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Arne Emil Okkenhaug

Comprehensive care for persons with severe mental disorders

Elements of relevance throughout all phases

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of Philosophiae Doctor
Faculty of Medicine and Health Sciences
Department of Mental Health

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Norwegian University of
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CONTENTS

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My research path started back in 2007 when my then leader, Olga Marie Midtaune, gave me and two colleagues a few weeks' professional leave to create a project outline for research on schizophrenia and social participation. We soon realized that this enabled us to use data from the HUNT Research Centre and further research.

However, my work on this PhD would never have started without the support of the then clinic manager, Kathinka Meirik, who asked me to consider doing a PhD and the former head of research at Nord-Trøndelag Hospital Trust, Bodil Landstad, who suggested a PhD based on published articles and articles in progress. Bodil's initiative and her continuous "gentle pressure" have given me invaluable support. Bodil Landstad also became my main supervisor. Along with my co-supervisors, Jo Magne Ingul and Solveig Klæboe Reitan, she has never given up on me, but helped me to keep going when the work at times seemed insurmountable.

Many thanks also to Manager Arnt Håvard Moe and Head of Department Karin Wang Holmen of the Mental Health and Substance Abuse Clinic for their great generosity in providing leave and financial support, beyond what could be expected, to enable me to complete this work. Throughout my work, the Hospital Research Department has provided considerable support in the form of library services and financing. The Department of Mental Health and the HUNT Research Centre under the Faculty of Medicine and Health Sciences at the Norwegian University of Science and Technology (NTNU) have provided academic support, data access and office space.

Dear co-authors, colleagues, family and friends: thank you so much for the faith, trust and never-ending support you have given me during my research.

A special thank you goes to all the people I have met as patients in my 30 years in psychiatry. You have helped to put me on the right track of a particular focus on prevention, patient involvement, salutogenesis and patient safety. These were patients who had found that the downward spiral in their lives had reversed; the mental health care they received and their own internal strength had changed their lives for the better. But also important were the lessons I learned and my reflections after meeting those patients where despair had pushed them into the darkest depths of depression. And for some, there is a fatal ending: life ends too soon.

Audun Thodesen did not experience the upward spiral until it was too late. He told his brother: “My anxiety is there all the time, but I still enjoy writing”. With the permission of his family, I present here one of his many beautiful poems:

Rewind me

Oh….if I could only dream myself back
to the wonderful days that were lost
to the time that shone into my heart
like the morning light glistens in the wet dew

did I ever have days like that
with soft undercurrents of pure calm
yes - when the rain lashed against the windows
and gave birth to me with rolling power

then I was alive like the spring
sprouting from the greenness of my vein
and I was recreated by the light from
high places
and I drank the water of the green river of opportunity

once in my life a canvas
held up tightly by the warm dry wind
these days a broken jar
whose pieces do not fit into a mosaic

but I will never forget the drumming of the rain
on the attic roof above my bed
and the rain that lashed against the panes
the wind howling and rising

that was when the breath of life caressed me
and nature’s heart whispered into me
“Hush now and sleep in my rain dance
Hush now and sleep my dance”.

I dedicate my work to my dear son, Emil, who was tragically and suddenly taken from us on 22 July 2011. “When you have no other choice but to be strong, that is when you realize how strong you are”. We, dear Ann Mari, Oda and Maria, have felt that so painfully. Thank you all very much for being yourselves, and for carrying each other forward through life, illness and pain, and through my PhD.

ABBREVIATIONS

MD:	Mental disorder
SMD:	Severe mental disorder
HP:	Health professional
NOVA:	Norwegian Social Research Institute
UN HRC:	United Nations Human Rights Council
UEMS:	European Union of Medical Specialists
WHO:	World Health Organization
UK:	United Kingdom
SDM:	Shared decision making
AE:	Adverse event
GTT:	Global Trigger Tool
GTT-P:	Global Trigger Tool - Psychiatry
BD:	Bipolar disorder
HCs:	Healthy controls
HUNT:	The Nord-Trøndelag Health Study
HNT HF:	Nord-Trøndelag Hospital Trust
SPSS:	IBM Statistical Package for the Social Sciences
SKL:	Sveriges Kommuner och Landsting. New abbreviation: SKR (Sveriges Kommuner och Regioner [SALAR: Swedish Association of Local Authorities and Regions])
QOL:	Quality of life

ABSTRACT

Health professionals (HPs) can take steps to reduce risk through prevention and respectful treatment and make efforts to increase protection and coping in patients and the population in general. HPs' knowledge of risk and protective factors, of what professional treatment entails and of how they can encourage salutogenic processes in all phases of life can help promote health and reduce illness in patients. This thesis presents these aspects for the benefit of HPs and patients. It also aims to increase knowledge of processes that affect health or prognosis, both before and after the onset of a disorder, including an examination of adverse events (AEs). The main aim of this thesis is to study risk factors before the onset of disorders and of AEs that may prolong illness in mental health care.

In Papers 1 and 2 we studied what life had been like for people with schizophrenia before they were defined as ill by an HP. The purpose, from a preventive perspective, was to identify factors that distinguish these persons from adolescents who do not develop schizophrenia. Knowledge of the factors that differ between those who later become ill and those who do not may be important for prevention. However, it may also be important for the sake of all adolescents, as associated conditions (e.g. smoking, poor physical condition) are important to prevent in general, while they represent an additional burden in the event of a fully developed disorder. This is important because it is often a question of lifelong conditions where it is essential to start health care interventions early, while we should also view illness in the light of the person's entire life. Papers 3 and 4 focus on quality failures and AEs caused by HPs during treatment, which can affect the person's illness trajectory without preventive interventions.

Papers 1, 2 and 4 use a quantitative approach to analyse and answer the hypotheses, while Paper 3 is based on a qualitative approach. Papers 1 and 2 are a case-control study using data from the Norwegian Young-HUNT1 survey with 15 cases of premorbid schizophrenia. Papers 3 and 4 report on the translation, validation and use of a quality and research tool, the Global Trigger Tool – Psychiatry (GTT-P), to detect and report triggers for AEs, risk areas and AEs in mental health care.

Our studies show that persons who later developed schizophrenia, compared to those who did not, were less physically active, more alone, more prone to a negative mood with increased rumination, worry, sadness and anxiety, and showed more health risk behaviours, such as greater daily smoking. Our cross-cultural adaptation and validation of GTT-P, across stakeholders, showed that the tool is useful in detecting triggers and AEs in the patient population. Our study showed that suffering was the most common AE, while the lack of a treatment plan was the most common trigger.

NORWEGIAN SUMMARY

Helsepersonell kan bidra til å redusere risiko for sykdom og skade gjennom forebygging og god behandling samt stimulere beskyttende faktorer hos pasienter og befolkningen generelt. Helsepersonells kunnskap om risiko- og beskyttelsesfaktorer, hva profesjonell behandling innebærer og kunnskap om hvordan de kan oppmuntre til salutogene prosesser, kan bidra til å fremme helse og redusere sykdom hos pasientene. Denne avhandlingen presenterer disse aspektene. Den har også som mål å øke kunnskapen om prosesser, inkludert pasientskader (AE), som påvirker helse eller prognose, både før og etter sykdomsdebut. Hovedmålet med denne avhandlingen er å studere risikofaktorer før sykdomsdebut og AE som kan forlenge sykdom i psykisk helsevern.

I artikkel 1 og 2 studerte vi enkelte helsedeterminater hos personer med schizofreni før de ble definert som syke av helsetjenesten. Hensikten, fra et forebyggende perspektiv, var å identifisere faktorer som skiller disse personene fra ungdom som ikke utvikler schizofreni. Kunnskap om hvilke faktorer som er forskjellig mellom de to gruppene, kan ha betydning for forebygging. Det kan også være av betydning for hele populasjonen, da uhelse (f.eks. røyking, dårlig fysisk form) er viktige å forebygge generelt, samtidig som negative helsefaktorer representerer en ekstra belastning ved en fullt utviklet sykdom. For alvorlige psykiske lidelser er det ofte snakk om livslange forhold der det er viktig å starte helsehjelp tidlig, samtidig som vi også bør se sykdom i lys av hele personens liv. Artikkel 3 og 4 fokuserer på kvalitetssvikt og pasientskader forårsaket av Helsepersonell under behandling, som kan påvirke den enkeltes sykdomsforløp dersom forebyggende intervensjoner ikke initieres.

I artiklene 1, 2 og 4 benyttes en kvantitativ metode for å analysere og besvare hypotesene, mens artikkel 3 er basert på en kvalitativ metode. Artikkel 1 og 2 er en case-kontroll studie som benytter data fra den norske Ung-HUNT1-undersøkelsen med 15 ungdommer i premorbid fase av schizofreni. Artikkel 3 og 4 rapporterer om oversettelse, validering og bruk av et kvalitets- og forskningsverktøy, Global Trigger Tool – Psykiatri (GTT-P), for å oppdage og rapportere markører for pasientskader, risikoområder og pasientskader i psykisk helsevern.

Våre studier viser at personer som senere utviklet schizofreni, sammenlignet med de som ikke gjorde det, var mindre fysisk aktive, mer ensomme, mer utsatt for psykiske helseplager som grubling, bekymring, tristhet og angst og negativ helserisikoatferd, som f.eks. økt tendens til

daglig røyking. Vår tverrkulturelle tilpasning og validering av GTT-P, på tvers av deltakende aktører, viste at verktøyet er nyttig for å oppdage markører (som kunne indikere mulig skade) og pasientskader i pasientpopulasjonen. Vår studie viste at den psykiske skaden; «lidelse» var den vanligste pasientskaden, mens mangel på behandlingsplan var den vanligste markøren.

LIST OF PUBLICATIONS

Okkenhaug, A., Tanem, T., Johansen, A., Romild, U. K., Nordahl, H. M., & Gjervan, B. (2016). Physical activity in adolescents who later developed schizophrenia: a prospective case-control study from the Young-HUNT. *Nordic Journal of Psychiatry*, 70(2), 111-115.

Okkenhaug, A., Tanem, T., Myklebust, T. Å., Gjervan, B., & Johansen, A. (2018). Self-reported premorbid health in 15 individuals who later developed schizophrenia compared with healthy controls: Prospective data from the Young-HUNT1 Survey (The HUNT Study). *Scandinavian Psychologist*, 5.

Okkenhaug, A., Tritter, J. Q., Myklebust, T. Å., Deilkås, E. T., Meirik, K., & Landstad, B. J. (2019). Mitigating risk in Norwegian psychiatric care: Identifying triggers of adverse events through Global Trigger Tool for psychiatric care. *International Journal of Risk & Safety in Medicine*, 30(4), 203-216.

Okkenhaug, A., Tritter, J.Q & Landstad, B.J. Developing a research tool for assuring quality in psychiatric health care by involving service users and health professionals Accepted: *Journal of Psychiatric and Mental Health Nursing*.

1 INTRODUCTION

Schizophrenia is often a question of lifelong conditions where it is essential to start health care early and to consider the disorder in the light of the person's entire life (Fusar-Poli et al., 2021; Torgalsbøen et al., 2018). The aim of this thesis is to study risk factors before the onset of disorders and of AEs that may prolong illness in mental health care. My first publications were about what life had been like for people with schizophrenia, told by themselves, before they were defined as ill in the health care system. This study is considered important because a large number of studies have focused on retrospective information from peers, teachers, and relatives, while few prospective studies have investigated the subjects' own experiences (Seidman & Nordentoft, 2015). The last two publications examined how quality failures and adverse events (AEs) caused by health professionals (HPs) during treatment can be detected, which can affect the person's illness trajectory without corrective interventions (Berzins et al., 2020; Wang et al., 2018). This also includes a safety aspect, as severe mental disorder (SMD) can make people pose a risk to their own and others' lives and health.

2 BACKGROUND

Nature and nurture lay the foundations for a person's lived life; the ill/healthy dichotomy, or the continuum between ill and healthy, will be balanced by risk and protective factors (Antonovsky, 1987, p. 3; Cicchetti & Rogosch, 1996). Quality of life (QOL) and the value of a life are based on many different factors, but the value of a life cannot be defined by anyone else than the one who lives that life. This can be a useful perspective on health care for people with a SMD. In research we often study individual elements of symptoms and treatment. However, it is not obvious that this is really what is important for people we define as belonging to a diagnostic group. In order to challenge this picture, in this thesis I have looked at different aspects of the lives of people with SMD, with the main focus on schizophrenia.

2.1 Mental disorder, severe mental disorder and schizophrenia

Mental disorder (MD) can be defined as disturbances of thought, emotion, behaviour, and ability to have relationships with others that lead to substantial suffering and functional impairment in one or more major life activities (Patel et al., 2018). Each year, 16-22% of the adult population in the Western world have symptoms that satisfy the criteria for a MD (Norwegian Institute of Public Health, 2018, p. 20) and some studies claim that in a life-long perspective up to 80% of the population will satisfy the criteria at least once (Schaefer et al., 2017). The most common problems are anxiety, depression, substance abuse and impulse control disorders (Kessler et al., 2005). The greatest functional impairment is seen in disorders related to injuries or disorders of the brain, or caused by disturbances in the development or functioning of the brain (Wittchen et al., 2011). MDs are generally equally common in men and women, but there are differences in frequency within the sub-groups and in how the disorders manifest. There is also a higher incidence of physical illness among people with MDs (Scott & Happell, 2011), and MD is more frequent in people of low socioeconomic status (Kivimäki et al., 2020).

The concept of severe mental disorder (SMD) lacks a reliable and consensual definition (Gonzales, Kanani, et al., 2022; Zumstein & Riese, 2020). Various epidemiological definitions of SMD like chronical mental illness (Bachrach, 1988), serious mental illness (Gonzales, Kois, et al., 2022), severe and persistent mental illness (Zumstein & Riese, 2020) have been used to obtain prevalence estimates and establish the cross-cultural utility of SMD (Gonzales, Kanani, et al., 2022). Zumstein and Riese (2020) recommend using the old, original National Institute for Mental Health`s (NIMH, 1987) definition of SMD which comprised the three dimensions of diagnosis, disability and duration. The definition is operationalized as follows:

> “Diagnosis: A major mental disorder according to DSM-III-R: a major affective, non-organic psychotic disorder or a disorder that may lead to a chronic disability... Disability: Severe recurrent disability resulting from mental illness. The disability results in functional limitations in major life activities... Duration: Treatment history meets one or both of the following criteria: (1) Has undergone psychiatric treatment more intensive than outpatient care more than once in a lifetime... (2) Has experienced an episode of continuous, supportive residential care, other than hospitalization, for a period long enough to have significantly disrupted the normal living situation” (Zumstein & Riese, 2020, p. 7).

Knowledge of psychosis and schizophrenia is shrouded in myths and factual knowledge is limited in the general population (Insel, 2010). Schizophrenia as a concept is under discussion

(Insel, 2010). Traditionally, there has been a tendency to stigmatize the person affected (Mannsåker, 2020) both in society and among HPs (Hansson et al., 2013; Lauber et al., 2004). The symptoms and suffering covered by this concept are however severe health disabilities that need to be taken seriously. In ICD-11, schizophrenia is a group of MDs that involve impairments in a number of areas, such as thinking, perception, self-experience, cognition, volition (e.g. loss of motivation), affect and behaviour (WHO, 2021b). Schizophrenia is considered the most severe psychotic disorder and affects around 0.9% of the population (Kahn et al., 2015). The disorder is more common in men than in women and the incidence peaks in the early twenties in men. In women, the peak is less sharp and the decline less steep than in men (Jauhar et al., 2022). Schizophrenia is considered a complex disorder, with a high degree of heredity, but caused by a mixture of environmental and genetic factors (Belbasis et al., 2018; Kahn et al., 2015). Migration, complications during pregnancy and birth, childhood in an urban area, early traumatic experiences, history of obstetric complications and the use of drugs (cannabis) are the best documented non-genetic risk factors (Belbasis et al., 2018; Kahn et al., 2015).

The most important and most characteristic symptoms are categorized into positive and negative symptoms. There are, however, significant differences in the symptom picture, course of the disorder and prognosis within the group (Kahn et al., 2015). Positive symptoms contain elements of a distorted perception of reality exemplified by thought disorders, delusions and hallucinations. Negative symptoms such as apathy, avolition, anhedonia and blunted affect often lead to significant loss of function, which reduces QOL and has an impact on social life (Kahn et al., 2015). Relationship failure is often the first visible problem in schizophrenia; this can lead to destructive communication barriers with consequent adverse effects on the person's condition and the course of the disorder (Conneely et al., 2021; Møller & Husby, 2000). The disorder may manifest itself with large individual differences in its course and prognosis (Kahn et al., 2015). Patients with schizophrenia are the main focus in my thesis.

2.2 Protective and risk factors

Research on risk factors has a long tradition in psychopathology (Luthar, 1993). There also has been a growing interest in the study of resilience and protective factors (Steinhausen & Metzke, 2001).

A protective factor can be defined as:

> “ … a characteristic at the biological, psychological, family, or community (including peers and culture) level that is associated with a lower likelihood of problem outcomes or that reduces the negative impact of a risk factor on problem outcomes.” (O'Connell et al., 2009, p. xxvii)

Conversely, a risk factor can be defined as:

> “ … a characteristic at the biological, psychological, family, community, or cultural level that precedes and is associated with a higher likelihood of problem outcomes.” (O'Connell et al., 2009, p. xxviii)

Previous research and work in this field focuses on safety: how factors potentially leading to an undesired event can be removed (such as never travelling by car, an example of “Safety I”). Recent research in the field, on the other hand, has focused on how can we live with an acceptable level of risk by not eliminating everything that is dangerous (such as driving carefully, an example of “Safety II”) (Hollnagel et al., 2015). From the moment we are born we develop through a dynamic interaction between our genes and the environment (Rutter & Sroufe, 2000). This dynamic interaction implies that a range of factors will influence our development, which takes place through causal processes occurring as chain reactions over time. When our development is led by individual cognitive and affective processes that influence and give meaning to our experiences, our individual biological make-up affects how we respond to experiences, but our biology is in turn shaped by these experiences (Rutter & Sroufe, 2000). In a salutogenic perspective, all people, adults and children alike, live on a continuum between health and illness (Antonovsky, 1987, p. 3), where the balance between various combinations of risk and protective factors may determine whether the person later becomes ill or not (Cicchetti & Rogosch, 1996). We live in a context where our innate elements are influenced by other factors such as school, peers, family and society, as well as nutrition, infections, physical activity, health behaviours, mood, etc. All settings contain both risk and protective factors; examples are innate predispositions to mental health disorders, behavioural problems among siblings, participation in leisure activities, close and warm relationships and experiences of success at school (Cicchetti, 2010; Weare & Nind, 2011). Risk factors increase the likelihood of later maladaptation, while protective factors reduce the risk of developing mental (and other) problems (Rutter, 1999). We therefore need to consider the importance of a variety of factors in a health-illness perspective.

2.2.1 A developmental psychopathology model

The dynamic transaction between different risk and protective factors determines the course of a person's development (Vasey & Dadds, 2001, p. 14), with multiple processes rather than single causes leading to psychopathology (Cicchetti, 2006, p. 9). This means that psychopathology, like other pathology, is also probabilistic and not only predetermined (Dadds & Frick, 2019; Vasey & Dadds, 2001, p. 23). The multiple paths to a disorder (Cicchetti, 2006, p. 3) are known as the principle of equifinality (Cicchetti & Rogosch, 1996).

Below is a model developed by Vasey and Dadds (2001, p. 13) to represent the development of psychopathology. It was originally related to anxiety disorders, but is considered to be transferable to illustrate the relationship between risk and protective factors, and their role in development of other areas of psychopathology and their trajectory and outcome.

