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Reflections on current practices and visions for the future

Tiina Putkuri

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ISBN 978-951-29-9939-2 (PRINT)
ISBN 978-951-29-9940-8 (PDF)
ISSN 0355-9483 (Print)
ISSN 2343-3213 (Online)
Painosalama, Turku, Finland 2024

To my family

UNIVERSITY OF TURKU
Faculty of Medicine
Department of Nursing Science
Nursing Science
TIINA PUTKURI: School nurse as a provider of mental health support – Reflections on current practices and visions for the future
Doctoral Dissertation, 178 pp.
Doctoral Programme in Nursing Science, November 2024

ABSTRACT

The purpose of this study was to examine the role of school nurses as providers of mental health support now and in the future.

The study was conducted in two phases. In the first phase, the role of the school nurse was examined through both the national (macro level) and organizational (mezzo level) perspectives. In the second phase, the role was examined through an individual (micro level) perspective. Sub-studies were conducted with a qualitative, descriptive design (Papers I & II); a descriptive, convergent mixed method (posttest only) design (Paper III); and a one-group quasi-experimental (pre- and posttest) design (Paper IV). Participants were the stakeholders in school health care (n=25), public health nurses (n=47), and public health nursing students (n=64). Additionally, feedback from learners (n=2 594) collected from an e-learning course platform was utilized as data.

The results of the first phase indicated that there is no unified future vision for the mental health support provided in school environments, and the role of the school nurse as a provider of this support is unclear. Several national- and organizational-level changes are needed, ranging from legislative amendments to the modeling of procedures. The results of the second phase indicate that school nurses are willing to implement mental health promotion, as well as the prevention and treatment of mental health problems, in their work. Competence in all these areas is needed when working as a school nurse. Participation in the developed e-learning course *'Mental health promotion in school health care'* was good and the learners were well satisfied with the program. The e-learning course significantly increased participants' self-efficacy, but more reliable study designs are needed to confirm these results.

The conclusion of the study is that a clear future vision needs to be established, and the macro and mezzo-level needs must be addressed before the potential of school nurses as providers of mental health support is optimally utilized. Because of their expertise in health promotion and prevention, the efforts of school nurses should be directed towards these areas. In line with their expertise, the most suitable role for school nurses would be to provide psychoeducation, involve parents, and promote – with evidence-based methods – health habits that promote mental health, prevent problems, and alleviate symptoms.

KEYWORDS: mental health, mixed method, public health nurse, school health services, school nurse

TURUN YLIOPISTO
Lääketieteellinen tiedekunta
Hoitotieteen laitos
Hoitotiede
TIINA PUTKURI: Kouluterveydenhoitaja mielenterveystuen tarjoajana – pohdintoja nykykäytännöistä ja visioita tulevaisuuteen
Väitöskirja, 178 s.
Hoitotieteen tohtoriohjelma, Marraskuu 2024

TIIVISTELMÄ

Tämän tutkimuksen tarkoituksena oli selvittää kouluterveydenhoitajan roolia mielenterveystuen tarjoajana nyt ja tulevaisuudessa. Tutkimus toteutettiin kahdessa vaiheessa.

Ensimmäisessä vaiheessa roolia tarkasteltiin kansallisen tason (makrotaso) ja organisaatiotason (mesotaso) kautta, toisessa vaiheessa yksilötason (mikrotaso) kautta. Osatutkimusten tutkimusasetelmat olivat laadullinen kuvaileva tutkimus (artikkelit I & II), kuvaileva, konvergentti monimenetelmätutkimus (vain jälkeen mittaus) (artikkeli III), ja yhden ryhmän kvasikokeellinen tutkimus (ennen ja jälkeen mittaukset) (artikkeli IV). Osallistujina oli kouluterveydenhuollon sidosryhmiin kuuluvia henkilöitä (n=25), terveydenhoitajia (n=47) ja terveydenhoitajaopiskelijoita (n=64). Lisäksi aineistona käytettiin oppijoilta (n=2 594) verkkokurssialustan kautta kerättyä palautetta.

