the mothers (not shown in table). They further reported that 63.4 % of fathers had some education (not shown in table).

Table 2 shows differences in socioeconomic factors, health factors and nutritional status of the children in the two study groups. There were no substantial differences between the two groups of children in terms of age group, sex or number of siblings, however the children not

in support group lived in smaller households (see Table 2). There was no significant difference in reported acute respiratory illness, diarrhoea or fever in the last two weeks before the final measurement between the two groups. There was no significant difference between the two groups with respect to breastfeeding practices. Every mother in both groups said they had breastfed their child exclusively the first 6 months. The mean height and mean weight were significantly higher among children in the non-support group compared to the children in the MSG. The nutritional status measured by the mean Z-score was significantly better among children in the MSG than in the non-support group. There was a non-significant increase in the number of children with moderate acute malnutrition (MAM) among children not in support group compared to children in the MSG. There was a significant higher number of children with severe acute malnutrition (SAM) among the children not in support group compared to children in the MSG.

Discussion

Our objective was to investigate how MSGs affected nutritional status in children under 2 years of age. Our findings suggest that MSGs can have a positive effect on the nutritional status in children under two years. Furthermore, it suggests that there may be fewer cases of severe acute malnutrition (SAM) among children of mothers in support group.

To the best of our knowledge, this is the first attempt to determine the effect of MSG's implementation on nutrition in Kenya. We have not found any research on the relation between mother support group participation and influence on nutritional status in infants. Local health workers in Laisamis reported that they had the impression that the mothers' compliance with the treatment for malnourished children was better in the MSG than in the not support group. They reported instances where supplementary and therapeutic nutritional supplements were shared with other children and family members, and not given to the malnourished child they were intended for. It was not unusual, they said, that mothers returned for more nutritional supplements only shortly after receiving a week's supply, because they had shared supplies with the whole family. Unfortunately, we were not in a position to investigate differences in compliance. If the health workers' observations are correct, then differences in compliance might explain differences in nutritional status in the two groups.

All mothers in the study agreed to participate in the study. Earlier studies of malnutrition in Marsabit County has concluded that social stigma connected with malnourished children is an important reason why mothers don't seek help for malnutrition.[13] We did not investigate this in our study, but we speculate that increased general awareness on nutrition initiated by the establishment of mother support groups might contribute to reduce the stigma, and as such

lower the barrier for mothers to seek help at health care facilities.

The results show an apparent awareness of the importance of breastfeeding in both of the two groups, as all mothers reported exclusively breastfeeding their children for 6 months regardless of participation in the support group. In Kenya only 32% of children are exclusively breastfed for 6 months.[10] Our findings indicate the important supportive and informative role of health workers to improve breastfeeding practices. Lack of breastfeeding counseling is reported to be an important reason why mothers stop breastfeeding exclusively only a few weeks after delivery.[14] Our study confirms earlier research that mothers having knowledge of exclusive breastfeeding are less likely to end exclusive breastfeeding early.[15] Earlier studies of mother support groups in India found a significant positive effect on breastfeeding practices among participants in support groups only.[16] Our study found no such effects limited to mothers in support group. However, our study did not inquire into the number of feedings per day as the Indian study did. These methodological differences may possibly contribute to the diverse results.

Study limitations

The study's sample size is very limited, and all measurements are therefore subject to uncertainty. Thus, any results should be interpreted with extreme caution. The two groups in the study were not randomly assigned. Even though there seem to be few substantial differences in the socio-demographic and health factors we assessed, there were some differences. Due to the selection process by geography, there may be confounders we have not considered. Our research suggests that MSGs can be successful in improving nutritional outcomes in children under two years of age. As such, our results may offer some encouragement to establishing MSG programs. More research on the topic is needed.

Conclusion

Our study suggests that Mother Support Groups might improve nutritional status, and that they may result in fewer cases of severe malnutrition in children under two years of age. All mothers in the study reported breastfeeding exclusively for 6 months, suggesting knowledge of the importance of breastfeeding in itself leads to better breastfeeding practices.

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Conflict of interest

Authors have no conflict of interest to declare.

Tables and figures

Table 1 - Socio-demographic characteristics of mothers attending the nutrition centre

Characteristics	Other mothers N (%)	Mothers in support group N (%)	Mothers not in support group N (%)
Age group			
<25	6 (50.0)	4 (28.5)	6 (35.3)
25-30	2 (16.7)	5 (35.7)	6 (35.3)
>30	4 (33.3)	5 (35.7)	5 (29.4)
Married			
Yes	12 (100.0)	14 (100.0)	16 (94.1)
No	0 (0.0)	0 (0.0)	1 (5.9)
Education			
Education	4 (33.3)	2 (14.3)	6 (35.3)
No education	8 (66.7)	12 (85.7)	11 (64.7)
Occupation			
Manual worker	7 (58.3)	9 (64.2)	3 (17.5)
Housewife	5(41.7)	5 (35.7)	14 (82.4)
Health status			
Good	12 (100.0)	14 (100.0)	16 (94.5)
Fair	0 (0.0)	0 (0.0)	1 (5.8)

Table 2 - Socio-demographic characteristics of and nutritional status in children whose mothers are in support group and not in support group

Characteristics	Support group N (%)	Not in support group N (%)	P value
Age groups in months			
0-12	10 (50.0)	9 (42.8)	0.647
> 12	10 (50.0)	12 (57.1)	
Sex			
Male	9 (45.0)	12 (57.1)	0.437
Female	11 (55.0)	9 (42.8)	
Mean number of children (SD)	5.6 (3.5)*	3.7 (2.5)*	0.0862
Mean number of adults (SD)	1.93 (0.61)*	1.64 (0.49)*	0.167
Diseases last 2 weeks			
Diarrhoea			
Yes	4 (28.5)	2 (11.7)	0.239
No	10 (71.4)	15 (88.2)	
Fever			
Yes	8 (57.1)	6 (35.3)	0.224
No	6 (42.8)	11 (64.7)	
Cough/Fast breathing (ARI)			
Yes	7 (50.0)	4 (23.5)	0.125
No	7 (50.0)	13 (76.4)	
Nutrition status			
Moderate Acute Malnutrition			
Yes	5 (25.0)	9 (42.9)	0.228
No	15 (75.0)	12 (57.1)	
Severe Acute Malnutrition			
Yes	0 (0.0)	4 (19.0)	**0.040**
No	20 (100.0)	17 (81.0)	
Breastfed first 6 months			
Yes	14 (100.0)	17 (100.0)	0.414
No	0 (0.0)	0 (0.0)	
Mean Height (SD)	67 (3.9)*	70.5 (4.3)*	**0.0001**
Mean Weight (SD)	6.4 (1.5)*	6.8 (1.8)*	**0.0281**
Mean MUAC (SD)	13.6 (0.78)*	13.3 (1.1)*	0.0615
Mean Z-score (SD)	-0.39** (0.61)*	-0.83** (0.90)*	**0.0001**

*Standard deviation

**Differences in means tested by Student's t-test