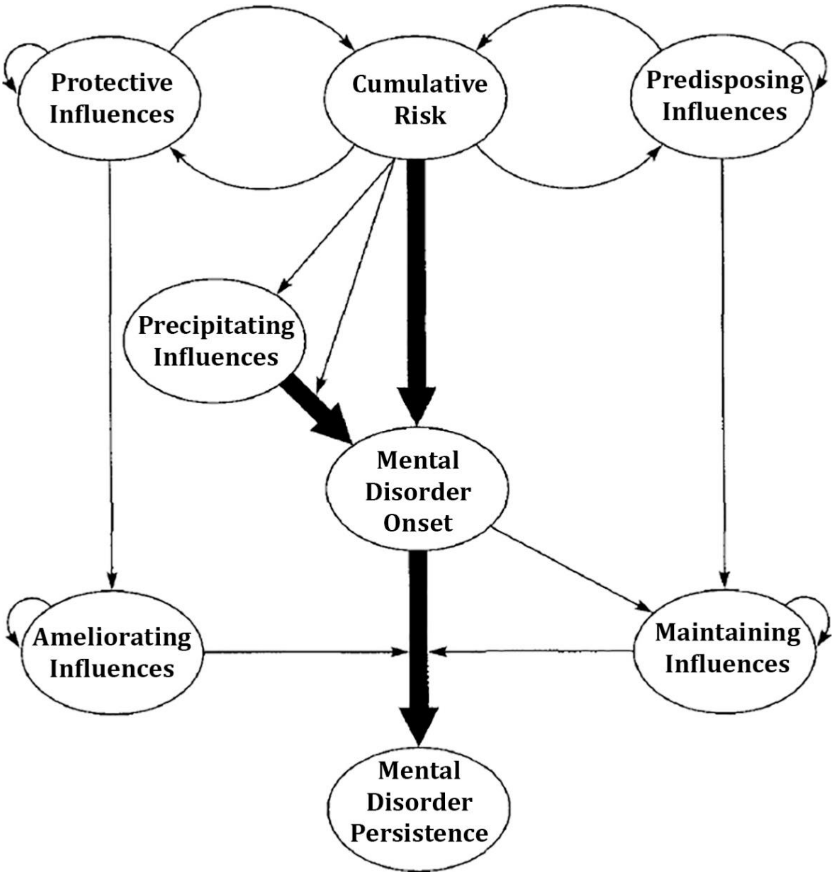

Figure 1: *Model adapted and recreated from Vasey and Dadds (2001, p. 13) by permission of Oxford Publishing Limited.*

Figure 1 shows how a person’s life always contains protective and risk factors for a disorder and how the balance between these provides a cumulative risk. The model also shows how the onset of a disorder is a result of the cumulative risk and precipitating factors. Examples of such precipitating factors can be any mental stress (bullying that is not stopped, racism, childhood abuse, loss of close relations, divorce, dropping out of school/work or being unable to deal with new situations that others expect you to cope with) or physical illness (infections, malnutrition, organ failure, etc.) (Felitti et al., 1998; Robinson & Bergen, 2021; Seidman & Nordentoft, 2015; Sommer et al., 2016).

The model also illustrates that further development into recovery, continued illness or deterioration in the period following the onset of the disorder will depend on similar factors, like the quality of the treatment. The consequence of this is that treatment of MD can affect the balance in favour of protective and ameliorating influences by altering conditions within and outside the patient, who may then recover partially or completely or avoid deterioration.

2.2.2 Risk factors for SMD and schizophrenia

Children who present social, emotional and behavioural problems as well as psychosis-related symptoms in childhood or adolescence have an increased risk of developing schizophrenia spectrum disorders later in life (Cornblatt et al., 2015; Golembo-Smith et al., 2012; Rapado-Castro et al., 2015; Welham et al., 2009). Reduced physical activity and low cardiovascular fitness in the premorbid phases of schizophrenia have been shown in adolescents who later developed psychosis (Nyberg et al., 2018; Sormunen et al., 2017). Studies have identified the developmental antecedents of schizophrenia prior to the prodromal phase, for instance greater exposure and responsiveness to psychosocial stressors such as childhood adversity, impaired performance on measures of general intelligence, specific cognitive functions, brain structure and functional abnormalities, and neuromotor dysfunction (Dickson et al., 2012; Rund, 2018; Varese et al., 2012; Welham et al., 2009). Earlier research has shown that persons diagnosed with schizophrenia more often played alone or socialized in small groups during childhood (Jones et al., 1994; Malmberg et al., 1998). Results from research on emotional problems showed that social anxiety (Johnstone et al., 2005; Jones et al., 1994) and depressive symptoms (Fusar-Poli et al., 2017; Fusar-Poli et al., 2014; Häfner et al., 1998) were generally highly prevalent in early stages of non-affective psychotic disorders (Thompson et al., 2015).

Young people who were considered vulnerable to developing psychosis reported lower subjective QOL than control groups (Bechdolf, Pukrop, et al., 2005; Bechdolf, Ruhrmann, et al., 2005; Svirskis et al., 2007). Studies have indicated that low frequency of meeting friends and low subjective well-being are the strongest adolescent predictors of reduced psychosocial functioning in young adulthood (Derdikman-Eiron et al., 2013). A number of studies have shown that a history of poor childhood social functioning is a sensitive predictor for schizophrenia later in life (Liu et al., 2015; Tarbox & Pogue-Geile, 2008). Loneliness is not only associated with manifest psychotic disorders but is also likely to be already present in subclinical stages (Michalska da Rocha et al., 2018).

A statistical risk factor can, with a certain probability, predict schizophrenia. This means that it is only statistically associated with the presence of schizophrenia and not that the risk factor is the cause of the disorder (Hollnagel & Malterud, 2000). As a causal factor, Keshavan et al. (2011) claim that genetic variation in the disorder causes approximately 80% of the variability seen in the schizophrenia disorder. On the other hand, the current evidence for the causal role of lifestyle factors in the onset and prognosis of MD is unclear (Firth, Solmi, et al., 2020).

2.3 Preventive interventions

However, persons defined as “at risk” of developing schizophrenia will not necessarily develop the disorder (Scott, 2016). Challenges for HPs in the twenty-first century will include the need to encourage the promotion of mental health and prevention of MDs (Bhugra & Carlile, 2013, p. 52). In addition to prevention, the term health promotion is often used, which can be understood as the process that enables people to better preserve their health (WHO, 1987).

2.3.1 Interventions in adolescent mental health

It is possible to promote good mental health in school children. Childhood and adolescence is a vital period for building a foundation for good mental health and preventing future mental health problems (Barry et al., 2013; Jané-Llopis et al., 2011; Nielsen et al., 2020; Weare & Nind, 2011). Research shows that the vast majority of young Norwegians have a good QOL in general, but some suffer from harassment, loneliness and stress symptoms such as worry and the feeling that everything is an “uphill struggle” (Bakken, 2020, p. 2). Problems experienced by children that might be a target for prevention include loneliness, anxiety and negative emotions (Patel et al., 2018) as well as a lack of connectedness (Bechdolf, Pukrop, et al., 2005; Resnick et al., 1997). Adolescents who report a poor QOL have an increased risk of developing MD (Keyes, 2002). Being affected by bullying or racism are examples of risk factors for later SMD (Lazaridou et al., 2022; Mueser et al., 1998). Similarly, well-being in the teenage years predicts better health and less risky behaviour in adulthood (Hoyt et al., 2012). Schools with interventions to promote pupils' social and emotional learning show a positive effect on socio-emotional competence, and on pupils' attitudes towards themselves, others and the school compared to controls (Durlak et al., 2011). Further, happy children and adolescents often have better health and health behaviour, less depression, loneliness and aggression and higher self-esteem and coping expectations, as well as being more prosocial and resistant to stress (Park, 2004). Thus, there are clear indications that in the general population factors in childhood and adolescence affect later health and that certain factors may be protective (Catalano et al., 2004). However, the role and relevance of such factors in SMD are not yet clear.

For high-risk groups of developing SMD like schizophrenia, Seidman and Nordentoft (2015) highlight selective and indicated preventive interventions. These interventions imply support for relationship building, cognitive enhancements such as cognitive training (Hooker et al., 2014; Keshavan et al., 2014; Sahakian et al., 2015; Weiden, 2016) and cognitive behavioural interventions (Laurens & Cullen, 2016), school functioning, substance abuse reduction, participation in sports and other stimulating environmental factors such as measures to promote better health and functioning in mothers in high-risk categories (Brokmeier et al., 2020; Keskinen et al., 2018; Murray et al., 2021; Seidman & Nordentoft, 2015).

Early identification of individuals at risk of developing schizophrenia is crucial for developing effective preventive interventions (Cornblatt et al., 2015; Fusar-Poli et al., 2021; Laurens & Cullen, 2016). Further, as part of a set of protective factors, a number of researchers maintain that psychotherapeutic, psychosocial or coping-oriented interventions should be directed towards children and adolescents who are potentially in premorbid phases of the disorder (Laurens & Cullen, 2016; Liu et al., 2015; Scott, 2016; Seidman & Nordentoft, 2015; Sommer et al., 2016). The degree to which the person, family members, the health and education sectors and society in general have knowledge and understanding of early signs of MD and of risk and protective factors may be a key factor in preventing SMD (Liu et al., 2015; Patel et al., 2016; Seidman & Nordentoft, 2015). Such knowledge can improve prevention, facilitation and treatment (Scott, 2016; Sommer et al., 2016).

In addition to psychosocial factors, there are some biological factors of relevance in SMD. Although not a target for prevention, genetic factors are strong. Similarly, several factors seem to increase the risk of the disorder, and preventing them may protect against or delay the onset. Such factors include foetal inflammation (Meyer et al., 2008) and malnutrition (McGrath et al., 2011) as well as childhood adversity (Alameda et al., 2020; Felitti et al., 1998) such as trauma (Varese et al., 2012; Aas et al., 2016) and substance use (Hunt et al., 2018).

Postponement of the onset of psychoses and prophylactic interventions are of vital importance in preventing and reducing the potentially chronic and devastating consequences of the disorder (Fusar-Poli et al., 2014; Seidman & Nordentoft, 2015). Keskinen (2018) calls for more research on protective factors against the development of psychoses.

2.4 Treatment and care of people with SMD and schizophrenia

A definition of treatment is the action or way of treating a patient or a condition medically or surgically: management and care to prevent, cure, ameliorate, or slow progression of a medical condition (Merriam-Webster, n.d., retrieved 21.02.22). For people who develop MD, services must be available, coordinated, of high quality and effective (Bhugra et al., 2017). For people struggling with mental health problems, not only are psychotherapy and biomedicine in continuous development, but there is a need of constant focus on ethics, dignity and QOL (Axelsson et al., 2020; Husum et al., 2022; Skorpen et al., 2015; Ventura et al., 2021) and the quality of the total service is challenging (Fiorillo et al., 2011; Jørgensen et al., 2020; Ljungberg et al., 2016; Ose et al., 2018; Pelto-Piri et al., 2019; Triliva et al., 2020).

According to the World Health Organization (WHO (2021a, p. 9)), health services for people needing long-term care should change from a patient-oriented perspective to a recovery- and person-centred approach, which implies a shift from a passive to a more active patient role. The term recovery has been used inconsistently across countries and settings (Slade et al., 2012) but can roughly be divided into two different ways of understanding. Clinical recovery is one, which is a result or a condition that is observable, assessed by a professional, and does not vary between persons. A widely used definition of clinical recovery is “to be healthy” and asymptomatic (Slade et al., 2012). The other understanding of recovery is personal recovery, which is a concept that has emerged from the expertise of people who have experienced MD, and is thus different from clinical recovery. The most widely used definition of personal recovery is from Anthony (1993, p. 17):

> "…a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills, and/or roles. It is a way of living a satisfying, hopeful, and contributing life even within the limitations caused by illness. Recovery involves the development of new meaning and purpose in one's life as one grows beyond the catastrophic effects of mental illness."

2.4.1 Schizophrenia – different approaches in treatment

People with schizophrenia have an average life expectancy 20 years below that of the general population (Tiihonen et al., 2009), increased incidence of serious physical disorders (Leucht et al., 2007) and a greater likelihood of unhealthy habits (Cerimele & Katon, 2013; Chwastiak et al., 2011; McCreadie, 2003). All these factors imply a risk of premature death and a lower QOL. People with MD need health care workers with knowledge of evidence-based psychiatry (Insel, 2010; Patel et al., 2016), who show care, empathy and respect (Akther et al., 2019; Carlsson et al., 2006) and focus on protective factors (Patel et al., 2018) such as patient safety (Thibaut et al., 2019).

Treatment must be individually tailored, flexible and diverse (Škodlar & Henriksen, 2019). Antipsychotic medication, family interventions, relapse prevention programmes, integrated interventions, cognitive-behavioural therapy and patient psychoeducation are highlighted among effective forms of treatment (Bighelli et al., 2021). As an example of individualized, flexible care within a broad spectrum of treatment, it is also important to focus on aspects of the person's physical health (Happell et al., 2014). Schizophrenia is associated with harmful health behaviour such as poor dietary habits, smoking, obesity and inactivity (Cerimele & Katon, 2013; Chwastiak et al., 2011; McCreadie, 2003), which cause increased morbidity and mortality in this group of patients (Gronholm et al., 2021; Oakley et al., 2018).

Ways to facilitate health-promoting and protective factors related to physical health include HPs asking about the person's motivation for smoking cessation, discussing lifestyle habits, noticing metabolic changes or encouraging relationship building between e.g. the patient and a fitness trainer. In general, physical activity has a positive effect on mental health and QOL (Biddle & Asare, 2011). The same effect has also been observed in schizophrenia (Rosenbaum et al., 2014). Regular physical activity is considered to be one of the most important factors in maintaining health and preventing disorder, and particularly important in disorders with a risk of increased mortality and general morbidity (Ashdown-Franks et al., 2020; Firth, Solmi, et al., 2020; Firth et al., 2017; Gronholm et al., 2021). Physical activity has a key role to play in a holistic treatment plan (Martinsen & Taube, 2008, p. 567; Ringen et al., 2018) and continuity, trust-building behaviour and a respectful attitude by HPs in relation to physical activity seem to be important factors for a positive outcome (Sagsveen et al., 2019).

2.4.2 Patient experiences and co-determination

To be met with respect is important for the person's feeling of co-determination (Dahlqvist Jönsson et al., 2015) and, in combination with skilled professionals, is highlighted as essential for good health and social care (Steinsbekk et al., 2013). Furthermore, an atmosphere of respect may help to improve mental health services (Axelsson et al., 2020). For example, patients' positive experiences may lead to earlier contact with services if their condition deteriorates and thus to resource use at a lower level of care (Axelsson et al., 2020). In cases where coercion is necessary, the associated negative experiences will be reduced if the patient feels seen, heard and treated with respect (Akther et al., 2019; Lidz et al., 1998). These elements may also be expected to prevent the use of coercion, contribute to better communication and conflict resolution; patient involvement appears to be an important factor in achieving this (Bowers et al., 2015; LeBel et al., 2014).

Since 2007, the Norwegian Patient Safety Act has applied to mental health care, with the aim of reducing risk and increasing patient participation and thus the likelihood of good treatment. Nevertheless, many patients still feel that they are not seen, heard, understood or involved when they need help from health care services for an MD (Mjøsund, 2020; Plahouras et al., 2020). Reports and studies of mental health care have indicated a potential for abuse, disrespect (Boisvert & Faust, 2002; Kohn et al., 2000; The Parliamentary Ombud, 2016, pp. 5-10) and AEs (Alshehri et al., 2017; Mills et al., 2018; Schneibel et al., 2017).

Disorder can be related to an existential crisis such as lack of meaning in life (Battista & Almond, 1973; Lambert et al., 2013) and existential suffering can be represented by hopelessness and helplessness. Hoffmann et al. (2000) have pointed out that people with an SMD such as schizophrenia are prone to experience hopelessness. This often means that active attempts to cope are discontinued, thus maintaining a chronic condition (Hoffmann et al., 2000).

Paternalistic approaches as well as experiences of failure can lead to learned helplessness, again leading to poor outcome (Borg & Davidson, 2008; Fredrickson, 2001; Maier & Seligman, 2016; Seligman, 1992, p. xvii; Seligman & Csikszentmihalyi, 2000). Similarly, belief that one is capable of changing one's life is crucial to bring about successful change (Bandura, 1994, p. 71; Pitt et al., 2007).

Research show that patients would like health care staff to be more attentive and proactive (Mjøsund et al., 2018; Thimm et al., 2020; Velligan et al., 2016). They expect to be taken seriously and to be consulted in accordance with their competencies, resources and knowledge (Delmar et al., 2011). There is evidence that patients with the knowledge, skills and confidence to manage their health have better health outcomes (Greene & Hibbard, 2012).

2.4.3 Treatment collaboration

Recovery orientation is highly valued by patients (National Guideline Alliance (UK), 2020). The patient and the care provider are equals, and both are experts in their respective fields. One is an expert by experience and the other one a professional expert (Roberts & Wolfson, 2004). It is generally acknowledged that most mental health services are organized to meet the goal of clinical recovery (Slade et al., 2014). The term "recovery" is primarily related to rehabilitation, outpatient care and recovery-oriented practice and to a lesser extent to hospital-based mental health services (Lorien et al., 2020), but support for personal recovery is increasing in mental health policy around the world (Slade et al., 2014). Norwegian mental health policy also emphasizes that treatment and follow-up care should be based on patients' own choices and priorities and lead to increased coping and participation in society (Norwegian Directorate of Health, 2013, p. 12). Johannessen et al. (2016, p. 41) state that modern treatment and early help enable remission within one year in up to 85% of cases. Increased optimism in the treatment of schizophrenia can be seen in relation to greater attention to early interventions, patient participation and recovery-based goals for treatment (Bjornestad et al., 2018; Jansen et al., 2015; McGorry, 2015; Zipursky & Agid, 2015).

The coping perspective in recovery can be illustrated with the upward spiral of flourishing from the broaden-and-build theory (Garland et al., 2010). This theory focuses on promoting coping experiences by showing how a broader repertoire of cognitive and behavioural skills is affected by positive emotions. This can lead to better coping with challenges one encounters, which in turn can improve mental health. Furthermore, an upward spiral of flourishing can be a key factor in treatment and care, where patients build or strengthen their ability to protect themselves from the consequences of risk factors. The opposite is the downward spiral of psychopathology which lead to narrowed self-focus and rigid or stereotyped defensive behaviour. The downward spiral can be exemplified by sadness after an experience of loss, where cognitive, physical, behavioural and emotional components influence each other. Sadness may be accompanied by brooding, and the components may interact to activate further sad feelings that may result in more brooding, withdrawal and grief. There is thus the risk of a downward spiral where new experiences are interpreted in the light of loss and lack of control, where a cognitive error eventually produces a persistent negative belief in oneself and the world, potentially leading to MD (Garland et al., 2010).

People who live in a world that they perceive as chaotic and unpredictable may find it difficult to believe that they will do well (Antonovsky, 1987, pp. 1-14), experience flourishing and well-being, and to feel that they are coping with everyday challenges. The concept of resilience is often used together with coping theories and as a term for the person's ability to adapt during or after AEs, also described as personality flexibility or elasticity (Luthar & Cicchetti, 2000). Resilience is a dynamic process by which persons utilize protective factors and resources to their benefit (Stainton et al., 2019). In an interpretation by Antonovsky (Bodryzlova & Moullec, 2023), salutogenesis is emphasized as "accumulation of reserves of health". Salutogenesis cannot be placed in a model where the traditional medical, diorder-oriented perspective is the other element of the dichotomy (Antonovsky, 1987, p. 3). Instead of using a perspective where the dichotomy is healthy versus ill, he finds it more appropriate to think of a continuum between health and illness and that salutogenesis is a matter of determining where on the continuum each person is at any particular time (Antonovsky, 1987, p. 4). Resilience may explain differences in illness trajectories and outcomes (Wambua et al., 2020), but the adversity of living with schizophrenia can be so intense that resilience can be overwhelmed (Torgalsbøen et al., 2018; Wambua et al., 2020). Previous follow-up studies related to full recovery in schizophrenia suggest that resilience may play a significant role in sustained full recovery (Harrow & Jobe, 2007; Torgalsbøen & Rund, 2010; Torgalsbøen, 2012), but resilience is a relatively under-explored and poorly understood construct in schizophrenia research (Mizuno et al., 2016; Wambua et al., 2020).