Ensimmäisen vaiheen tulokset osoittivat, että kouluympäristössä tarjottavasta mielenterveystuesta ei ole yhteistä tulevaisuudenvisiota ja terveydenhoitajan rooli tuen tarjoajana on epäselvä. Tutkimuksessa tunnistettiin useita kansallisen ja organisaatiotason muutostarpeita, aina lakimuutoksista toimintatapojen mallintamiseen. Toisen vaiheen tulokset osoittivat, että kouluterveydenhoitajat ovat halukkaita toteuttamaan sekä mielenterveyden edistämistä että mielenterveysongelmien ennaltaehkäisyä ja hoitamista. He tarvitsevat työssään osaamista kaikilla näillä alueilla. Tutkimuksen aikana kehitettyyn ’*Mielenterveyden edistäminen kouluterveydenhuollossa’* -verkkokurssiin osallistuttiin hyvin ja siihen oltiin tyytyväisiä. Verkkokurssi lisäsi osallistujien minäpystyvyyttä merkittävästi, mutta tuloksen vahvistamiseksi tarvitaan luotettavampi tutkimusasetelma.

Kouluterveydenhoitajien potentiaalin optimaalinen hyödyntäminen mielenterveystuen tarjoamisessa edellyttää selkeän tulevaisuuden vision muodostamista sekä tunnistettuihin muutostarpeisiin vastaamista. Terveyden edistämisen ja sairauksien ehkäisyn asiantuntijoina kouluterveydenhoitajien työtä tulee suunnata erityisesti näille alueille. Terveydenhoitajien professioon soveltuu rooli psykoedukaation tarjoajana, vanhempien osallistajana ja mielenterveyttä edistävien, ongelmia ehkäisevien ja oireita lievittävien terveystottumusten edistäjänä näyttöön perustuvia menetelmiä hyödyntäen.

AVAINSANAT: mielenterveys, kouluterveydenhuolto, terveydenhoitaja, monimenetelmätutkimus

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Abbreviations

APA	American Psychological Association
BPS	Brief Psychosocial Support
CHC	Child Health Clinic
COREQ	Consolidated Criteria for Reporting Qualitative Research
COVID-19	Coronavirus Disease
EU	European Union
GDPR	General Data Protection Regulation
ICD	International Statistical Classification of Diseases and Related Health Problems
IPC	Interpersonal Counselling
NANDA	North American Nursing Diagnosis Association
NGO	Non-governmental organization
NIC	Nursing Intervention Classification
NOC	Nursing Outcomes Classification
OECD	Organisation for Economic Co-operation and Development
OSF	Official Statistics of Finland
PHN	Public Health Nurse
SHC	School Health Care
SN	School Nurse
SPSS	Statistical Package for the Social Sciences
TENK	Finnish Advisory Board on Research Integrity (Tutkimuseettinen neuvottelukunta)
THL	Finnish Institute for Health and Welfare (Terveyden ja Hyvinvoinnin Laitos)
TIDieR	Template for Intervention Description and Replication
UAS	University of Applied Sciences
UN	United Nations
UNFPA	The United Nations Fund for Population Activities
YLD	Years Lived with Disability
WHO	World Health Organization
WMA	World Medical Association

List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

I Putkuri T, Lahti M, Laaksonen C, Sarvasmaa AS, Huttunen R, Axelin A. Mental health services in the school environment – Future visions using a phenomenographic approach. *Journal of Clinical Nursing*, 2023; 32 (11–12), 2742–2756.

II Putkuri T, Salminen L, Axelin A, Lahti M. Good interaction skills are not enough – competency in mental health issues in child health clinics and school health services. *Scandinavian Journal of Caring Science*, 2021; 35 (3): 988–997.