Research has established that relationships are pivotal to the effect of therapy (Baldwin et al., 2007; Flückiger et al., 2018; Laska et al., 2014; Wampold & Imel, 2015, p. 158). Similarly, a poor alliance and relationship are key risk factors for unsuccessful treatment and dropout from treatment (Flückiger et al., 2018; Grubaugh et al., 2007; Laska et al., 2014; Leitner et al., 2013; Tschuschke et al., 2020). A good relationship is essential to respect patient integrity, dignity and autonomy (Axelsson et al., 2020; Horgan et al., 2021; Lindvig et al., 2020; Sagsveen et al., 2019). Other factors in the person's premorbid phase that may affect treatment collaboration are low life satisfaction (Layard et al., 2013), low self-esteem and a feeling of having little worth (Radcliffe et al., 2018). Even fear of being diagnosed (with a stigmatized disorder) may prevent people from seeking treatment (Corrigan, 2007). HPs' focus on disorder and the abnormal rather than having a holistic view of the patient may be a contributing factor (Karlsson, 2015).

Lack of focus on these factors may prevent patients from seeking and accepting relevant treatment. For the individual patient, HPs who show commitment and care are often more important than evidence-based methods (Bacha et al., 2020; Davies et al., 2014; Laugharne et al., 2012; Ness et al., 2014; Topor & Denhov, 2015).

Some studies show good implementation of shared decision making (SDM), where both HPs and patients reported positive SDM experiences in decisional situations (Drivenes et al., 2020; Hamann et al., 2020), while other studies indicate the opposite. One example of this is HPs in inpatient mental health care being focused on disorders and symptoms (Jørgensen et al., 2018). We also see a lack of prioritization of the involvement of patients in treatment and rehabilitation (Jørgensen et al., 2018; Ramon et al., 2017), and inadequate procedures in child and adolescent psychiatry to ensure patient participation (Norwegian Board of Health Supervision, 2015, p. 5). Patients in outpatient treatment highlight a lack of sufficient information to enable them to contribute to treatment decisions (Thimm et al., 2020) and they did not feel involved and lacked coordination in their recovery process when being transferred from specialist to primary care (Jørgensen et al., 2020). In one study, patients with diagnoses involving psychotic symptoms reported lower SDM scores than all the other patients (Drivenes et al., 2020) and there is a common understanding that SDM is underutilized with people with SMD (Dahlqvist Jönsson et al., 2015; Zisman-Ilani et al., 2021). The barriers are complex and include patients' lack of decisional capacity (Beitinger et al., 2014), underestimation of their own capacity for decision making/autonomy (Hamann et al., 2017) or characteristics/attitudes of HPs such as authoritative styles (Hamann et al., 2010) and lack of good relationships (Kogstad et al., 2011). Some therapists are perceived to reflect too little on the difference in power in the relationship (Grim et al., 2019), while Blindheim (2020, p. 13) argues in a report that there is a lack of discussion of alternative treatment to coercion and medication. This statement is supported by scientific research (Hamann et al., 2010; Haugom et al., 2020).

HPs must be able to relate to the familiar and general, but also the unique aspects of every person encounter with a patient. This requires competence that integrates knowledge, skills, attitudes and values (Hook & Vera, 2020; McInnis-Perry et al., 2014, p. 3; UEMS, 2006; Vyskocilová & Prasko, 2013). Respect for patients is a universal characteristic of all health care professions. Rules and regulations as well as tradition and culture for treatment of patients with MD still differ across countries (Zhang et al., 2015) (Eren, 2014; Ventura et al., 2021). In mental health services, the use of coercion is one factor challenging ethical principles (Fiorillo et al., 2011).

Research shows that coercion and restraint are sometimes used unnecessarily due to lack of time, resources, flexibility and crisis plans (Wormdahl et al., 2020). Coercion can represent a serious intervention in a person's life. Reduced autonomy may be a risk factor for lower perceived self-worth, and thus for remaining in a patient role without the opportunity to use one's own resources, which in turn increases the risk of experiencing shame and violation (Akther et al., 2019; Husum et al., 2022; Stensrud et al., 2016).

Despite efforts to achieve alternative solutions and autonomy, coercion is a form of paternalistic action that can be difficult to avoid (Karlsson & Nilholm, 2006). In bringing up children, it may be said that the fatherly principle (paternalism) is used when parents act in the best interests of their child (Beauchamp, 2009). The situation is, however, different regarding a patient who is an equal adult and here the use of paternalism is controversial (Lynøe et al., 2021), also since HPs, with their own values and position of power, make assessments of people's capability for autonomy (Lynøe et al., 2018; O'Brien & Golding, 2003). In recent years, there have been initiatives to promote an equal position between HPs and patients (Lepping et al., 2016). Still, sometimes it is assumed that the patient needs "paternalistic acts" (e.g. when unable to make a reasoned decision due to a severe mental health condition). This may be termed "true paternalism", although it is still debatable (Beauchamp, 2009). True paternalism also involves strengthening relationships where professionals and patients consider each other as equals and respect each other's integrity, autonomy, rights and dignity (Beauchamp, 2009; Breeze, 1998;

Lepping et al., 2016), thus building powerful therapeutic alliances and relationships. By contrast, false or disguised paternalism can weaken these (Lynøe et al., 2021).

2.5 Patient participation in development of services and mental health research

Especially from the 1980s onwards, the concept of patient participation has expanded and gained a dominant position as a policy objective internationally (Barnes & Cotterell, 2012, p. xv) and from the 1990s in Norway (Askheim, 2017).

Seen from the perspective of patient participation, the Escalation Plan for Mental Health Care (Meld. St. 25 (1996-97), 1997) involved a shift in both approach and terminology (Ekeland, 2021, p. 153). Patient participation became a statutory right (Patient Rights Act, 1999, § 4-1) and Ekeland (2021, p. 153) argues that health care was now organized with a greater focus on efficiency, results and requirements for documentation, monitoring and control. Patient now have the right to participation, and health care services are obliged to involve them in research and in treatment and care options (Storm & Edwards, 2013), like developing research tools to evaluate the services (Barber et al., 2011). The benefits of patient involvement in research are typically framed as ensuring greater relevance of research questions, improving response rates and increasing the impact of dissemination (National Institute of Health Research, 2014). Inclusion of patients in research, such as in development of research tools, can also reduce AEs in order to promote quality-assured healthcare services (Berzins et al., 2020; von Peter et al., 2022). In psychiatry, involving patients also has a significant ethical dimention given the particular history of abuse, the ways diagnoses can be utilized as tools for oppression, and the prevalence of coercion (Friesen et al., 2021).

Mental health care has a long history of using the paternalistic decision model (Park et al., 2016). Departing from this view can be difficult and one reason can be a belief that one particular theoretical orientation works best for most patients (Park et al., 2016). Furthermore, clinicians may rely on the paternalistic model because they are frequently overconfident in their own judgement and decision-making abilities (Ridley et al., 2017). Participation and involvement are in line with recovery thinking, where everyday challenges can be met through processes of flourishing that involve greater perceived coping and stress management (Anthony, 1993). Most adults with SMD wanted to be involved in decision making (Park et al., 2014; Velligan et al., 2016) and they are able to participate (Aoki et al., 2019; Kaminskiy et al., 2017; LeBlanc et al., 2015). Patient participation has intrinsic value and therapeutic value; it is a means of improving and quality assuring health care (Norcross & Wampold, 2018; Spencer et al., 2019). It also implies that health care services use the lived experience of the person to provide high-quality care, without minimizing the professional responsibility of the therapist (Landstad et al., 2020, p. 1). The WHO emphasizes the role that patients and their families can play in improving health care, especially in decision-making processes and in the treatment of chronic disorders (WHO, 2013, p. 6).

Patient participation implies that patients are involved with providers in making health care decisions that take patient preferences into account and that are informed by the best available evidence about treatment and disorder management options, potential benefits and harms (Gulbrandsen et al., 2016; Stiggelbout et al., 2012; Zisman-Ilani et al., 2021). Patient participation for adults with SMD is a communication process, involving user-friendly visualization techniques and broader stakeholders. The process may overcome the traditional power imbalance and encourage changes in both patients and professionals that could enhance the dyadic relationship (Aoki, 2020). However, many professionals seem to find it difficult to apply its principles (Elwyn et al., 2013; Kaminskiy et al., 2017; Scholl et al., 2018). Patient participation has received greater emphasis in recent years (WHO, 2013, p. 1), including in relation to reducing health care-related safety risks (WHO, 2013, p. 5). An examination of the Norwegian clinical pathway for MD reveals inadequate patient participation and satisfaction and continuity of care (Norwegian Directorate of Health, 2019; Åndanes et al., 2021; 2020), despite an international focus on professionally sound care, quality improvement and patient safety (WHO, 2020, p. 2).

2.6 Patient safety

MD involves risk, not only because the disorders are serious in themselves, but also because errors can occur in assessment, treatment and follow-up care (Berzins et al., 2020). A focus on patient safety can improve care and prevent harm (Harrison et al., 2015; WHO, 2020, p. v). People with mental health challenges are in a vulnerable situation both within and outside health care services (Berzins et al., 2020; Dahlqvist Jönsson et al., 2015; McKay & Jensen-Doss, 2021). This vulnerability may increase the risk of harm to patients, such as those with psychosis, who more often experience violence on admission (True et al., 2017), and may exacerbate the negative consequences of the harm. Feeling lost and alone in the health care system and not being listened to may be obstacles to recovery and increase the risk of harm (Berzins et al., 2020; Hansen et al., 2020). Harm prevention, early intervention, greater self-efficacy, encouragement of salutogenic processes and effective professional treatment and care for people who have, or may develop, an MD are all factors that promote health and reduce illness (Hansen et al., 2020; Mjøsund, 2020; WHO, 2020, p. 1).

Iatrogenic harm occurs and there are clear indications that the harm may worsen or prolong a patient's suffering (Berzins et al., 2020; Wang et al., 2018). It has also been shown that a focus on patient safety and changes in care- and organization-related variables are key to efforts to reduce the incidence of iatrogenic harm (Berzins et al., 2020; Duxbury et al., 2019; Urheim et al., 2020). However, there is less knowledge of the relevance, frequency and degree of the individual elements (triggers) during a treatment trajectory and their importance in reducing the incidence of iatrogenic harm.

Patient safety has been defined as

> "the prevention of errors and adverse effects to patients associated with health care" (WHO, 2021c)

and can be explained as

> "A framework of organized activities that creates cultures, processes and procedures, behaviours, technologies, and environments in health care that consistently and sustainably: lower risks, reduce the occurrence of avoidable harm, make error less likely and reduce its impact when it does occur." (WHO, 2020, p. xiii)

In Norway, "patient safety" has been defined as protection against unnecessary harm as a result of the treatment and care provided, or not provided, by the health care system (Norwegian Directorate of Health, 2019, p. 31). This also applies to users of mental health services (Norwegian Directorate of Health, 2019, p. 3).

Most of the experience of patient safety incident reporting and learning systems has been in physical health care settings (WHO, 2020, p. 3). In the Norwegian document "National Action Plan for Patient Safety and Quality Improvement 2019-2023", and the WHO report "Patient Safety Incident Reporting and Learning Systems, 2020", the term mental health care is virtually absent (Norwegian Directorate of Health, 2019; WHO, 2020). In Norway, the Regulations on Leadership and Quality Improvement in Health Care Services, which took effect on 1 January

2017, require health care providers to plan, implement, evaluate and correct their activities to ensure professionally sound health care, quality improvement and patient safety (Regulations on management and quality improvement in the health and care service, 2017). Good quality health care means services that are effective, secure and safe, involving patients and giving them influence over their care (Norwegian Directorate of Health, 2019, p. 11).

2.6.1 Adverse events

The Norwegian Directorate of Health defines patient harm as an accidental harmful event that has occurred as a result of treatment or services or that the health care service has contributed to, which requires additional monitoring, treatment or hospitalization or has a fatal outcome (Norwegian Directorate of Health, 2019, p. 31). In the research literature, various terms such as patient safety issues or incidents, patient harm and AEs are used (Deilkas et al., 2017; Harrison et al., 2015). In this thesis, we describe patient harm as an AE, in accordance with common practice in the field (Saunes et al., 2010, p. 10).

We define an AE as an accidental or unintended incident that occurs in health care or services, which requires further monitoring, treatment or hospitalization, or leads to a fatal outcome that is not a consequence of the patient's disorder (Nilsson et al., 2020; Okkenhaug et al., 2019). In mental health care, AEs include both physical and mental harm. An AE will usually be an accidental incident that has occurred during treatment, or may be due to a lack of treatment. The risk of AE may result from side effects of medication (Jayaram, 2008; WHO, 2020, p. 3), misdiagnosis (Read et al., 2018), poor continuity of care (Davies et al., 2014; Jørgensen et al., 2020; Wormdahl et al., 2020), in addition to less visible harm of a psychological nature (Eldal et al., 2019; Husum et al., 2019; Pelto-Piri et al., 2019). Neuroleptic malignant syndrome, circulation and heart failure and suicide are examples of possible fatal outcomes. Unnecessary deprivation of liberty, sexual harassment, and violence during admission to hospital are examples of AEs that patients may be subjected to in mental health care (Berzins et al., 2020; Jayaram, 2008; Nilsson et al., 2020).

We do not currently have a satisfactory overall picture of the total extent of AEs, and one challenge is that many AEs are not detected. AEs that can be clearly attributed to failure, e.g. lack of or delays in assessment, activity or treatment, should be considered as avoidable (Nilsson et al., 2020; Okkenhaug et al., 2019). Studies have found that reporting systems in hospitals detect 7-15% of AEs (Blais et al., 2008). In addition, information about AEs in primary health care is more limited (Deilkås et al., 2019). Recently, a large Norwegian study revealed that more than 60% of nursing staff in nursing homes had psychologically abused older patients on one or more occasions during the past year (Botngård et al., 2020). In specialist physical health care, AEs have been identified annually since 2010 using the Global Trigger Tool (GTT) method (Norwegian Directorate of Health, 2017). A report from the GTT surveys in Norway shows at least one AE in 13% of non-psychiatric hospital stays (Deilkas et al., 2017).

Just as in physical health care, people admitted to mental health care are at risk of experiencing malpractice that results in AE (Mills et al., 2018). For patients with SMD, AEs were positively associated with physical harm and 30-day mortality in non-psychiatric hospitalizations (Daumit et al., 2016), which indicates a need for additional monitoring and coordination of care for this patient group in the entire health service (Berzins et al., 2020; Teachman et al., 2021). In mental health care the use of a review team has been suggested as a method for detecting and reporting medication errors (Grasso et al., 2003). Patient safety, including AEs in the form of potentially harmful therapies, has also been neglected in mental health research (Lilienfeld, 2007; Parry et al., 2016), and safety issues appear broader than those recorded and reported by health services and inspectorates (Berzins et al., 2020). The Norwegian Ministry of Health and Care Services states that patient surveys indicate that stigma and prejudice may prevent patients in mental health care from receiving care at the same level as other groups of patients (2017, p. 24).

A poor therapeutic alliance is a risk factor for dropping out of treatment (Saxon et al., 2017). In one study, every fifth patient reported having a poor therapeutic relationship (Leitner et al., 2013) and one of six felt violated by statements by their therapist (Strauss et al., 2021). Further, psychotherapy is not without side effects (Dimidjian & Hollon, 2010; Halfond et al., 2021; Williams et al., 2021), which can increase patient suffering and harm (McKay & Jensen-Doss, 2021; Strupp et al., 1977, pp. 118-119). Research has estimated that 5-10% of all patients get worse from psychotherapy (Boisvert & Faust, 2002; Lambert & Ogles, 2004, p. 160), while errors and malpractice were covered up by clinicians (Bergin, 1971, p. 250). Hatfield revealed that patients' self-reported worsening of symptoms and functioning were documented by the therapist in the patient record in 20-30% of cases (2010). The "Rosenhan study" shows how HPs can be caught up in their pathological way of thinking, patients can be trapped in a diagnosis and HPs can interpret normal behaviour as pathological (Rosenhan, 1973).

The most frequent mental health AEs reported to the Norwegian System of Patient Injury Compensation were self-harm, suicide, physical and mental harm, diagnostic and treatment errors and incorrect medication (Renolen, 2020, p. ii).

HPs have a responsibility to treat, and try to prevent, patient harm caused by other HPs. This may consist of visible physical injuries resulting from falls or restraint, medication-related harm, or fatal injuries such as suicide. The harm may also be less obvious, such as deterioration of the person's illness due to a poor therapeutic relationship, stigma or discontinuation of treatment that prolongs the illness (Beckham, 1992; Wang et al., 2018). Flor and Kennair (2019, p. 180) state that discontinuation of treatment or patient withdrawal from treatment may conceal severe exacerbation of the disorder. In patients discharged from mental health care, researchers also found examples of less visible mental harm, such as threats of violence, harassment or sexual abuse, which had not been reported (Nilsson et al., 2020; Okkenhaug et al., 2019). Consequently, this harm was not assessed (e.g. in relation to retraumatization), treated or prevented on later occasions. Knutzen et al. (2014, p. 5; 2013) have shown that four times as many women as men have experienced more than 20 episodes of mechanical restraint. Most of these women were not diagnosed with SMD, but with a personality disorder. The use of restraint is not an injury in itself, but it involves a risk of injury (SKL, 2018a). Taking this potential harm seriously may be a key factor in preventing long-term intrapsychic consequences and in influencing help-seeking behaviour.

2.7 Research topics and aims of this thesis

There is a balance between risk and protective factors in our lives. We can reduce risk (prevention/treatment) and increase protection/coping. HPs' knowledge of risk and protective factors, of what professional treatment entails and of how they can encourage salutogenic processes in all phases of life can help promote health and reduce illness in the individual patient. This thesis aims to highlight these aspects for the benefit of HPs and patients.

The main aim of this thesis is to study various factors of relevance for the prognosis of severe mental disorder (SMD). This implies risk factors before the onset of the disorder as well as adverse events (AE) after the onset, which can prolong functional impairment.

This has led to two studies and four papers.

Study 1, Paper 1:

The aim of Paper 1 was to investigate the prevalence and pattern of physical activity in participants who later developed schizophrenia, compared with healthy controls (HCs) and individuals with later bipolar disorder (BD).

Study 1, Paper 2:

In Paper 2, we expanded the survey from Study 1. Paper 2 compared participants who later developed schizophrenia (cases) with HCs on several measures of self-reported health and functioning. We hypothesized that the case group would report poorer self-perceived mental and psychosocial health than the HCs.

Study 2, Paper 3:

Paper 3, reports on the adaptation of the Global Trigger Tool – Psychiatry (GTT-P) (SKL, 2015) to Norwegian settings. The aim was to apply an innovative approach to cross-cultural adaptation. The Swedish handbook was translated to Norwegian, based on a cross-cultural adaptation of research instruments. Service users and HP contributed in the adaptation prosesses.

Study 2, Paper 4:

The aim of Paper 4 was to pilot the modified version of the GTT-P adapted for Norwegian hospital-based psychiatric treatment, and to report the findings of triggers associated with AEs.

3 METHODS

3.1 Methodological approach

Papers 1, 2 and 4 use a quantitative approach to analyse and answer the research question, while Paper 3 is based on a qualitative approach. A quantitative approach provides data in the form of measurable units, where the researcher strives to neutralize the subjective view in data processing and analysis. In a qualitative method, the aim is to capture opinions and experiences that cannot be measured or quantified, but instead to take part in the lifeworlds of others, using their language and later interpreting the information that emerges (Dalland, 2017, p. 53; Olsson & Sörensen, 2003, p. 17).

Study 1 (Papers 1 & 2) is a case-control study (Ludvigsson, 2002, p. 202) which obtained data from the Young-Hunt1 survey (see 3.2.1) and patient records. The two papers shed light on various aspects of premorbid functioning in participants who later developed schizophrenia. The data were obtained before the onset of the disorder. In this way, the data were not affected by the informants' memory and retrospective assessments. This can be especially important in the case of illness associated with impaired insight into the disorder (Karow & Pajonk, 2006) and various forms of cognitive impairment (Heinrichs & Zakzanis, 1998), which are not uncommon in schizophrenia (Jauhar et al., 2022).