III Putkuri T, Sarvasmaa AS, Lahti M, Laaksonen C, Axelin A. Participation and satisfaction in the 'Mental health promotion in school health care' e-learning course – a mixed-method study. *The Journal of Mental Health Training, Education and Practice,* 2024; 19 (3): 139–152.

IV Putkuri T, Sarvasmaa AS, Lahti M, Laaksonen C, Axelin A. Knowledge and self-efficacy of school nurses and nurse students on mental health issues before and after e-learning course – A quasi-experimental study. *(Manuscript)*

1 Introduction

Mental health problems among children and young people are common (Polanczyk et al., 2015; Rehm & Shield 2019), but the services targeted towards them are insufficient to fulfill requisite needs; it has been shown that almost 50% of all young Europeans reported an unmet need for mental health care (OECD 2022). The need for help with mental health problems has been growing for a considerable number of years (Gyllenberg et al., 2018). The events of recent years have made the situation even worse. During the early phase of COVID-19, the use of mental health services decreased (Wan Mohd Yunus et al., 2022), but the prevalence of symptoms of certain mental health problems were seen to double (OECD 2022; Racine et al., 2021). In Finland, the number of new mental health diagnoses among children and adolescents has increased by almost 20% since the beginning of the COVID-19 pandemic (Gyllenberg et al., 2023).

Mental health problems cause harm in various ways at the individual level (micro-level) but also at the community and organizational levels (mezzo level), and societal and national levels (macro-level). They often begin before adulthood (Solmi et al., 2022) and once manifested, they tend to persist or reappear later in life (Jones, 2013). Mental health problems are associated with lower educational attainment and unemployment (Clayborn et al., 2019; Ringbom et al., 2022), and, for example, in Finland, they are the most common cause of sick leave (Blomgren & Perhoniemi, 2022). Globally, they are the leading cause of health-related costs for children in society (Soni, 2014) and among the most significant causes of years lived with disability (YLD) among adolescents (Erskine et al., 2015; WHO, 2021b). Mental health problems have also been found to be associated with substance abuse issues (Polanczyk et al., 2015), an increased risk of somatic diseases, such as cancer, and higher mortality (Wahlbeck et al., 2011; WHO 2021a). The saddest of all consequences of mental health problems is that suicides are one of the most common causes of death among young people (WHO, 2021b; OSF, 2023).

Schools are and should be the places where mental health promotion, prevention of mental disorders, and early identification of problems can be offered to all children and adolescents (Rampazzo et al., 2016). With the professional expertise of school nurses, promotion and prevention are also precisely the areas on which their

work should be focused (Alstveit et al., 2022; Jansen et al., 2019; Government Decree 338/2011; WHO, 2021a). Despite this, the mental health work carried out by both school nurses and other health and social care professionals working in and outside schools has not placed sufficient focus on the prevention of mental health problems (Vorma et al., 2020; WHO 2021a). This in particular, has led to a situation where curative services are congested. For example, temporarily the waiting times for child and adolescent psychiatric special healthcare have been over 90 days in Finland (OECD, 2022). Knowledge of service overload may act as a barrier to seeking help (Radez et al., 2021) possibly leading to delays in seeking help. From both a humane and economic point of view, it would make more sense to focus on promotion and prevention instead of treatment. However, the full potential of school nurses may not currently be fully utilized, as their role in mental health issues remains somewhat unclear (Bohnenkamp et al., 2019; Svensson & Warne, 2024).

The purpose of this study was to examine the role of school nurses as providers of mental health support in the future. The overall aim was to investigate how the potential of school nurses could be optimally utilized in the future. The study had two phases with specific goals. In phase I, the perspective was on the national and the organizational levels (i.e., macro and mezzo levels), and in phase II at the individual level (micro level). This study is guided by the Ottawa Charter, which states that health promotion efforts should be directed not only at the individual level but also at the community and societal levels (WHO 1986). It is important to examine the subject of study from multiple perspectives to achieve a comprehensive understanding. The results of this study structure and clarify various options concerning the school nurses' roles related to providing mental health support. With the results, it is possible to develop school health services and the work of school nurses in a direction that optimally utilizes the specialized expertise of school nurses and enhances the well-being of children and adolescents in the most appropriate manner.