Study 2 (Papers 3 & 4) deals with quality and safety in mental health care in order to detect and prevent AEs. Paper 3 uses a Swedish handbook for quality work in psychiatry as the basic material for translation and adaptation to the Norwegian context. For translation, quality assurance and development of the Norwegian GTT-P, focus groups and a dialogue conference were used as methods. Focus groups are planned discussions by a selected group of participants led by a topic guide designed to obtain perceptions, experiences and understandings of particular issues and are particularly well suited to sensitive topics (Kitzinger, 1995; Krueger & Casey, 2015, p. 2). The discussion in a focus group, led by a facilitator or co-facilitators, is not intended to produce consensus but rather to enable participants to share their experience and construction of reality, and understand how they relate to the views of other participants (Patton, 2014, p. 475). The dialogue conference was conducted based on guiding principles of a democratic dialogue in terms of creating symmetry between the participants according to their contributions and organizing the conversation (Ekman Philips & Huzzard, 2007). Paper 4 is a cross-sectional study based on register data (Gliklich et al., 2014). The study collected data from patient records and compiled these using structured checklists developed in the Norwegian version of GTT-P.

3.2 Samples and procedure

3.2.1 Samples: Paper 1 and 2

Study 1 is based on data from the Young-HUNT1 survey. The survey was conducted in Nord-Trøndelag County from 1995 to 1997 (Holmen et al., 2014). The Young-HUNT1 survey is the adolescent part of the HUNT Study (age range 13-19 years). The cohort consisted of 8,984 people, about 90% of the youth population in Nord-Trøndelag. The data collection was performed in schools by trained nurses, and the methods included self-report questionnaires, structured interviews and clinical measurements. The questionnaires covered major public health issues, including physical and mental health, quality of life and health behaviour. Further description of the Young-HUNT data can be read elsewhere (see Holmen, 2000).

Paper 1:
The sample consisted of 153 participants. All were participants in Young-HUNT1. These were divided into three subgroups: a group of people who were later diagnosed with schizophrenia (N = 15), one group with the diagnosis BD (N = 18) and a group who had no known diagnosis (HC) (N = 120).

The case group consisted of 15 adolescents, eleven boys and four girls. Mean age at data collection was 16 years, ranging from 13 years and ten months to 18 years and eight months. All cases were later diagnosed with schizophrenia, nine with paranoid type, four hebephrenic, one catatonic and one with an undifferentiated type. One informant was diagnosed about four to six months after participating in Young-HUNT1.

The contrast group consisted of 18 adolescents who were later diagnosed with BD: Ten boys and eight girls with a mean age of 15 years and nine months at data collection with an age span from 13 years and four months to 18 years and five months. Four were diagnosed with bipolar disorder type I and 14 with type II. All were in the euthymic phase and none were in psychiatric treatment at baseline (date of data collection). Two individuals were diagnosed with the disorder in the twelve months following Young-HUNT1.

A control group (HC) of healthy adolescents was matched on age and gender with a ratio of 1:8 to the case group. The HCs thus consisted of 120 adolescents with the same gender and age distribution as the cases at baseline. The HC group was intended to represent as good health as possible at baseline. Individuals that were "moderately" or "severely" disabled because of e.g. visual or hearing impairment, physical illness or mental distress were therefore excluded from the eligible sample, including those with physical illnesses lasting more than three months.

Paper 2:

The study dataset consisted of responses to the self-reported Young-HUNT1 questionnaires from a case group of 15 adolescents (Table 1), of whom twelve were boys and three girls. The majority of the cases in Papers 1 and 2 are identical. The discrepancy is due to the fact that one person was diagnosed between Papers 1 and 2 and was therefore included. During the same period, one person withdrew consent. In Paper 2, the HC group was matched with a ratio of 1:4 to the case group, compared to 1:8 in Paper 1. Mean age at the time of Young-HUNT1 data collection was 16 years and one month, ranging from 13 years and eleven months to 18 years and eight months. The time of first reported prodromal symptoms for the cases varied from six months to eight years after Young-HUNT1. Later, four subgroups of schizophrenia were identified among the case group subjects.

Table 1. Characteristics of study sample in Paper 2

Categories	*N*
Case group	
Gender	15
Female	3 (20%)
Male	12 (80%)
Age at inclusion in HUNT Study (mean/sd)	16/1.54
Schizophrenia diagnosis:	
Paranoid type	9 (60%)
Hebephrenic type	4 (26.7%)
Catatonic type	1 (6.7%)
Undifferentiated type	1 (6.7%)
Healthy controls	
Gender	45
Female	9 (20%)
Male	36 (80%)
Age at inclusion in HUNT Study (mean/sd)	16/1.54

3.2.2 Procedure: Papers 1 and 2

The study was approved by the Central Norway Regional Committee for Medical and Health Research Ethics (4.2007.1949)

Based on a list of people recorded with a diagnosis of schizophrenia (F 20.0-F 20.9) in the patient administration system (PAS) in the Department of Psychiatry of Nord-Trøndelag Hospital Trust (HNT), people born in Nord-Trøndelag between 1977 and 1983 were identified and thus qualified for participation in Young-HUNT1. Two study members examined the patient records of the PAS cohort based on the following inclusion criteria (see Figure 2):

1. Residence in Nord-Trøndelag during the Young-HUNT1 survey period
2. Plausible schizophrenia diagnosis (F 20.0-F 20.9) or BD (F 31) based on patient records
3. The absence of prodromal and manifest psychotic symptoms (F 20.0-F 20.9) or in the euthymic phase and not in psychiatric treatment at baseline (F 31) during Young-HUNT1 data collection

Prodromal symptoms (F 20.0-F 20.9) were considered present in cases where marked changes in behaviour or thought patterns were reported at the time of participation in Young-HUNT1. The included cases and cases of BD were then invited, and gave their consent, to participate in the study.

Two external experienced psychiatrists validated the diagnoses in the included cohorts and estimated onset of the disorder based on the participants' patient records. Inclusion was dependent upon fulfilment of the diagnostic criteria of the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) (WHO, 2016). Each case was grouped in one of the following categories: (a) certain diagnosis, (b) probable diagnosis, and (c) uncertain diagnosis. If there was at least one rating of "uncertain diagnosis", the respondent's data were excluded. The project members confirmed the respondents' participation in the Young-HUNT1 survey based on the HUNT database.

The informed consent procedure was undertaken by project members in collaboration with the individual's therapist, primarily in the Department of Psychiatry or at home. When necessary, required information was obtained from patient records held at clinics for children and adolescents and from former therapists.

Individuals who fulfilled the inclusion criteria and gave their consent to participate in the study were included in the study (Figure 2).

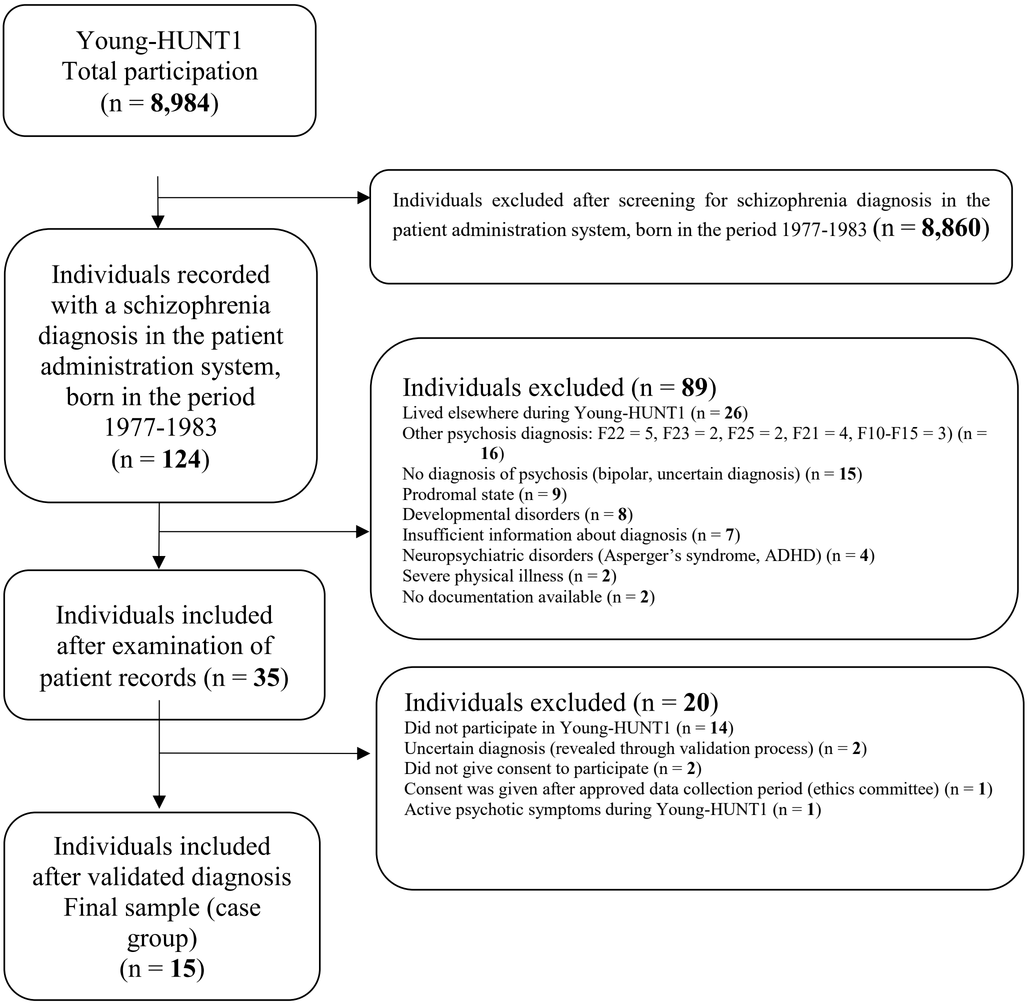

Figure 2. Procedure for inclusion of study participants in Paper 2.

3.2.3 Samples: Paper 3

Participants in this qualitative paper were clinical staff and service users recruited and involved in the adaptation of a patient safety tool, GTT-P, from the Swedish to the Norwegian context (see 3.2.4 for recruitment strategy).

Focus group 1 (six participants) and 2 (seven participants) consisted of HPs recruited from the three locations of the Department of Psychiatry at HNT. Participants in focus group 1 were psychiatrists, psychiatric nurses and psychologists, while focus group 2 consisted of psychiatrists and psychiatric nurses (see Table 2). Focus group 3 consisted of four service users recruited by the HNT Service User Involvement Committee via Mental Health Norway (the largest Norwegian mental health user group) and KBT (the Norwegian Competence Center for Lived Experience and Service Development). The service users had experience of psychiatric care delivered by the hospital (see Table 2).

Ten people attended the dialogue conference: three service users and seven HPs (two psychiatrists, one psychologist, and four psychiatric nurses). All participants received an invitation to the conference, and three out of four service users from the focus group interview attended (see Table 2).

Table 2 Research Participants

	Service user	Health professional	Male	Female	Age range	Experience of psychiatric care
Focus Group 1	0	6	2	4	31-62	2-32 years Median = 10
Focus Group 2	0	7	0	7	34-56	1-21 years Median = 9
Focus Group 3	4	0	3	1	29-69	2-45 years Median = 18
Dialogue Conference	3	7	3	7	29-58	

3.2.4 Procedure: Paper 3

The “translation” process was based on a series of steps including language translation (from Swedish to Norwegian (step 1) followed by work in focus groups (step 2) with different categories of clinical staff and service users and finalized with a dialogue conference (step 3) according to principles described in Ekman Philips and Huzzard (2007).

The study is based on a Swedish questionnaire (Nilsson et al., 2020) that was translated from the source language Swedish into the target language Norwegian (forward translation) according to the cross-cultural adaptation of research instruments as described in Gjersing et al. (2010) and Breugelmans (2009). This was followed by a quality control step in which the target language version was translated back into the source language (back translation) (Breugelmans, 2009). The Norwegian project team then met with the Swedish developers of the GTT-P to clarify contested areas and validate the Norwegian team's understanding of the tool and its components.

Step 2 in the translation process involved the focus groups. Clinicians (focus group 1) were recruited from three hospital locations (Levanger, Stjørdal and Namsos). The leader of each location selected the members of the clinical group (focus group 1) using the following criteria: both genders, and different clinical roles, ages and lengths of time spent working in HNT. The Head of the Department of Psychiatry in HNT selected the clinicians for focus group 2. This group was also the investigation team (see 3.2.6 for further information). The leaders of the HNT Service User Involvement Committee, Mental Health Norway and KBT Midt-Norge recruited service users (focus group 3). Seven service users with experience of psychiatric care were selected but only four attended the focus group due to illness on the day of the meeting.

The purpose of the focus group interviews was to identify and define AEs in psychiatric care from the perspective of both HPs and people who had experience of psychiatric treatment (service users). To achieve the aim, a topic guide was developed (for further description see 3.3.2). The focus groups were held in Norwegian, and were co-facilitated by a senior hospital trust manager and researcher, and a specialist psychiatric nurse.

The final step, the dialogue conference, enabled all the participants from the focus groups to come together to review the content of the tool developed from the previous steps of the adaptation process. Service users were involved throughout the study. Audio recordings were used in the focus groups and the dialogue conference.

The dialogue conference was convened to review and finalize the Norwegian tool (GTT-P). The dialogue conference began with a discussion of how to define AEs in psychiatric care and distinguish between avoidable and unavoidable events. Then followed a discussion of the key issues raised in the focus groups, and a review of the original Swedish tool to highlight differences related to the Norwegian context. Specifically, participants were asked to consider the similarities and differences in the translation and meaning, to note the triggers identified in the Swedish tool but excluded from the Norwegian version and whether any additional triggers were needed. These results were used to modify the translation of the GTT-P.

3.2.5 Sample: Paper 4

In total, 240 patient records were examined, using the Norwegian version of GTT-P (Okkenhaug et al., 2017), from in- and out-patient units in the Department of Psychiatry of HNT. The patient records represented 12% of all patients treated during the period of investigation (see 3.2.6 and 3.3.3 for further information).

The distribution of patient diagnoses in the study sample was consistent with the pattern at national level (Indergård & Urfjell, 2018; Norwegian Directorate of Health, 2016; Ose et al., 2014). However, there were fewer patients with diagnoses coded as F20-, F30-, F40-, but more with the F60 spectrum compared with the National Patient Registry data (Norwegian Directorate of Health, 2016).

3.2.6 Procedure: Paper 4

The study was assessed by the Regional Ethics Committee, which concluded that it did not require formal ethical approval (2017/1779 REK Midt). The study was therefore assessed by the data protection officer of HNT, who approved it (2017/39-2369/2017).

After approval by the data protection officer, the diagnoses and the demographic data of education level and civil status were collected following the regular data collection.

Three investigation teams (one for each unit) were created to review journals with GTT-P. These teams consisted of HPs with previous experience of quality and safety work. Prior to the analysis, all members of the investigation team took a one-day training course under the direction of the authors of the Swedish GTT-P handbook (SKL, 2015). Drawing on the Swedish experience, this was followed by a calibration exercise where the team members reviewed the same five records according to the Swedish standard (SKL, 2013). The teams then performed the same exercise using the translated Norwegian version of GTT-P (Okkenhaug et al., 2017). Following a discussion and comparison of the results, it was necessary to repeat the procedure on three more patient records before the teams were considered consistent. In addition to these two rounds of calibration, we had two additional joint meetings with all three teams to ensure a common understanding of the research procedures.

After the training course, 30 patient records for discharged patients were randomly selected for review every month from May 2017 to January 2018 (except July due to holidays); these consisted of ten records (five in- and five out-patients) from each of the three locations in the Department of Psychiatry. Patients had to have completed their treatment or been discharged at least one month earlier in order to be included. The secretary followed a written procedure in randomly selecting records. The investigation teams examined records from a different location than the one where they worked. In order to identify AEs for Norwegian patients receiving hospital treatment, we validated the GTT-P for both in- and out-patients. Psychiatric care in Norway includes interdisciplinary specialized treatment for substance abuse and the data therefore relates to patients treated for substance abuse as well as mental health problems.

Each month, the ten records were analysed using the GTT-P by the investigation team composed of a doctor and two nurses in each of the three locations. The nurses reviewed the records independently before comparing their results and then validating their findings with the doctor in their team. Through discussions, they usually reached a common understanding of the various coding challenges. In the event of a disagreement, the doctor had the last word. The patients were not anonymous to the investigation teams, but they were unknown as the teams worked in different locations from where the patients were treated.

The investigation teams identified triggers and AEs. The teams also had the opportunity for clarification with a senior consultant psychiatrist if necessary. One of the investigators in each team had the additional responsibility to record the information in the data registration system. The project manager checked that there was a correspondence between the information given in the paper version and that recorded in the data system.

3.3 Measures

3.3.1 Study 1, Papers 1 and 2. Young HUNT1 Questionnaire

In Study 1, information on diagnoses was collected from patient records, while other data were collected from the Young-HUNT1 questionnaire (1995-97). The Young-HUNT1 survey formed part of the Nord-Trøndelag Health Study (HUNT) (Holmen et al., 2014).

For Paper 1, two questions were selected to measure hours and days spent on physically active sports or exercise in the past week. These questions were developed and used in the WHO Health Behaviour in Schoolchildren (HBSC) survey. The intraclass correlation coefficients for reliability were 0.71 for frequency and 0.73 for duration (Rangul et al., 2008). Physical activity in the past week was dichotomized into inactivity and activity (the same question and dichotomization were used in Paper 2). Activity was defined as at least two days or two hours per week outside school hours. This is in accordance with recommendations in other studies (Rangul et al., 2008). Different types of sports were dichotomized into team or individual sports. Soccer, handball, basketball and volleyball were merged into the category of team sports. All other sports were defined as individual sports. The number of sports was calculated for each respondent.

To measure topics relevant to the second paper, questions on psychiatric conditions such as anxiety and depression, in addition to self-esteem, personality and well-being were included. There were also questions related to the use of alcohol and tobacco, physical activity, school problems, social functioning, help-seeking behavior, and leisure time activity (For the questionnaire see Young-HUNT1: “Junior high school (age 13-16)” and “High school (age 16-19)”).

Some of the questions were single items, but most of the independent variables were composite scores constructed by the administrators of HUNT from a set of questions (Examples: school functioning (14), friends (7), use of alcohol (5), and tobacco (10), and help-seeking behaviour (6)).

Other HUNT Study questions were based on structured, validated scales, such as the five-item version of the *Hopkins Symptom Checklist (SCL-5)* (Tambs & Moum, 1993), with Cronbach’s alpha of 0.79 (Størksen et al., 2006). This checklist was used to assess symptoms of anxiety and depression.

Four of the ten items on the *Rosenberg Self-Esteem Scale* were used to assess self-esteem (Rosenberg, 1965) The correlation between the original and short versions was estimated at .95 and Cronbach's alpha was .78 (Tambs, 2004, pp. 217-231).

"General well-being" was measured by a three-item quality-of-life scale, the *Subjective Well-being* scale, validated in earlier HUNT studies with a Cronbach's alpha of 0.75 (Størksen et al., 2006).

Further, an 18-item short version of the *Eysenck Personality Questionnaire* (EPQ-18), which assesses extraversion (E), neuroticism (N), and psychoticism (P) (Eysenck & Eysenck, 1977) was used in Young HUNT1, where six items for each of the dimensions E, N, and P were chosen. The selection of combinations of items that best predicted the scores from the original items was based on analysis of data from the entire scale (Eysenck & Tambs, 1990). The analysis showed correlations between scores from the original tool and the short form at .90 for E, .90 for N, and .78 for P (Tambs, 2004, pp. 219-220). Psychoticism has been difficult to interpret in theory (Berg Gudbergsson et al., 2007) and was therefore excluded from the analysis. Each item on the EPQ-18 was scored as 0 (no) or 1 (yes), and the six-item scores on each dimension were added together, giving a total score ranging from zero to six on each dimension. The paper presents results of all the total scores and the scores for each question. The results were presented in this way since some of the individual questions, such as "often worried", might be particularly important considering the subjects' risk of potentially experiencing emotional problems prior to the development of schizophrenia (Rapado-Castro et al., 2015; Welham et al., 2009).

The question "Do you smoke?" was dichotomized into "smoking daily" and "not smoking daily". Similar dichotomizations have been used in other Young-HUNT studies (Mangerud et al., 2014). Smoking habits, together with sport frequency/duration weekly and alcohol use, form part of the cluster: "Health behavior in school-aged children" from the WHO HBSC study (Currie et al., 2004; HUNT, n.d) and found to be reliable in young adults in Norway (Fergusson & Horwood, 1995; Foss et al., 1998; Holmen, 2000, p. 49).