2 Review of the Literature

2.1 Mental health of children and adolescents

Mental health can be examined from the perspectives of health or illness. From a health perspective, a term often used is positive mental health or mental well-being. (Keyes 2005; Vorma et al., 2020.) Positive mental health is defined as *"a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"* (WHO 2022). The same definition can be used for mental well-being. Mental well-being includes two aspects: hedonic well-being (feeling of pleasure and enjoyment) and eudaimonic well-being (having a sense of purpose in living) (Ryan & Deci 2001).

From an illness perspective, the focus is on mental health problems or diagnosed mental disorders. The presence of mental wellbeing and mental illness are not mutually exclusive; an individual may concurrently experience both mental well-being as well as mental health problems or diagnosed mental disorders (Keyes 2005; WHO 2022). The term mental disorder is used when based on the symptoms, an individual can be assigned a specific mental health diagnosis according to the International Statistical Classification of Diseases and Related Health Problems (ICD) (WHO 2021a). In this dissertation, instead of using the term 'mental disorder', I will use the term 'mental health problem', which also encompasses symptoms that do not meet the diagnostic criteria for any specific mental disorder.

The following sections examine the current state of mental health in children and adolescents, considering both mental well-being and mental health problems. United Nations defines those between the ages of 10 and 19 as adolescents (UNFPA N.d.) and by that definition, therefore, children are those under 10 years. In this dissertation, the term 'children and adolescents' refer broadly, taking the context into account, to pupils in primary and lower secondary education ('perusopetus') being 6 –15 years old and students in higher secondary education ('toisen asteen koulutus') being 16–19 years old.

2.1.1 Mental health in childhood and adolescence – current situation

While mental well-being and mental illness are distinct concepts, a high level of mental well-being correlates with the absence of mental disorders (Keys 2005; WHO 2022). Mental health issues are also associated with somatic health. For example, good mental well-being reduces the risk of at least some somatic diseases, such as cardiovascular diseases (Keyes 2005) and mental disorders increase the risk of somatic diseases, such as cancer, and even premature death (WHO 2021a). Mental well-being is generally higher among boys than girls, both in Finland and in many other countries (Cosma et al., 2023).

Mental wellbeing can be measured for example through experiences of feelings good about themselves, closeness to other people, or optimism about the future (Tennant et al., 2007). Considering the concepts of closeness to other people and feelings of optimism, the majority of Finnish children and adolescents are doing well, although there is still room for improvement (Kivijärvi 2023). Although meetings between adolescents and their friends have decreased it has not been reflected in their sense of belonging; the majority of Finnish youth still feel a sense of belonging with their close circle (Kivijärvi 2023). However, about 10% of secondary school boys and even 20% of girls consider themselves lonely (THL 2023a). In an international study, the proportion of lonely 15-year-old Finnish girls was even higher (26%), while the number was only 13% in Denmark and even 40% in the United Kingdom (Cosma et al., 2023). According to the Youth Barometer, a significant proportion of adolescents have experiences that threaten their mental well-being; approximately one in five experience an uncertainty about their future, and one in four considerable or a great deal of stress (Kivijärvi 2023). However, maintaining optimism is crucial: it both promotes the mental well-being of adolescents and prevents mental health problems (Rincón Uribe et al., 2020).