The questions on alcohol use, which originate from the European school survey project on alcohol and other drugs, have good reliability and a high level of validity (ESPAD Group, 2021, p. 23). The two questions used were dichotomized based on similar dichotomizations in other Young-HUNT studies (Bratberg et al., 2007; Mangerud et al., 2014).

Fourteen questions on school were grouped into three separate domains: (1) problems related to concentration and academic achievement (Academic) with a Cronbach's alpha of 0.67, (2) behavioural problems (Conduct) with a Cronbach's alpha of 0.64, and (3) well-being problems (Dissatisfaction) with a Cronbach's alpha of 0.57 (Størksen et al., 2006). A specific single question, "Are you teased/harassed by other students?" formed a single question domain.

The self-assessed health status question "How often have you been to the school health centre?" was dichotomized and used in the paper.

Leisure time was assessed with the question: "How often have you done any of these activities in the past week?". Since social activities are found to be a potentially important risk factor for schizophrenia (Derdikman-Eiron et al., 2013; Michalska da Rocha et al., 2018), five of the nine sub-questions related to social activities are reported in the paper.

In addition to the items mentioned, there were three single-item questions that explored participants' experience of loneliness, number of friends, and self-assessed health status.

3.3.2 Topic guide based on GTT-P

In Paper 3, the primary method of data collection was semi-structured interviews in focus groups with the use of a topic guide. Interview questions were developed based on themes from the Swedish version of GTT-P (see 3.3.3). Interview questions were not prescriptive but were used as a guide to explore aspects regarding possible AEs, triggers for AEs and risk factors in Norwegian mental health facilities. The co-facilitators and interview questions were the same for the three groups in order to maximize consistency and reliability (Fern, 2001, pp. 228-229). The focus group interviews lasted two hours for all groups.

Topics for the focus groups:

1. What constitutes patient harm (AEs) in mental health care and interdisciplinary specialized

treatment for substance abuse in specialist health services?
2. In what situations is there a risk that patient harm (AEs) may occur? (Cues if needed: At the system level, medication, treatment, care transitions, coercion, drug abuse)
3. What could be possible triggers in Norwegian psychiatric records in order to identify patient harm?

The topic guide explored the patient journey and specific points with a risk of an AE. The final section of the focus group was devoted to considering what, in a written patient record, would be a trigger of an AE, or might be understood as a trigger of AEs. A trigger might also be the absence of an action or intervention.

3.3.3 GTT-P

GTT was designed to review patient records to generate data on the frequency and types of AEs in physical health care (Resar et al., 2003). In Sweden, the tool was redesigned to include mental health care and forensic psychiatry (SKL, 2015). In January 2017, we initiated the development of a Norwegian tool and translated and modified the Swedish tool and methodological appendix to the Norwegian context (Okkenhaug et al., 2017). Papers 3 and 4 are based on this tool. GTT-P is a Norwegian quality and research instrument designed to review patient records to generate data on the frequency and types of AEs in in- and out-patient mental health care. The handbook exists in paper and online versions. In addition to background information, it contains a description of how the investigation was conducted, a description of the triggers and a form to record the findings. The version of GTT-P used in Paper 4 consists of 32 triggers, divided into five domains: treatment (14 triggers), drugs (one), coercive treatment (four), medicine (seven) and continuity and transitions (six).

In addition to recording AEs and triggers, GTT-P distinguishes between avoidable and unavoidable AEs, and between in- and out-patients. AEs are categorized using a four-point severity scale: low (discomfort or negligible harm), moderate (temporary impairment), considerable (persistent moderate impairment) and catastrophic (persistent major disability or death) (Ericsson et al., 2016; Okkenhaug et al., 2017).

3.4 Analysis

3.4.1 Papers 1 and 2

In Paper 1, statistical analyses included investigation of median values and percentages that described central tendencies. In addition, Pearson's chi-square test and Fisher's exact probability test were used to test the goodness of fit between cases and controls. The Mann-Whitney U-test and the Kruskal-Wallis test were used to test non-normally distributed continuous variables. Statistical analysis was performed using SPSS 18.0.

In Paper 2, the data analysis was conducted using IBM SPSS, version 23 (IBM, 2013). Differences in means were analysed with independent samples t-tests. Associations between case and controls and the categorical variables were analysed by estimating odds ratios from standard binary logistic regressions and by chi-square or Fisher's exact tests. All tests were two-tailed.

3.4.2 Paper 3

For translation, quality assurance and development of the Norwegian GTT-P, focus groups and a dialogue conference were used as methods. Language translation of the handbook was based on the cross-cultural adaptation of research instruments (Gjersing et al., 2010).

The transcripts of the audio tape recordings from the focus groups and dialogue conference were analysed using content analysis (Graneheim & Lundman, 2004). This type of analysis method is suitable when conducting exploratory work in an area where little is known (Green & Thorogood, 2004, p. 265). Content analysis enabled the identification of similarities and differences in textual content. These differences were expressed using categories where the context was important. The interpretation of texts therefore assumes knowledge of the context within which a study is carried out (Lundman & Graneheim, 2013, pp. 159-172). For example, the present interview study was conducted in a psychiatric unit in a hospital setting. The analyses of focus groups 1 and 2 generated similar findings, and for the sake of clarity it was thus decided to use data from only group 1 in the comparison with the service user group (focus group 3).

The first and third authors reviewed each transcript individually and then met to discuss their understandings and specify different areas of risk and the coding of AEs and triggers identified in each focus group. The analysis identified codes for 32 AEs, grouped into seven categories: mental injury, prolonged disease progression, self-harm, drug-related injury, physical injury, illegal/unethical treatment and others. For triggers, 50 codes were identified grouped into five categories: treatment, continuity of care, drug/alcohol abuse, medication and coercive treatment. The authors were particularly attentive to highlighting the differences between health professionals and service users. Often these dissimilarities were more about the language used to describe a particular AE rather than differences in conceptualization. In addition, the authors reviewed the transcript from the dialogue conference and examined the statements made by HPs and service users to look for differences in content and the number of statements.

3.4.3 Paper 4

Descriptive statistics are presented using frequencies and relative frequencies for categorical variables, and using mean and standard deviation for continuous variables. Differences in relative frequencies were tested using Fisher’s exact test. To analyse factors associated with AEs, multivariate logistic regression with AE (yes/no) as the dependent variable was used. For completeness, estimations of univariate logistic regressions for each covariate were performed in order to show how the importance of each covariate changed when all other covariates were taken into account. A significance level of 5% was chosen. The data were recorded in an Excel spreadsheet and analyses were performed using SPSS v23 and Stata 15.0.

4 RESULTS

4.1 Papers 1 and 2

In many areas, there were no differences between the cases and the HCs. None of the results indicated that the HC group had better health than the case group. Nevertheless, the case group reported poorer subjective well-being, more negative emotions, and more difficulty with social functioning than the HC group. Several of them smoked daily and they were less physically active. Less physically active means fewer days per week ($z = -2.219$; $p<.05$) and fewer hours per week ($z = -2.403$; $p<.05$) in the premorbid phase, compared to the HCs. The case group (53 %) also participated less in team sports than the HC group (79 %) ($p<.05$). Further, participants in the case group reported significantly poorer scores on the "General well-being" scale than those reported by the HCs (p = .002).

The scores on the SCL-5 scale showed no significant differences between the two groups. However, the case group scored significantly lower on one of the items, having been more dejected, down, or sad than the HCs (p = .01), and the mean difference was -.59. The participants in the case group experienced more nervousness (during the previous month) than the HC (p = .004). Regarding the EPQ, there were no differences in the two scales for neuroticism and extraversion, but there were differences in two individual items: "more often worried" (p = .004) and not liking "arriving early for appointments" (p = .013). There were no significant differences between the groups in terms of self-esteem as measured by the short version of the Rosenberg Self-Esteem Scale. Compared with the HCs, those in the case group reported having fewer close friends (p = .034), and feeling lonelier (p = .003)

Although the case group reported daily smoking more often than the HCs (p = .001), there was no difference between the groups in response to the question "Have you tried smoking?"

No differences were identified in the use of school health services or help-seeking behaviour based on the question about initiating contact with the school health services. Those in the case group had more often been to a general practitioner (p = .011) and to a psychologist in the past year (p = .046) than the HCs. There were no differences between the cases and HCs in patterns of alcohol use or in response to the question about their present state of health (p = .251). Further, no differences were identified concerning concentration or behaviour at school or academic achievement.

4.2 Paper 3

Our analysis sought to highlight the differences between the issues raised by HPs and by service users about risk and experience of AEs in psychiatric care, and the points of similarity or consensus. During the dialogue conference, the service users and clinicians identified and confirmed the same AEs as in the Swedish version, but the number of triggers differed between the Norwegian (32) and Swedish (36) versions of the GTT-P. The Swedish GTT-P is consistent with the Norwegian GTT-P across three of the five risk domains: coercive treatment, medicine, and continuity and transitions.

The participation of service users led to changes in the research tool and the inclusion of triggers (e.g. individual plans) that were specific to their experience of the Norwegian clinical context.

In psychiatric care, AEs can engender both physical and mental harm and we were therefore particularly interested in two categories of AEs, mental harm and physical harm, and three trigger categories particularly associated with clinical management, namely, coercive treatment, inadequate treatment, and continuity of care and transition. Service users and HPs both identified mental harm as a potential AE associated with mental health treatment, but in different ways. For the HPs, this was framed in terms of the importance of respecting the person behind the diagnosis, while for service users this was understood more in terms of additional consequences often associated with a diagnosis (labelling, stigma). Coercion was another issue showing a contrast between the two conceptualizations. HPs accepted that treatment could involve some forms of coercion, but felt that this was a source of moral discomfort. For service users, however, coercion also included the rules and regulations enforced in in-patient psychiatric units, which was a broader understanding embedded in lived experience. The other significant AE discussed was physical harm, but only the HPs raised this as an AE.

The analysis of the transcripts of the dialogue conference revealed that HPs were considerably more active in the discussions than service users. In part, this reflected differences in numbers, but also inevitable underlying power differences and perhaps the continued dominance of the "voice of medicine".

A major finding in the paper is that there are differences between HPs and service users in how they define areas of risk, AEs and their triggers. This suggests that the two groups view these differently, further underlining the need for collaboration between them in developing tools aimed at enhancing patient safety.

4.3 Paper 4

The aim of this study was to analyse and report AEs and the associated triggers identified using a modified version of GTT-P on a random sample of psychiatric patients treated in one Norwegian hospital trust. The findings show that AEs occurred in nine outpatients (out of 119) and in 10 inpatients (out of 121). This equates to approximately 8% of the mental health patients treated in the hospital. This level of AEs is consistent with some studies (Daumit et al., 2016) and one report (SKL, 2013), while another report (SKL, 2018b) and a more recent study (Marcus et al., 2018) reported that around 20% of patients had experienced a patient safety event.

The analysis was based on the identification of 32 potential triggers of AE. Eighteen of the triggers were significantly related to AEs. The results of the analysis identified at least one AE in 19 (7.9%) of the 240 patient records in the study sample. These 19 records included a total of 29 AEs. Of these, 13 records included evidence of one AE while six records had from two to four AEs.

The most frequent triggers identified in this study were the lack of a treatment plan, followed by lack of contact with relatives, change of treatment unit, and unplanned inpatient treatment or contact with the acute psychiatric unit. The six most commonly identified triggers related to a specific AE (p-value compared with patient records with no associated AE) were absence of treatment plan ($p = ns$), unplanned inpatient treatment or contact with acute psychiatric unit ($p < .001$), change of treatment unit ($p < .001$), consultation with a doctor on call ($p < .001$), increased surveillance ($p < .001$) and undesired effect of treatment ($p < .001$). Other triggers with a p-value $< .05$ included lack of review of suicide risk, lack of documentation of failure, change of diagnosis, self-harm, threats, violence and inappropriate behaviour, coercion, coercive treatment, inadequate administration, change from voluntary to involuntary treatment, more than four different psychofarmaca, metabolic risk factors, readmissions within 30 days and lack of a responsible doctor or coordinator.

The AEs recognized in the analysis were: suffering (five cases, three avoidable), disease worsening (three cases, one avoidable), suicide attempts (three cases, none avoidable), self-harm (three cases, one avoidable), other drug-related AEs (three cases, none avoidable), measures without legal basis (three cases, three avoidable), insults (two cases, one avoidable), interrupted treatment (two cases, two avoidable), other AEs (two cases, two avoidable), insufficient effect of treatment (one case, avoidable), metabolic effect (one case, avoidable), and a fall (one case, not avoidable).

Of the 29 AEs identified in the 240 patient records in the study sample, 17 were categorized as minor and twelve as moderate. Thirteen of the AEs identified were associated with treatment in the outpatient unit and four of these were potentially avoidable. Sixteen AEs were found in treatment delivered to patients in the inpatient units and eleven of these were avoidable.

The study also shows a correlation between the number of identified triggers and AEs. The number of triggers in records with a detected AE was 7.28 vs. 2.81 in records where no AE was identified. Further, no AEs were identified in patient records that did not also contain triggers included in the GTT-P.

4.4 Summary of results

Our studies show that persons who later developed schizophrenia, compared to those who did not, were less physically active, more alone, more prone to a negative mood with increased rumination, worry, sadness and anxiety, and showed more health risk behaviours, such as greater daily smoking. Our cross-cultural adaptation and validation of GTT-P, across stakeholders, showed that the tool is useful in detecting triggers and AEs in the patient population. Our study showed that suffering was the most common AE, while the lack of a treatment plan was the most common trigger.

5 DISCUSSION

The main aim of this thesis was to study various factors of relevance for the prognosis of SMD. This implies risk factors before the onset of the disorder as well as AE after the onset of the disorder, which can prolong functional impairment.

This thesis studies factors that can prevent negative developments and increase the likelihood of self-perceived good QOL and a life of dignity. Factors before and during illness and in the recovery phase were studied. Preventing negative developments and encouraging belief in the future is linked to balancing risk and protective factors in order to avoid triggering or perpetuating MDs (Vasey & Dadds, 2001, p. 13). Furthermore, this balance involves experiencing good relationships in all phases, in addition to developing coping strategies that create flourishing (Garland et al., 2010).

In Papers 1 and 2, we study the time before illness, and there are four main findings. Persons who later developed schizophrenia, compared to those who did not, were less physically active (1), more alone/lonely (2), more likely to have negative moods with more rumination, worry, sadness and anxiety (3), and had a greater tendency towards health risk behaviours such as daily smoking (4).

After the onset of the disorder we studied factors during admission which could lead to negative/harmful events and consequently prolong or exacerbate suffering or even lead to death. In Study 2 we first defined AEs and potential triggers for later AEs and then examined 240 patient records and systematically recorded triggers and assessed whether patients had suffered iatrogenic AEs (see 4.3 for further information). Factors in iatrogenic AEs after the onset of the disorder could be influenced by personality, behaviour and experiences prior to disorder onset (Grubaugh et al., 2007; Husum et al., 2019; Knutzen et al., 2013). The models of Vasey and Dadds (2001, p. 13), Garland et al. (2010), and Seidman and Nordentoft (2015) indicate that much can be done to prevent a disorder, but also to improve QOL after the onset.

5.1 Prevention before developing a disorder

Study 1 concurs with previous research on environmental risk factors where adolescents who later develop schizophrenia are less physically active, have more negative affects, poorer social functioning (loneliness, fewer friends and visitors) and a greater tendency towards health risk behaviour, such as daily cigarette smoking (Fusar-Poli et al., 2017). If it is known that these risk factors are present in an individual before disorder onset, prevention might delay the onset and/or lead to a milder course of the disorder (Barry et al., 2013; Catalan et al., 2021; Jané-Llopis et al., 2011; Patel et al., 2016; Scott, 2016). Such a claim must be treated with caution, as other risk or causal factors such as heredity (genes) and co-variation with other factors can influence the course of a disorder. This largely applies to schizophrenia (Jauhar et al., 2022; Patel et al., 2016). Although there is a high false positive rate for the development of psychosis in cases of familial predisposition (90%) (Seidman & Nordentoft, 2015), Liu et al. (2015) defend early intervention in such cases based on high rates of other behavioural, cognitive and neuromotor problems in the premorbid period. This is in addition to the consequences of living with an ill parent and a greater probability of developing other problems and psychopathology (Liu et al., 2015).

There are indications that it is possible to prevent many mental disorders, especially anxiety and depression, and promote mental health in children and young people through targeted interventions (Salazar de Pablo et al., 2020; Skogen et al., 2018, p. 113). Holte (2012) argues that mental capital is a country's most important resource. Mental capital is the citizens' overall opportunities to develop security, independence and creativity, use their emotions, think smart, coordinate their behaviour, form social networks and master challenges (Holte, 2012). Jenkins et al. (2008, p. 8) claim that developing the nation's mental capital systematically will probably prevent mental disorders and is more effective than measures aimed directly at mental disorders. Prevention has been proposed as one of the grand challenges for global mental health (Collins et al., 2011), and has been estimated to be highly cost effective (Knapp et al., 2011). Despite the claim by Jenkins et al. (2008), indicated preventive interventions for depression have traditionally shown better results than universal interventions, but research also suggests a generally greater effect of preventive measures for high-risk groups (Horowitz & Garber, 2006; Stice et al., 2009). There is no current evidence of the effectiveness of selective screening and psychological/psychoeducational interventions in reducing the incidence of psychotic/bipolar/common mental disorders (Fusar-Poli et al., 2021).

Based on several studies (Barry et al., 2013; Firth, Schuch, et al., 2020; Fusar-Poli et al., 2017; Sommer et al., 2016; Thompson et al., 2015; Weare & Nind, 2011), prevention that focuses on encouraging physical exercise, fostering self-esteem, improving parent-child relationships and resilience, promoting secure attachment relationships with trusted others, increasing social and neighbourhood supports, and reducing drug abuse and bullying, may contribute to flourishing in different persons (Garland et al., 2010; Hoyt et al., 2012; Salazar de Pablo et al., 2020; Sommer et al., 2016). Furthermore, such interventions improve outcomes for young people at risk of developing psychopathology (Healy & Cannon, 2020).

In Study 1, loneliness was reported before the onset of schizophrenia, indicating that this was a potential risk factor in the development of the disorder. This is in accordance with Michalska da Rocha's study (2018). Further results from Study 1 show that these adolescents were more dissatisfied with their lives than the HCs, and often did not feel as strong and vital as the HC group. They also disliked school breaktime. This may indicate that many who later developed schizophrenia experienced everyday challenges. Previous research has shown that people with first-episode psychosis do not initiate help-seeking behaviour for themselves, particularly if they have close relatives who suffer from a mental disorder (O'Callaghan et al., 2010). The lack of help-seeking behaviour increases the challenge of implementing early identification measures and intervention strategies and may thus support the argument by Jenkins et al. (2008) for the need for universal prevention. Indicated prevention is also recommended in connection with the risk of psychosis (Cornblatt et al., 2015; Seidman & Nordentoft, 2015), but the risk factor, e.g. loneliness, must then have been identified. Identification of adolescent premorbid functioning should not only rely on information from health services, but also from peers, teachers, or significant others (Jané-Llopis et al., 2011). Internationally, there is a need for high-quality services that are adapted to the relevant culture and capture children and families, ensuring that the children become a part of a pro-social system (Catalan et al., 2021; Catalano et al., 2004).

According to Murray et al. (2021), the best-established statistical risk factors for psychosis are obstetric events, childhood abuse, migration, city living, adverse life events and cannabis use. They also suggest public health campaigns to educate young people about the potential harm of regular use of high-potency cannabis as an initial step towards a strategy for universal primary prevention. This might be relevant to address the increased incidence of cannabis-induced psychosis in Scandinavia (Rognli et al., 2022). The majority of the adolescents in Study 1 reported smoking cigarettes daily; however, there were no differences in alcohol use between the HCs and the case group. Our findings are in line with other studies (Buchy et al., 2015; Gurillo et al., 2015; Mangerud et al., 2014; Myles et al., 2012) in relation to cigarette smoking and its association with cannabis use and later psychosis (Ryan et al., 2020).

Research shows that psychosocial interventions (Liu et al., 2015; Patel et al., 2016; Sommer et al., 2016), psychoeducation and physical therapy, exercise and relaxation (Salazar de Pablo et al., 2020) can reduce stressors and increase coping, and might reduce the incidence of MD. A key factor in preventing SMD is the degree to which the person, family members, the health and education sectors and society in general have knowledge and understanding of early signs and risk and protective factors of MD (Liu et al., 2015; Patel et al., 2016; Seidman & Nordentoft, 2015). Skogen et al. (2018, p. 113) suggest an overview of preventive and health-promoting measures, as well as a greater degree of coordination and coherence between the professional communities to strengthen the mental health of children and adolescents. Furthermore, the implementation of national, multisectoral promotion and prevention programmes in mental health such as the Act-Belong-Commit framework has proven to be a valuable resource for building capacity for mental health promotion in the general population (Donovan et al., 2021).

5.2 Protective factors that encourage recovery

In Paper 3, service users considered “suffering” as one of the most important AEs and identified stigma as a possible cause of suffering, while in Paper 4, the most common AEs were “suffering” as well as two AEs categorized as “insults”. Findings of “suffering” and “insults” are compatible with findings from the study by Nilsson et al. (2020). Stigma can also reinforce already existing challenges such as struggling with the symptoms in a crisis, coping with mental health problems in general, and dealing with contextual barriers such as financial issues, living situation, loneliness and relational challenges (Borg et al., 2009; Borg et al., 2011; Corrigan, 2007). The researchers argue that these factors are all part of the necessary treatment picture that HPs need to consider. To contribute to a person’s growth and strengthen family ties, HPs need to focus on the person and his or her family, especially how they manage everyday life tasks and skills in mental health crises (Borg & Davidson, 2008; Borg et al., 2011). Disrespectful and undignified treatment does not foster hope and belief in either treatment effects or a better life, and can in the worst cases lead to chronification, hopelessness and learned helplessness (Berzins et al., 2020; Hansen et al., 2020; Ljungberg et al., 2016). In a perspective where hope and belief in a better life for the person gradually emerge, coping is a key concept. This also involves meeting skilled, respectful professionals who facilitate co-determination and treat patients with dignity (Dahlqvist Jönsson et al., 2015; Steinsbekk et al., 2013; UEMS, 2006). These aspects have been assessed as important in efforts to improve mental health care (Axelsson et al., 2020). If HPs make greater efforts to help patients cope with everyday crises, this can act as a protective factor and encourage learning and growth (Borg et al., 2011).

5.2.1 Service users' involvement in recovery

After the onset of the disorder, the quality of treatment and follow-up is important for the outcome (Flückiger et al., 2018; Saxon et al., 2017; Topor et al., 2018), and adequate service user involvement is part of this recovery (Lindvig et al., 2020; Spencer et al., 2019). Mjøsund et al. (2018) emphasize that people with SMD wish to receive more knowledge, to improve their well-being and mental health and to be able to live as well as possible with their illness (2018). Participants in the study by Mjøsund et al. (2018) considered that a systematic focus on both pathogenesis and salutogensis from HPs was lacking. This is supported by research studing HPs (Jørgensen et al., 2018; Lindvig et al., 2020), and where patients and HPs work together on environmental changes in the hospital setting (Follevåg & Seim, 2021).

Infantilization and a focus on pathology are emphasized in Paper 3 as examples of AEs as mental harm. Hansen et al. (2020) discuss salutogenic thinking and patients not being seen as unique people by HPs, which in turn can lead to relational distance and prolongation of the illness. Despite the involvement of service users in all aspects of the research in Paper 3, the relative dominance of HPs in joint discussions such as the dialogue conference suggests issues of power and dominance embedded in the HP-patient relationship even when outside a therapeutic relationship.

Paper 4 reveals three avoidable AEs related to measures without a legal basis (e.g. unnecessary use of coercion). An illegal action suggests a need for continuous patient safety work, the importance of listening to the patient, and quality assurance of the treatment provided by the HP. Coercion is highlighted as involving a risk of humiliation, fear and a feeling of inferiority (Lanthén et al., 2015; Larsen & Terkelsen, 2014), and may weaken the therapeutic alliance (Wynn et al., 2011). Adequate use of coercion requires legal and ethical justification (Chieze et al., 2021); however, factors such as culture (True et al., 2017), education (Cowman et al., 2017; Lickiewicz et al., 2021) and the presence of male staff (Beghi et al., 2013) affect the degree of coercion. Research shows that coercion and restraint may be used unnecessarily due to lack of time, resources, flexibility and crisis plans (Wormdahl et al., 2020). The most frequent triggers identified in Paper 4 were the lack of a treatment plan, followed by the lack of contact with relatives, change of treatment unit and unplanned inpatient treatment. All these triggers are closely linked to HPs failing to draw up treatment plans and to cooperate with relatives, in addition to transitions involving a risk of poor information and continuity. Wormdahl et al. (2020) argue that an unnecessary amount of coercion is often used due to a lack of tailored housing and employment, little variation in the activities offered, poor coordination between services and a lack of competence. Our findings are in accordance with this. Beames and Onwumere (2022) state that research on risk factors associated with the use of coercive practices is weak and insufficient. Therefore, we cannot say with certainty that people with schizophrenia have a greater likelihood of being subjected to coercion with a risk of AEs, even though Beghi et al. (2013) suggest that there is an association. These authors' suggestion is supported by results in Paper 4, where more than a fifth (21%) of all AEs identified are related to patients with psychotic disorders (11% of the sample).

In a phase where the person will need help from HPs, it is important that they give the patient time and space to move towards flourishing (Prochaska et al., 2013). Lack of time and space may create a mismatch between the HPs' need to treat the patient according to a "treatment guideline" and provision of the necessary emotional support (Prochaska et al., 2013). Prochaska el al. (2013) have developed a model called "five stages of change" (precontemplation, contemplation, preparation, action and maintenance) that the patient may experience through a course of treatment. Processes of change are the covert and overt activities that people use to alter emotions, thoughts, behaviours, or relationships related to a particular problem or more general patterns of living (Prochaska & Norcross, 2018, p. 7). Often, change processes follow a spiral pattern rather than a strictly linear progression, and most people will experience relapses (Prochaska et al., 2013). Flexibility and sensitivity appear to be important characteristics of an HP (Brekke et al., 2018; Rober, 2017). Such qualities are valuable in assessing which stage the patient is at in the change process. Many forms of therapy are aimed at the action stage, and can lead to unnecessary dropout if the HP overlooks the patient's own stage in the process (Goldfried, 2019; Krebs et al., 2018). In Paper 3, we see a divergence between HPs' and service users' perceptions of inadequate treatment. HPs focused on progression where inappropriate diagnosis was a trigger of potential AEs but also led to delayed diagnosis and interventions. By contrast, service users seemed to focus on the stage they were at in the change process, and missed engagement between HPs and themselves about their diagnosis and the consequences of this for care and recovery. For people with schizophrenia, the change processes require continuity, trust-building behaviour and a respectful attitude from HPs (Sagsveen et al., 2019). Moreover, the disorder can lead to destructive communication barriers (Møller, 2018, p. 42), and requires the HP to be vigilant about the patient's stage in the change process. Otherwise, there is a risk of causing an adverse patient event.

5.2.2 The significance of relationships and collaboration

It is vital for people with SMD to maintain engagement with services, but up to 30% of people with MDs break off contact with mental health services and relationships with HPs (Davies et al., 2014). Dropout will affect continuity of care (Davies et al., 2014) and increase the risk of AEs (Nilsson et al., 2020). The importance of supportive relationships is emphasized in other research where the relationship between patients and HPs seems to be the most important foundation for collaborative practices and dialogue (Lindvig et al., 2020; Ness et al., 2014; Norcross & Wampold, 2018; Sagsveen et al., 2019; Sweeney et al., 2014; Topor & Denhov, 2015). This relationship is also important in providing a safe and therapeutic treatment environment (Gilburt et al., 2008). Low self-esteem, a sense of worthlessness and shame over their situation can make people more sensitive to how clinicians relate to them. In this way, humiliation or disrespect can occur when HPs lack sufficient self-reflection or sensitivity (Hem et al., 2017, p. 225; Škodlar & Henriksen, 2019). Professional competence and patient competence are seen as complementary, and there is a positive association between a good therapeutic alliance and treatment outcome (Flückiger et al., 2018).

As shown in Paper 3, access to the service user's perception of a phenomenon can challenge the HP to think differently about mental health care. As an example, Kidd et al. (2014) found that when service users shared their personal recovery stories, staff hope for recovery increased. HPs need to understand patients, be familiar with the various services available, foster hope and believe that recovery is possible (Horgan et al., 2021; Lorien et al., 2020). In Paper 4, we describe three findings of AEs, disease worsening (three cases), interrupted treatment (two cases), and insufficient effect of treatment (one case), which can be linked to treatment outcome. Four of these six cases were considered to be avoidable. Nevertheless, we cannot conclude that they were solely caused by a poor therapeutic alliance. HPs who achieve good results in treatment are often described as warm, understanding, experienced and active. Good communication and dialogue between patient and professional requires both to be open and responsive to each other (Axelsson et al., 2020; Mjøsund, 2020; Norwegian Directorate of Health, 2013, p. 29). Hansen et al. (2020) identified sub-themes such as respect for patients as unique persons, which includes empathy, compassion and effective communication (Cullen et al., 2022). In addition, collaboration in a partnership between peers and mental health personnel in treatment for persons with SMD seems to enhance person-oriented recovery (Thomas et al., 2018).

5.2.3 Minimizing AEs

Several studies state that AEs occur more frequently than recorded and reported by health services and inspectorates (Bergin, 1971, pp. 217-270; Berzins et al., 2020; Deilkas et al., 2015; Lambert & Ogles, 2004). Furthermore, researchers in Canada, a comparable country to Norway, warn about a lack of a national strategy, or research agenda, in patient safety and mental health care (Waddell & Gratzer, 2021). “Not being listened to” is a central theme as a risk factor for AEs (Berzins et al., 2020). In Study 2 (Papers 3 and 4), we found that seven of 29 AEs were related to suffering and insults, and that mental harm was linked to the degree of respect in the patient’s encounter with HPs. In both the Norwegian and the Swedish GTT-P, insults can be understood as violations, infringement and humiliation, while stigma is a possible cause of suffering. Stigma relates to a group of people with common characteristics being subject to a form of discrimination that is rooted in prejudice and ignorance (Goffman, 1963, pp. 11-13, 16-17, 41). Stigma associated with mental illness is common (Thornicroft, 2008) and can act as a formidable barrier to active recovery (Daumerie et al., 2012). This also emerged in statements from the focus group of service users in Paper 3.

The results in Paper 3 show that 15 (52%) of the 29 identified AEs could have been avoided if adequate measures had been initiated when the patient was in contact with the health care system. This shows that there are indications of areas where efforts to improve patient safety could be intensified.

In Paper 4, we show a correlation between the presence of triggers in a patient’s medical record and the likelihood of AEs, i.e. if treatment is of poor quality, there is a greater risk of causing harm to the patient. The more triggers we found in a patient record, the greater the risk that the patient would have experienced an AE. This is in accordance with research in physical health care (Hwang et al., 2018; Naessens et al., 2010).

In a study reviewing patient records in non-psychiatric care, between 4% and 17% of hospital admissions were associated with an AE and a significant proportion of these (1/3-2/3) were preventable (Rafter et al., 2015). Many AEs are traditionally considered inevitable complications of treatment, but certain AEs can be defined as avoidable. An AE that can be clearly attributed to a treatment delay or e.g. assessment or clinical work that is lacking or inadequate should be considered as avoidable (Okkenhaug et al., 2019).

A Swedish study reported similar patterns (Nilsson et al., 2020) regarding triggers, with the lack of a treatment plan as the most commonly identified trigger. This contrasts with other patient safety surveys in physical health care where different events are more common. In a survey by Marcus et al. (2018), the most frequent events were medication errors (delayed and missed doses, 17.2%), followed by adverse drug events (4.1%), falls (2.8%), and assaults (1.0%). Most reported patient safety events (94.9%) resulted in little or no harm although more than half of the events (56.6%) were deemed preventable (Marcus et al., 2018).

Nilsson et al. (2020) revealed considerably more AEs than found in our study (17% vs. 8%) (see Chapter 4.3.3 for further details). Similar to our findings, the Swedish researchers found more AEs in inpatients than outpatients. A study in physical health care only included inpatients and higher numbers of AEs (13%) were identified (Deilkas et al., 2015). This might indicate that there are more AEs in inpatient than in outpatient care. We support the assumption of Nilsson et al. that this may be because care in hospitals is round-the-clock, patients are more severely ill and more advanced care is usually provided (2020).

After reviewing the research literature, it is difficult to obtain a clear picture of the operationalization and quality of milieu therapy (round-the-clock care). We found different alternatives to recovery-oriented practice that might be useful in preventing AEs in hospitals. Lorien (2020) emphasizes that hospital-based models such as cognitive milieu therapy (Borge et al., 2013), the dynamic-maturational model (Wilkinson, 2010), psychodynamic-oriented milieu therapy (Oeye et al., 2009) or the Soteria treatment model (Ciompi & Tschacher, 2021) may be barriers to implementing recovery-oriented practice. Furthermore, this might be increased by resistance to change from the embedded biomedical model, lack of systematic ethical reflections in staff, organizational factors beyond staff control, experiencing the milieu therapeutic work as infantilizing and patronizing, staff attitudes and absence of user involvement in implementation (Allerby et al., 2022; Follevåg & Seim, 2021; Haugom et al., 2019; Kvia et al., 2021; Oeye et al., 2009). Changes also require efforts such as education of staff (Bhat et al., 2020), knowledge of the patient's functioning outside hospital (Kidd et al., 2014; Stickley & Wright, 2011) and tools to measure the quality of the milieu therapeutic work (McGuire et al., 2021). Nevertheless, other hospital-based models, e.g. cognitive milieu therapy (Røssberg, 2019), person-centred care (Allerby et al., 2022) or the Soteria model (Ciompi & Tschacher, 2021), should be considered as alternatives to a recovery-oriented practice (Lorien et al., 2020). These models could possibly help to minimize AEs.

5.3 Ethical considerations

Ethical considerations are central in mental health care, and in several countries this awareness has led to the creation of various ethics support services such as ethics committees, ethical reflection groups and ethics consultants (Bruun et al., 2018). People with MDs may be especially vulnerable to burdens and harm associated with research participation (Deshpande et al., 2020). This is due to their conditions potentially affecting their autonomy and decision-making ability, their dependence on others for caregiving and their vulnerability to stigmatization if their condition becomes known (Deshpande et al., 2020). Study 1 required written consent from the participants. All were given written and oral information about data collection and the purpose of the study. The participants' therapist or one of the researchers was available to them to answer questions or provide support. They were informed that their participation in the research would have no consequences for their treatment.

In our studies, ethical considerations were emphasized through awareness of the research ethical principles in the Helsinki Declaration (World Medical Association, 2013), Norwegian research legislation (The Health Research Act, 2020), and established procedures. Study 1 was approved by the Central Norway Regional Committee for Medical and Health Research Ethics. Study 2 was assessed by the Regional Ethics Committee, which concluded that it did not require formal ethical approval. The study was therefore assessed by the data protection officer of HNT, who approved it. This was in addition to evaluation of the study by the data access committee of the HNT Research Department.

5.4 Methodological strengths and limitations

5.4.1 Papers 1 and 2

The clinical sample in the study was small. This may have increased the risk of reduced external validity and generalizability. The sample size also excluded the possibility of conducting multiple regression analysis and justified the choice to analyse dichotomous variables. Furthermore, there was a clearly skewed gender representation in the sample, with more males than females, which might have affected the results. There was also a risk of reduced reliability associated with the reporting of self-reported data, but there is no reason to suspect that participants with a later diagnosis of schizophrenia would differ from others regarding the validity of such data (Brill et al., 2007).

We used data from the Young-HUNT1 survey (1995-97), which is part of the longitudinal HUNT population study. At that time, the research instruments used were considered to be good. However, HUNT has subsequently been criticized for weaknesses in the validation of certain instruments (Holmen, 2000; Rangul et al., 2008). Regular changes have since been made and today HUNT is considered as a highly valid research database (HUNT, n.d).

A strength of Study 1 is that the case group participants had well-validated diagnoses, and patients with short, single psychotic episodes (< 1 month) were excluded. Compared with other studies where respondents were selected on the basis of genetic risk factors, the self-reported premorbid data limited potentially biased responses compared with other retrospective methods.

5.4.2 Paper 3

A strength of this study is that the adaptation of a research tool from Sweden went beyond simple language translation. Instead we incorporated the understandings of both service users and HPs in order to bring together the "lifeworld of the patient" and the professional definition of mental health treatment in the Norwegian context. We consider our study to be credible and reliable as we not only performed forward and back translation from Swedish to Norwegian, but also involved service users and HPs in all aspects of the research.

We invited seven service users to participate in the dialogue conference but a weakness is that only three took part. Only 5% of the sentences were spoken by service users during the conference, which is far less than we expected. Ideally, the number of service users participating should be equal to the number of HPs (Ekman Philips & Huzzard, 2007). Despite our attempts to create an open and welcoming space for discussion, the underlying power differences and continued dominance of the voice of medicine still exist and are apparent in our data.

5.4.3 Paper 4

The Department of Psychiatry of HNT received ISO certification in 2005. This included systematic checking of records by unit leaders and teams of auditors (Standard Norge, 2015). This is not commonplace in Norwegian psychiatric departments, thus our department might not be comparable to other psychiatric departments in terms of quality systems. This could be a strength as well as a weakness. We may have identified fewer AEs and less serious harm than would be expected in Sweden and most Norwegian psychiatric departments.

The paper reports the results of a dataset drawn from one hospital trust with few AEs and the clinical sample in the study was much smaller (n = 24) than in the Swedish study (n = 2552) (Nilsson et al., 2020). A small number increases the risk of reduced external validity and generalizability.

GTT is a widespread and accepted patient safety tool in physical health care (Classen et al., 2011; Griffin, 2009, p. 1). When developing the tool for mental health care, it is natural to think that there might be similarities in the approach to care provision. Triggers such as “lack of a treatment plan” or “an undesired effect of treatment” that we identified in our study as important in psychiatric care may also be relevant for the general GTT. If an examination of a patient record reveals that a patient in need of rest became insecure and afraid because of sharing a room with an aggressive elderly demented person and the nurses in the unit knew about it but did not respond, does this constitute an AE that could be labelled “suffering” in physical health care?

To our knowledge, our study is the first to be published in the literature that includes mental harm as an AE using the GTT applied to psychiatric care; however, SKL has produced two reports (2013, 2018b) in Swedish on the application of the GTT to psychiatric care in Sweden and one later study (Nilsson et al., 2020). Indeed, other articles have been published where GTT has been modified from physical to mental health care (Ivashchenko et al., 2020; Sajith et al., 2021; Sharma et al., 2022) but the tools deviate to such an extent from what the Nordic countries consider relevant as triggers and AEs that the results cannot be automatically compared.

This means that there are no other studies that can directly be compared with our results. Nevertheless, there are some studies that have focused on AEs or patient safety events in mental health care but these provide little agreement on what constitutes an AE in a psychiatric environment (Jayaram, 2008; Mills et al., 2018). Moreover, most studies have focused on the frequency of specific AEs such as suicide (Mahal et al., 2009; Mills et al., 2013), assaults (Powell et al., 1994), violence (Van Dorn et al., 2017), medication errors (Alshehri et al., 2017; Bakhsh et al., 2014; Grasso et al., 2005; Haw & Cahill, 2011; Marcus et al., 2018) or falls (Marcus et al., 2018; Mills et al., 2018).

5.5 Implications for practice

This thesis has shown that it is possible to identify risk factors before the onset of a disorder, which may help to reduce the incidence of MDs if adequate preventive measures are implemented. Loneliness, negative mood, less physical activity and increased health risk behaviour are all factors that can be prevented, although we cannot claim that prevention of these would reduce the incidence of schizophrenia. Effective monitoring procedures that focus on the identification of important risk factors and implementation of preventive strategies to minimize the risk of disorder may be important elements in this connection. HPs' knowledge of risk and protective factors and increased active involvement in universal, selective and indicated preventive interventions may contribute to reducing the incidence of MD and perhaps SMD. Our findings support already existing research.

In the same way that systematic preventive work before a disorder can affect outcomes, a high-quality preparatory measure such as the introduction and implementation of GTT-P can help change practice and influence the outcome of possible AEs. AEs can affect the course of the disorder through the harm caused, and they can also affect the therapeutic relationship and faith in HPs and the system. In the treatment of a disorder, the HP's personal qualities, behaviour patterns and experience with management of challenges, in addition to the quality of the care provided, will affect the outcome.

Our studies have shown that GTT-P identifies AEs and triggers and that there are associations between the two, where the risk of AEs increases with a greater number of triggers. Systematic work to reduce triggers or AEs could influence a patient's disorder trajectory. Preventable AEs are undesirable and may be a sign of poor quality health care. The majority of the triggers are anchored in legislation and guidelines as central elements of an adequate course of treatment. A conscious focus on reducing the number of triggers and preventing AEs can be a sign of good quality in health care services.

To apply the GTT-P to hospital-based psychiatric care might help identify processes that need to be changed in order to promote patient safety and a safer workplace for HPs, as well as preventing AEs from affecting the course of the disorder in a downward spiral of psychopathology (Martens et al., 2016; Nilsson et al., 2020). Embedding the application of the GTT-P through a process of engaging with stakeholders, patients, relatives and different HPs will help to create and promote a safety culture and improve the quality of inpatient mental health care (True et al., 2017).

This study shows that the service user's voice is not always considered or prioritized equally with the voice of HPs. This means that insensitive HPs can harm the therapeutic alliance if they are not concerned with service users' ways of understanding. This could also affect the service user's illness progression. Some service users discontinue treatment or lose faith that they can be helped because they do not feel seen or heard. The study emphasizes these various understandings and is a reminder of the importance of listening to service users and getting to know and understanding their world. For patients with schizophrenia, experiences like the consequences of the pessimistic prognoses in some HPs' cultures (Schulze, 2007; Torgalsbøen et al., 2018), and symptoms such as relational disorders and "wordlessness" (Møller, 2018, p. 42) may make this population more vulnerable to AEs.

Professionalism and a holistic approach to the patient and his or her life must be maintained, dignity, respect and ethical conduct must be absolute and broad competency of HPs is needed. It is important to focus on preventive and evidence-based everyday work, with procedures that improve patient safety.

5.6 Further research

This study has shown that there are identifiable factors that differ between those who later develop schizophrenia and those who do not. It is, however, unclear whether preventive measures aimed at these factors will reduce the incidence of the disorder, and this should be investigated further. SMDs are strongly associated with poor general health, and thus increased physical activity and the prevention of high-risk health behaviours, although they may not prevent SMD, are likely to increase QOL and reduce impairment in this group, which may prove to be important factors. This should also be subject to further research.

More research in general on patient safety in mental health care is needed. Possible research questions to study could include whether reducing the number of triggers and AEs might have an effect on patients, their course of treatment and the quality of health care services in general. Do patients' QOL increase, and does dropout decrease? Do patients more quickly attain the level defined as personal recovery? Do people with SMD and other vulnerable groups have an increased risk of AEs?

A criticism directed at tools such as GTT-P is that they are resource-intensive to use, which can be a barrier to implementation and use of the tool. A non-psychiatric hospital in Northern Norway has further developed GTT to examine medical records using an electronic portal and automated trigger search, the Nordic Clinical Automatic Framework. Using automated GTT can save resources, and those using this framework have been able to examine the records of far more patients than other health trusts in Norway (St.meld. nr. 7 (2019-2020), 2019, p. 148). While it is important to develop and conduct studies on existing tools, research that simplifies and streamlines the use of a tool is also recommended.

6 CONCLUSION

Our studies have shown that persons who later developed schizophrenia, in comparison with persons who did not, were less physically active, more alone, more prone to a negative mood with more rumination, worry, sadness and anxiety, and they showed increased health risk behaviours such as more daily smoking.

Our study has analysed and reported AEs and the associated triggers identified using a modified quality and research instrument (GTT-P) in in- and out-patient units in the department of psychiatry of a Norwegian hospital. The results show that service users and HPs define areas of risk for AEs, triggers and AEs in a very similar way, but there are nuanced differences. Findings in our studies show that half of the AEs could have been avoided. In contrast to the Swedish research (Nilsson et al., 2020), we detected “suffering” as the most common AE.

HPs’ knowledge of key characteristics of mental, physical and psychosocial health before the onset of a disorder can increase the focus on individually tailored treatment and good quality care after disorder onset.

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Paper I

Paper II

Self-reported premorbid health in 15 individuals who later developed schizophrenia compared with healthy controls: Prospective data from the Young-HUNT1 Survey (The HUNT Study)

psykologisk.no/sp/2018/11/e8

Norwegian adolescents in the premorbid phase of schizophrenia reported poorer self-perceived mental and psychosocial health in several areas compared with healthy controls, write Arne Okkenhaug and colleagues.

BY: Arne Okkenhaug, Torbjørn Tanem, Tor Åge Myklebust, Bjørn Gjervan and Asbjørn Johansen

Early identification of individuals at risk of developing schizophrenia is crucial for developing effective preventive interventions (Cornblatt et al., 2015; Fusar-Poli et al., 2013; Laurens & Cullen, 2016; Rutigliano et al., 2018). The detection and prevention of psychotic symptoms has been of interest in both research and treatment intervention development since the early 2000s (Fusar-Poli et al., 2013; Millan et al., 2016). Delaying, ameliorating, and preventing the onset of schizophrenia is especially important considering the potentially chronic and debilitating consequences associated with the disorder (Cornblatt et al., 2003; Fusar-Poli et al., 2013; Laurens & Cullen, 2016; Millan et al., 2016; Morgan et al., 2014). The identification and investigation of risk factors and groups at ultra-high risk of developing schizophrenia has been a major aim of researchers, and temporary symptoms of psychosis and loss of function along with genetic risk factors have been regarded as early markers for later such development (Fusar-Poli et al., 2012, 2013). However, recent research has shown that identifying subjects who later develop psychosis is difficult. Schizophrenia shares risk factors with other mental disorders (Scott, 2016), and individuals defined as "at risk" of developing schizophrenia will not necessarily develop the disorder (Scott, 2016).

As a result of the high risk perspective, interventions have often been provided in the prodromal phase of schizophrenia (Brew, Shannon, Storey, Boyd, & Mulholland, 2017; Fusar-Poli, Yung, McGorry, & van Os, 2014). It may be more effective to investigate predictors in earlier stages of life in order to prevent development of the disorder. Previous evidence suggests that this earlier identification should be done prior to the advent of significant disability characterizing the prodrome and without restriction to those accessing health services (Laurens & Cullen, 2016; Scott, 2016). A number of researchers maintain that psychotherapeutic, psychosocial, or mastering-oriented interventions should be directed towards children and adolescents who are potentially in premorbid phases of the disorder (Laurens & Cullen, 2016; Liu, Keshavan, Tronick, & Seidman, 2015; Scott, 2016; Seidman & Nordentoft, 2015; Sommer et al., 2016). Neurocognitive impairments (Bora et al., 2014; Seidman et al., 2016) and reduced social skills (Addington & Heinssen, 2012) are often already established when subclinical symptoms emerge (Sommer et al., 2016). Multiple preventive and treatment strategies have been proposed for children with proven genetic vulnerability and children with transient psychotic symptoms (Sommer et al., 2016).

Relatively robust evidence indicates that children who present social, emotional, and behavioural problems as well as psychosis-related symptoms in childhood or adolescence have an increased risk of developing schizophrenia spectrum disorders later in life (Cornblatt et al., 2015; Golembo-Smith et al., 2012; Rapado-Castro, McGorry, Yung, Calvo, & Nelson, 2015; Welham, Isohanni, Jones, & McGrath, 2009). Previous studies have identified the developmental antecedents of schizophrenia prior to the prodromal phase, such as greater exposure and responsiveness to stressors, impaired performance on measures of general intelligence, specific cognitive functions, brain structure and functional abnormalities, and neuromotor dysfunction (Dickson, Laurens, Cullen, & Hodgins, 2012; Rund, 2018; Welham et al., 2009).

A fairly large number of studies have focused on retrospective information from peers, teachers, and relatives, while few prospective studies have investigated the subjects' own experiences (Seidman & Nordentoft, 2015). Results from longitudinal studies of general populations as well as familial high risk in cases of individuals at increased genetic risk of developing schizophrenia may not be generalizable. That is because most people with the disorder do not have affected family members (Laurens & Cullen, 2016).

It is important to expand the knowledge of early antecedents of schizophrenia in order to develop specific interventions aimed at identification and prevention of early psychotic symptoms (Scott, 2016). Prospective data on antecedents are not widely available because many studies have investigated retrospective data (Laurens et al., 2015). However, there is evidence that self-report measures are reliable in premorbid phases of schizophrenia (Brill et al., 2007). Prospective data from individuals who later developed psychotic illness and who have described their subjective experiences and premorbid characteristics in terms of health-related variables help preclude biased recollections of historical behaviour. They could also be a useful contribution to the field of early detection and prevention of psychotic illness (Lancefield, Raudino, & Downs, 2016).

The aim of the study

The aim of the study was to compare self-reported health and function in premorbid participants who later developed schizophrenia with healthy controls. We hypothesized that those in the premorbid phase of schizophrenia would report poorer self-perceived mental and psychosocial health compared to the controls.

Method

Design

The study had a prospective case-control design based on premorbid data from the Young-HUNT1 survey, which was part of the Nord-Trøndelag Health Study (Helseundersøkelsen i Nord-Trøndelag, HUNT). This longitudinal population study was conducted by the Norwegian University of Science and Technology (NTNU).

The Young-HUNT1 survey

The Young-HUNT1 survey was conducted in Nord-Trøndelag County in the period spanning 1995 to 1997 (Holmen et al., 2014) (https://www.ntnu.edu/hunt). Nord-Trøndelag is in Central Norway and currently has a stable population size of around 130,000 inhabitants (Holmen et al., 2014). The county is considered to be representative of Norway as a whole in terms of geography, economy, industry, and sources of income, age distribution, morbidity, and mortality. The study presented in this article was based on the Young-HUNT1 survey, which is the adolescent part of The HUNT Study (age range 13–19 years). The cohort consisted of 8,984 persons, about 90% of the youth population in Nord-Trøndelag. The data collection was performed in schools by trained nurses, and the methods included self-report questionnaires, structured interviews, and clinical measurements. The questionnaires covered major public health issues, including somatic and mental health, quality of life, and health behaviours.

Procedure

Based on a list of persons registered with a diagnosis of schizophrenia (F.20.0–F.20.9) in the Patient Administrative System (PAS) at the Department of Psychiatry of Nord-Trøndelag Hospital Trust, we identified people born in Nord-Trøndelag between 1977 and 1983 and thus eligible for participation in Young-HUNT1. Two study members examined the medical records of the PAS cohort based on the following inclusion criteria (Figure 1): 1) residence during the Young-HUNT1 survey period; 2) plausible schizophrenia diagnosis based on patient records; and 3) the absence of prodromal and manifest psychotic symptoms during Young-HUNT1 data collection. Prodromal symptoms were considered present in cases where marked changes in behaviour or thought patterns were reported at the time of participation in Young-HUNT1. The included cases were then invited to participate in the study.

Two external experienced psychiatrists validated the included cohorts' diagnoses and estimated onset of disease based on the participants' medical records. Inclusion was dependent upon fulfilment of the diagnostic criteria according to the *International Statistical Classification of Diseases* *and Related Health Problems 10th Revision* (ICD-10) criteria (World Health Organisation, 2016). Each case was grouped in one of the following categories: (a) certain diagnosis; (b) probable diagnosis; and (c) uncertain diagnosis. If there was at least one 'uncertain diagnosis' score, then the respondents' data were excluded. The project members confirmed the respondents' participation in the Young-HUNT1 survey based on the HUNT database. An application for this procedure was granted by the NTNU administrators of The HUNT Study (Nord-Trøndelag Health Study, 2015).

The informed consent procedure was undertaken by project members in collaboration with the individual's therapist, primarily in the clinic or at his or her home. When individuals were prevented from using this approach, they were contacted by telephone. When necessary, required information was obtained from medical records held at clinics for children and adolescents and from former therapists.

Individuals who fulfilled the inclusion criteria and gave their consent to participate in the study were included in the study case group. The case group consisted of patients from the Psychiatric Department in the Nord-Trøndelag Hospital Trust.

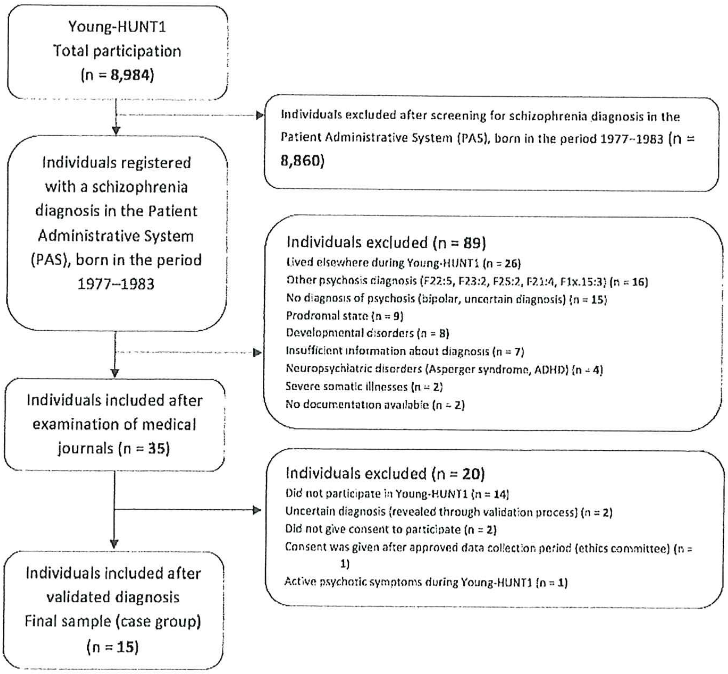

FIGURE 1: Procedure for inclusion of study participants.

Sample

The study dataset consisted of responses to the self-reported Young-HUNT1 questionnaires from a case group of 15 youths (Table 1), of whom

12 were boys and three were girls. Mean age at the time of Young-HUNT1 data collection was 16 years and one month, ranging from 13 years and 11 months to 18 years and eight months. The time of first reported prodromal symptoms varied from six months to eight years after Young-HUNT1. Later, four subgroups of schizophrenia were identified among the case group subjects.

From the HUNT sample (n = 8,984), we excluded respondents who had reported reduced mobility, reduced hearing, physical illness, severe mental illness, epilepsy, diabetes, migraine, or other somatic conditions lasting more than three months. From the remaining cohort, we identified a comparison group of healthy controls, matched 3:1 (n = 45) on gender and age.

TABLE 1: Characteristics of study sample.

Categories	*N*
Case group	
Gender	15
Female	3 (20%)
Male	12 (80%)
Age at inclusion in HUNT Study (mean/sd)	16/1.54
Schizophrenia diagnosis:	
Paranoid type	9 (60%)
Hebephrenic type	4 (26.7%)
Catatonic type	1 (6.7%)
Undifferentiated type	1 (6.7%)
Healthy controls	
Gender	45
Female	9 (20%)
Male	36 (80%)
Age at inclusion in HUNT Study (mean/sd)	16/1.54

Measures

To measure topics relevant to this study, we selected the questions in Young-HUNT1 regarding psychiatric conditions such as anxiety and depression, self-esteem, personality, and well-being. In addition, we included questions related to alcohol use, tobacco use, physical activity, school problems, social function, help-seeking behaviour, and leisure-time activity. (For the questionnaire see Young-HUNT1; 'Junior high school (age 13–16)' and 'High school (age 16–19)').

Some of the questions were single items, but most of the independent variables were composite scores constructed by the administrators of HUNT from a set of questions (examples: school function (14), friends (7), alcohol (5), and tobacco use (10) as well as help-seeking behaviour (6)). Other HUNT Study questions were based on structured, validated scales like The Hopkins Symptom Checklist version SCL-5 (Tambs & Moum, 1993). This checklist was used to assess symptoms of anxiety and depression. Four questions from Rosenberg's Self-Esteem Scale were used to assess self-esteem (Rosenberg, 1965). 'General well-being' is a three-item quality-of-life scale validated in earlier HUNT studies (Storksen, Roysamb, Holmen, & Tambs, 2006). Moreover, an 18-item short version of the Eysenck Personality Questionnaire (EPQ) assesses extraversion, neuroticism, and psychoticism (Eysenck & Eysenck, 1977). Psychoticism has been difficult to interpret in theory (Gudbergsson, Fosså, Sanne, & Dahl, 2007) and was therefore excluded from our analyses. Each item on the EPQ-18 was scored as 0 (no) and 1 (yes), and the six-item scores on each dimension were summed, giving a total score ranging from zero to six on each dimension. We present results on all the sum scores but also for each question.

This dual presentation was done since some of the single questions, such as "often worried," might be particularly important considering the subjects' risk of potentially experiencing emotional problems prior to schizophrenia development (Rapado-Castro et al., 2015; Welham et al., 2009).

The question 'Do you smoke?' had five items ranging from 'Yes, I smoke about xx cigarettes daily' to 'No, I don't smoke'. The responses were dichotomized between 'smoking daily' and 'not smoking daily'. Similar dichotomizations have been used in other Young-HUNT studies (Bratberg, Nilsen, Holmen, & Vatten, 2007; Mangerud, Bjerkeset, Holmen, Lydersen, & Indredavik, 2014). Schizophrenia is associated with an increased risk of daily smoking (Compton et al., 2009). Activities during the past week were dichotomized into 'inactivity' and 'activity'. Inactivity was defined as 'less than one day or one hour or less per week' in accordance with recommendations in other studies (Rangul, Holmen, Kurtze, Cuypers, & Midthjell, 2008). Self-reported alcohol use was assessed with two questions: (1) 'Have you ever tried drinking alcohol?' with the response options 'Yes', 'No', and 'Don't know'; and (2) 'Have you ever drunk so much alcohol that you felt intoxicated (drunk)?', which was measured on a scale with five response options ('Never', 'Once', '2–3 times', '4–10 times', and '> 10 times'). None of the participants answered 'Don't know' to the first question, which was dichotomized into 'Yes' or 'No'. The second question was dichotomized between 'Never' and 'Once or more'. Similar dichotomizations have been used in other Young-HUNT studies (Bratberg et al., 2007; Mangerud et al., 2014).

Lacking existing dichotomization procedures in the Young-HUNT1 dataset, we divided the groups based on their absence or presence of the element asked for in the questions. The question 'How often have you been to the school health centre?', which had three values – 'Not at all', 'One to three times', and More than three times'– the variables were dichotomized between 'Not at all' and 'One or more times'.

Leisure time was assessed with the question: 'How often have you done any of these activities in the past week?' Since problems related to social activities are found to be a potentially important risk factor for schizophrenia, we present only those five of the nine sub-questions related to social activities (Derdikman-Eiron, Hjemdal, Lydersen, Bratberg, & Indredavik, 2013; Liu et al., 2015; Tarbox & Pogue-Geile, 2008; Michalska da Rocha, Rhodes, Vasilopoulou, & Hutton, 2017).

Fourteen sub-questions about school were gathered under the main question: 'Do any of the following things happen to you at school/concerning school, or have any of them happened?' The school questions were grouped into three separate domains: (1) problems related to concentration and academic achievement (Academic); (2) behavioural problems (Conduct); and (3) well-being problems (Dissatisfaction) (Storksen, Roysamb, Holmen, & Tambs, 2006). A specific single question, 'Are you teased/harassed by other students?', formed a single question domain. All of these are presented in the results section.

Adding to the already referred items, we used three single-item questions that investigated participants' experience of loneliness, number of friends, and self-assessed health status.

Statistical methods

Data analyses were performed with IBM's SPSS, version 23 (IBM, 2013). Differences in means were analysed with independent samples' *t*-tests. Associations between case and controls and the categorical variables were analysed by estimating odds ratios from standard binary logistic regressions and by chi-square or Fisher's exact tests. All tests were two-tailed.

Ethical considerations

The study was approved by the Regional Committee for Medical and Health Research Ethics and was conducted in accordance with the Helsinki Declaration (The World Medical Association, 2013). All participants had the required competence to give an informed consent to participate in the study.

Results

Participants in the case group reported significantly poorer scores on the 'General well-being' scale compared with those reported by the healthy controls (*p* = .002). The estimated mean difference was −2.5. On two of three items, the case group reported significantly poorer well-being compared with the healthy controls (satisfaction with life (*p* = .007*)* and feeling strong and vital (*p* = .001)).

TABLE 2: Mean differences in scale variables.

Variables	Items	Range	Mean (*SD*) Case	Mean (*SD*) Control	Mean diff. (95% CI)	*p*-value
Self-perception						
'General well-being' scale	3	1–7	10.13(3.23)	7.67(2.36)	−2.5 (−4.0 – −.92)	.002
Rosenberg Self-esteem Scale	4	1–4	7.77(2.71)	7.27(1.74)	−.5 (−1.8 – .75)	.425
EPQ: neuroticism	6	Yes – No	3.15(1.46)	2.49(1.64)	−.67 (−1.7 – .35)	.195
EPQ: extraversion	6	Yes – No	4.08(2.06)	4.51(1.56)	.43 (−.64 – 1.5)	.419
Anxiety and depression SCL-5	5	1–5	7.67(1.72)	6.82(2.32)	−.85 (−2.3 – .59)	.243
School						
Total scale School/Academic *	4	1–4	11.62(2.86)	11.80(1.42)	.19 (−.96 – 1.33)	.748
Total scale School/Conduct *	4	1–4	13.92(1.93)	14.04(1.75)	.13 (−1.03 – 1.29)	.826
Total scale School/Dissatisfaction *	5	1–4	12.25(2.99)	13.53(2.25)	1.29 (−.30 – 2.87)	.110

Notes: * Fourteen items distributed across four scales: Academic, Conduct, Dissatisfaction, and Harassed (1 item). The Harassed scale is shown in Table 4.

The scores on the SCL-5 scale showed no significant differences between the two groups. However, the case group scored significantly lower on one of the items, having been more dejected, down, or sad compared with the healthy controls (*p* = .01), and the mean difference was –.59. The participants in the case group experienced more nervousness (during the last month) than the controls (*p* = .004). With regard to the EPQ, there were no differences on the two scales for neuroticism and extraversion, but there were differences on two single items: 'more often worried' (*p* = .004) and not liking 'meeting ahead of schedule to appointments' (*p* = .013). We did not find any significant differences between the groups in terms of self-esteem as measured with the short version of Rosenberg`s Self-Esteem Scale.

Compared with healthy controls, those in the case group reported having fewer close friends (*p* = .034), feeling lonelier (*p* = .003), and spending fewer hours (*p* = .002) and days per week (*p* =.009) engaged in sports or exercise.

TABLE 3: Associations between case/controls and categorical variables.

Variables	Original Items	Cases *N* positive/*N* total	Controls *N* positive/*N* total	OR	95% CI	*p*-value
Tobacco						
Tried smoking?	2	11/15 (73%)	28/44 (64%)	1.57	(.43 – 5.76)	.495
Smoke daily *	5	7/15 (46%)	2/45 (4%)	18.81	(3.29 – 107.53)	.001
Alcohol						
Tried drinking alcohol? (ref. = no) *	3	3/15 (20%)	4/45 (9%)	.39	(.08 – 1.99)	.258
Ever drunk so much you felt intoxicated? (ref. = no) *	5	5/15 (36%)	17/44 (39%)	1.13	(.33 – 3.96)	.844
Sports and exercise						
Days per week (ref. = 1 day or less) *	8	9/15 (60%)	10/45 (23%)	.19	(.06 – .66)	.009
Hours per week (ref. = 1 hour or less) *	6	9/15 (60%)	7/44 (16%)	.13	(.03 – .47)	.002
Self–perception EPQ (ref. = yes)	2					
Are you a relatively lively person?		10/14 (71%)	41/45 (91%)	.24	(.05 – 1.15)	.074
Would you be upset by seeing a child or animal suffer?		12/13 (92%)	36/44 (82%)	2.67	(.30 – 23.57)	.378
Do you like meeting new people?		10/15 (67%)	40/45 (89%)	.25	(.06 – 1.03)	.056
Are your feelings easily hurt?		8/13 (62%)	25/45 (56%)	1.28	(.36 – 4.52)	.702
Do you often feel that you lose interest?		9/14 (64%)	19/44 (43%)	2.37	(.68 – 8.23)	.175
Do you like to tease people even though it may hurt them?		7/15 (47%)	15/44 (34%)	1.69	(.51 – 5.56)	.387
Are you often worried?		11/14 (79%)	14/45 (31%)	8.12	(1.95 – 33.73)	.004
Are good manners and cleanliness important to you?		10/13 (77%)	42/45 (93%)	.24	(.04 – 1.36)	.107
Do you worry that terrible things might happen?		3/15 (20%)	17/45 (38%)	.41	(.10 – 1.67)	.215
Do you usually take the first step to make new friends?		8/15 (53%)	22/44 (50%)	1.14	(.35 – 3.7)	.824
Are you mostly quiet when you are around other people?		4/14 (29%)	13/45 (29%)	.99	(.26 – 3.71)	.982
Do you like to be on time for appointments?		8/14 (57%)	40/45 (89%)	.17	(.04 – .68)	.013
Do you often feel tired and indifferent/unmotivated without reason?		8/15 (53%)	17/44 (39%)	1.82	(.56 – 5.92)	.323
Do many people try to avoid you?		3/14 (21%)	2/44 (5%)	5.73	(.85 – 38.61)	.073
Are you a life-of-the-party type person?		9/13 (69%)	36/44 (82%)	.50	(.12 – 2.04)	.334
Are you bothered by an embarrassing experience long after it happens?		6/14 (43%)	18/45 (40%)	1.13	(.33 – 3.79)	.849
Do you like to have a lot of life and excitement around you?		11/14 (79%)	32/45 (71%)	1.49	(.36 – 6.23)	.585
Do people tell you a lot of lies?		0/13 (0%)	3/45 (7%)	.00	NA	.999
Friends						
Best friend at school? No/Yes (ref. = no)	2	5/14 (36%)	7/45 (16%)	.27	(.09 – 1.29)	.111
Do you have enough friends? (ref. = no)	2	4/14 (29%)	8/45 (18%)	.54	(.14 – 2.17)	.385
Health services visited in last 12 months						
Been to general practitioner? (ref. = yes)	2	10/14 (71%)	13/42 (31%)	5.58	(1.47 – 21.12)	.011
Been to psychologist? (ref. = yes)	2	3/13 (23%)	1/38 (3%)	11.10	(1.04 – 118.57)	.046
Been to other treatment? (ref. = yes)	2	3/12 (25%)	2/38 (5%)	6.00	(.87 – 41.44)	.069
Been to the school health centre? (ref. = yes) *	3	7/13 (54%)	12/41 (29%)	2.82	(–.78 – 10.15)	.113
Contacted school health centre? (ref. = yes)	2	15/14 (35%)	9/44 (20%)	2.16	(.58 – 8.06)	.251
Would you like to contact/visit the school health centre more often than you have? (ref. = no)	2	13/13 (100%)	38/44 (86%)	NA	NA	.319

Notes: * Item has been dichotomized; NA – Estimates were not available due to lack of variation in one or both groups.

TABLE 4: Continuous variables.

Variables	C/Con N total	Item from Young HUNT1					Value	*p*-value*
Health		Poor	Not so good	Good	Very good			
How is your health at the moment?	C: 14	1 (7%)	1 (7%)	7 (50%)	5 (36%)			
	Con: 45	0 (0%)	1 (2%)	25 (56%)	19 (42%)		4.033	.251
Self-perceptions		Almost always	Often	Sometimes	Never			
Bothered by nervousness?	C: 14	0 (0%)	3 (22%)	10 (71%)	1 (7%)			
	Con: 45	0 (0%)	4 (9%)	16 (35%)	25 (56%)		11.198	.004
School		Never	Sometimes	Often	Very often			
Teased/harassed by other students	C: 13	9 (69%)	3 (23%)	1 (8%)	0 (0%)			
	Con: 45	39 (87%)	5 (11%)	1 (2%)	0 (0%)		2.882	.215
Leisure time last week		Not Once	Once	2 or 3 times	4 or more			
Visited someone you know	C: 14	1 (7%)	3 (21%)	6 (43%)	4 (29%)			
	Con: 45	4 (9%)	4 (9%)	18 (40%)	19 (42%)		2.133	.543
Were visited	C: 13	6 (46%)	0 (0%)	3 (23%)	4 (31%)			
	Con: 44	9 (21%)	6 (14%)	16 (36%)	13 (30%)		4.177	.221
Out for more than 2 hours with friends	C: 13	2 (15%)	2 (15%)	5 (39%)	4 (31%)			
	Con: 45	7 (16%)	8 (18%)	17 (38%)	13 (29%)		.244	1.000
Meeting or training with a club	C: 13	9 (69%)	2 (15%)	2 (15%)	0 (0%)			
	Con: 44	20 (46%)	8 (18%)	10 (23%)	6 (14%)		2.615	.452
Were active in a hobby	C: 13	6 (46%)	2 (15%)	3 (23%)	2 (15%)			
	Con: 43	8 (19%)	6 (14%)	18 (42%)	11 (26%)		4.114	.255
Friends		None	One	Two or more	Four or more			
How many close friends?	C: 13	2 (15%)	2 (15%)	4 (31%)	5 (39%)			
	Con: 45	2 (4%)	1 (2%)	9 (20%)	33 (73%)		7.490	.034
		Very often	Often	Sometimes	Seldom	Never**		
Do you feel lonely?	C: 15	0 (0%)	3 (20%)	7 (47%)	3 (20%)	2 (13%)		
	Con: 45	2 (4%)	0 (0%)	8 (18%)	17 (38%)	18 (40%)	14.047	.003

*Fisher's Exact Test (2-sided); ** Very seldom or never

The case group reported daily smoking more often than the healthy controls (*p* = .001), but there were no differences between the groups on the question 'Have you tried smoking?'

No differences were identified regarding the use of school health services or help-seeking behaviour based on the question about initiating contact with school health services. Those in the case group had more often been to a general practitioner (*p* = .011) and to a psychologist in the last year (*p* = .046) than had the healthy controls. There were no differences between the cases and controls in terms of patterns of alcohol use or the question about their present state of health (*p* = .251).

No differences were identified concerning school (concentration/school conduct and academic achievement).

Discussion

The study hypothesis was that, as a group, young people who later suffered from schizophrenia would report significantly poorer self-perceived health than would the control group. We found this was the case for some health-related themes. In many areas, there were no differences. None of the results indicated that the case group had better health than the healthy controls.

The findings suggest that the main differences between the case group and the control group were that the case group's subjects had elevated premorbid levels of negative affect in terms of poorer subjective well-being and a higher degree of nervousness. They reported themselves more dejected and sad compared with the healthy controls. These findings correspond closely with results from previous research on emotional problems, which showed that, for example, social anxiety (Johnstone, Ebmeier, Miller, Owens, & Lawrie, 2005; Jones, Rodgers, Murray, & Marmot, 1994) and depressive symptoms (Fusar-Poli et al., 2017; Fusar-Poli, Nelson, Valmaggia, Yung, & McGuire, 2014; Häfner et al., 1998) were generally highly prevalent in early stages of non-affective psychotic disorders (Thompson et al., 2015).

To our knowledge, few studies have examined subjective well-being in people in phases prior to the onset of schizophrenia. When asked about both intrapsychic and functional conditions, young people who were considered vulnerable to developing psychosis reported lower subjective quality of life than control groups (Bechdolf & Pukrop et al., 2005; Bechdolf & Ruhrmann et al., 2005; Svirskis et al., 2007). Low level of well-being is associated with less resilience in people with mental illnesses (Uzenoff et al., 2010), and it is an important topic to investigate in people in transition to psychosis (Brew et al., 2017). For many of our participants, their experiences of poor levels of well-being appear to have existed for quite some time before the onset of schizophrenia. Therefore, the low well-being scores can hardly be explained by annoying psychotic symptoms or by negative mental and social consequences associated with having a diagnosis.

The participants reported being more affected by worrying compared to the healthy controls. The concept of worry is documented as a factor in theoretical models for the establishment and continuation of psychopathological processes (Wells & Matthews, 1996). A thinking style characterized by worry has been identified as one among other specific proximal causal factors in persecutory delusions (Freeman & Garety, 2014). Worry leads to implausible ideas (Freeman et al., 2012; Freeman & Garety, 2014). Antecedent worry and rumination may predict delusional and hallucinatory experiences and associated distress (Hartley, Haddock, e Sa, Emsley, & Barrowclough, 2014). An elevated level of worry may contribute to a longer duration of paranoid thoughts (Startup, Freeman, & Garety, 2007). Treatment aimed at reducing concern may improve paranoid symptoms (Freeman et al., 2015). Our findings indicate that worrying processes were present in premorbid phases for the case group subjects. This finding may serve as a contribution to the ongoing discussion of the phenomenon's significance in the development of schizophrenia.

The case group reported poorer social functioning compared with healthy controls regarding the following: feeling lonelier, having fewer close friends, not following up on appointments, and having a tendency to receive fewer visits. Studies have indicated that the frequency of meeting friends and the experience of low subjective well-being are the strongest adolescent predictors of reduced psychosocial functioning in young adulthood (Derdikman-Eiron et al., 2013). A number of studies have shown that a history of poor childhood social functioning during critical developmental stages is a sensitive predictor for schizophrenia later in life (Liu et al., 2015; Tarbox & Pogue-Geile, 2008). Loneliness is not only associated with manifest psychotic disorders but is also likely to be already present in subclinical stages (Michalska da Rocha et al., 2017). For a number of our cases, the experience of loneliness was reported before the onset of schizophrenia, indicating that such an experience was potentially a contributing factor in the development of the disorder.

Based on the responses they gave, the participants of the Young-HUNT1 survey were dissatisfied with their lives, often did not feel strong and vital, did not like school breaks, and felt lonelier than their peers. From this information, we can assume that many of them who later developed schizophrenia experienced struggles in daily life. A connection between low subjective well-being, depression, and experienced social support has previously been identified in individuals with first-episode psychosis (Uzenoff et al., 2010). Furthermore, previous research suggests that greater sensitivity to everyday stress is an indicator of both later development of psychosis (Myin-Germeys & van Os, 2007; Van Winkel, Stefanis, & Myin-Germeys, 2008) and experiences of social defeat (Selten & Cantor-Graae, 2007). The aforementioned dissatisfaction with life could indicate that at the time of participation the case subjects experienced what Myin-Germeys & Van Os (2007) describe as the 'emotional pathway to psychosis'.

There were no differences between the case and control groups on the variables 'self-esteem' and 'school function' (concentration and academic achievement). The homogeneous response on self-esteem is interesting, given that the case group reported a higher degree of emotional and social problems. The lack of significant differences on reported school function differs from studies that have shown an association between schizophrenia in the premorbid phase and IQ reduction, cognitive deficits (Agnew-Blais et al., 2015; Welham et al., 2009), lower grades at school, and more negative academic assessments from teachers (Ullman, Levine, Reichenberg, & Rabinowitz, 2012).

Our study showed that individuals diagnosed with schizophrenia were less physically active in the premorbid phase of their disease compared with the healthy controls. In an earlier study, we found a relationship between inactivity and a diagnosis of schizophrenia (Okkenhaug et al., 2016). The reduced physical activity in the premorbid phases of schizophrenia development in this study confirm the findings from three linked studies of physical activity in adolescents who later developed psychosis (Sormunen et al., 2017).

The majority of the case group subjects reported that they smoked daily. There is a strong association between nicotine use and schizophrenia (Gurillo, Jauhar, Murray, & MacCabe, 2015; McCreadie, 2003), especially with daily smoking (Compton et al., 2009). Earlier studies have documented that smoking is overrepresented among people in the pre-clinical phases of schizophrenia (Myles et al., 2012) and at the onset of first-episode psychoses (Gurillo et al., 2015). Smoking is also associated with the earlier debut of symptoms (Gurillo et al., 2015). That many in the case group reported smoking before onset of disease supports the current argument that smoking is not necessarily a cause of schizophrenia. Smoking could represent one of many risk factors for disease development (Gurillo et al., 2015) by contributing to symptoms such as anxiety and depression (Alderson & Lawrie, 2015).

Studies have shown that alcohol abuse starts in early adolescence and that there are no differences in such abuse between healthy youths and youths in premorbid phases of schizophrenia (Buchy et al., 2015; Hambrecht, Lotz, Häfner-Ranabauer, & Waschkowski, 1996; Mangerud et al., 2014). Our findings support the findings of these studies.

Some case group subjects reported that they had more often attended appointments with general practitioners or psychologists. However, we found no difference between the groups as to whether they had taken the initiative to seek help from their school health services. Moreover, none of the participants reported the need for additional help of that type. Previous research has shown that people with first-episode psychosis do not initiate help-seeking for themselves, particularly those who have a relative who is affected by mental illness (O'Callaghan et al., 2010). This lack of help-seeking increases the challenge of implementing early identification and intervention strategies. Identification of adolescent premorbid function should rely on information not only from health services but also from peers, teachers, or significant others.

Limitations and strengths

The clinical sample in the present study was small. This tendency may have increased the risk of reduced external validity and generalizability. The sample size also excluded the possibility of conducting multiple regression analysis and justified the choice to analyse dichotomous variables. Furthermore, the sample had considerable gender skewness, with more males than females, which might have affected the results. There was also a risk of reduced reliability associated with the reporting of self-reported data, but there is no reason to suspect that participants with a later diagnosis of schizophrenia would differ from others regarding the validity of such data (Brill et al., 2007). The risk of bias regarding data derived from self-assessments stemming from participants' long-term deficient memories or subjective distortions of their childhood was minimized by the data being prospective.

The case group participants had well-validated diagnoses, and people with short, single psychotic episodes (< 1 month) were excluded. The case group subjects were also considered representative of the total population of people who developed schizophrenia in the cohort born between 1977 and 1983 in Nord-Trøndelag. Compared with other studies where respondents were selected on the basis of genetic risk factors, the self-reported premorbid data limited potentially biased responses compared with other retrospective methods.

Conclusions

Adolescents in the premorbid phase of schizophrenia reported poorer self-perceived mental and psychosocial health in several areas compared with healthy controls. Compared with the healthy controls, they reported poorer subjective well-being, they felt more nervous, less happy, and sad, and they described themselves as more worried. Additionally, they had fewer friends, and they reported feeling lonely more often. Almost 50% smoked nicotine daily, and they were less physically active than their healthy peers.

Despite the limited possibility to generalize the findings, our results may support earlier empirical studies that examined possible strategies for the early detection and prevention of disease development. Implementing strategies aimed at adolescents of multiple age levels presupposes a broad knowledge base regarding markers for premorbid development. Our findings suggest that such markers could consist not only of manifest symptoms but also, to a greater extent, vague characteristics and problems. The task of identifying subjects at risk of developing schizophrenia is challenging because such individuals may not seek help for their psychological problems. It can be assumed that data from broad national health surveys, such as Young-HUNT1, will continue to be an important source of knowledge. The variety of questions on multiple domains provides the opportunity to construct a comprehensive knowledge base for the heterogeneous premorbid characteristics of people at risk of developing schizophrenia. More prospective data from larger cohorts are needed to be able to generalize such knowledge.

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Abstract

Self-reported premorbid health in 15 individuals who later developed schizophrenia compared with healthy controls: Prospective data from the Young-HUNT1 Survey (The HUNT Study)

Objective: The study investigated whether youths who later developed schizophrenia would report poorer mental and psychosocial health compared with matched healthy controls. Method: The study had a prospective case control design. Data were extracted from the Norwegian health survey, the Young-HUNT1 survey (collected between 1995–1997). Results: The case group reported poorer subjective well-being, more negative emotions, and more difficulties related to social function compared to healthy controls. Several of them smoked nicotine daily and they were less physically active. Conclusions: The results support other studies showing that premorbid schizophrenia is associated with negative emotions and social disturbances. The results also reveal that negative subjective well-being and problems with smoking and inactivity were present before onset of the disease.

Keywords: help-seeking behaviour, The HUNT Study, lifestyle risks, loneliness, negative emotions, premorbid, schizophrenia, social relations, subjective well-being.

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