Mental wellbeing can also be measured through the concept of life satisfaction; self-reported mental health problems (Lombardo et al., 2018) and depressive symptoms (Mosknes et al., 2016) are strongly associated with low life satisfaction. According to a large Finnish School Health Promotion study, almost eight out of ten boys and six out of ten girls in secondary school are satisfied with their lives (THL 2023a). According to the Finnish Youth Barometer, adolescents' life satisfaction decreased during the COVID-19 pandemic but has now returned to pre-pandemic levels (Kivijärvi 2023). However, among girls, there is a significant decrease in life satisfaction between girls in elementary and middle school: respectively from 81% to only 55% (THL 2023a). There has also been a decline in adolescents' life satisfaction at the international level between 2018 and 2022 (Cosma et al., 2023).

Through the lens of mental health problems, mental health can be measured by the prevalence of symptoms or diagnoses. Symptoms related to youth mental health

have been relatively common for a significant amount of time (Castelpietra et al., 2022; Polanczyk et al. 2015). According to a Finnish School Health Promotion study, approximately one-third of adolescent girls have reported symptoms of moderate or severe self-reported anxiety (THL 2023a). Globally, the prevalence of diagnosed anxiety disorder among individuals aged 10–24 is approximately 6.5%, and the prevalence of depressive disorder 3% (Castelpietra et al., 2022). Not all individuals experiencing symptoms meet the diagnostic criteria for a mental disorder. However, up to 15% of the whole population receives a diagnosis of some mental disorder before the age of 18 years (Dalsgaard et al., 2020) and nearly half of all mental disorders have emerged by the age of 18 years (Solmi et al., 2022).

2.1.2 Factors associated with children's and adolescents' mental health

Several factors associated with mental health are known and these factors also concern children and adolescents. Mental wellbeing is positively associated with the number of friends and activity in social relationships (Pasanen et al., 2018), active participation in cultural or other events (Hansen et al., 2015; Pasanen et al., 2018), and physical activity (Pasanen et al. 2018; Tamminen et al., 2020; White et al., 2017). Physical activity also alleviates effectively the symptoms of depression (Noetel et al., 2024) and seems to be an effective treatment for other mental health problems too (Carter et al., 2021; Firth et al., 2020).

Mental health problems, on the other hand, are associated with factors such as obesity (Quek et al., 2017), experiences of being bullied (Ye et al., 2023), loneliness (Hemberg et al., 2022), learning disabilities (Aro et al., 2019), and low levels of life satisfaction (Lombardo et al., 2018; Mosknes et al., 2016). One of the key protective factors against mental health problems is good mentalization ability, which refers to the capacity to observe and reflect on internal states of one's own mind and the minds of others (Luyten et al., 2020).

There also appears to be a connection between diet and mental health. For example, a comprehensive meta-analysis demonstrates that vitamin D supplementation can reduce depressive symptoms in adults (Mikola et al., 2023), and the potential for utilizing gut microbiota in the treatment of depression and anxiety symptoms looks promising (Simpson et al., 2021). A healthy diet in general is associated with lower rates of depression (Cairns et al., 2014). Preliminary evidence exists regarding other possibilities of using dietary patterns for the prevention and treatment of mental health problems, but further research is still needed (Dietch et al., 2023; Firth et al., 2020; Hockey et al., 2023).

Concerning other health habits, poor sleep, for example, is associated with a higher risk for mental health problems (Firth et al., 2020) and disturbed sleep with

depressive syndromes (Marino et al., 2021). Moreover, excessive gaming might be associated with attention-deficit hyperactivity disorder (Dullur et al., 2021), and extensive use of social media with depression and anxiety (Keles et al., 2020; Kosola et al., 2024). Substance use has also been identified as a risk factor for mental health problems: both smoking and the use of alcohol in adolescence are associated with a higher risk of depression (Cairns et al., 2014). Cannabis use in adolescence is associated with an increased risk of depression (Cairns et al., 2014; Mustonen et al., 2021), anxiety (Mustonen et al., 2021), and psychosis (Hasan et al., 2020).

In addition to individual factors, it is important to remember that mental health is also influenced by community factors. For instance, a better student-rated school climate is associated with fewer mental health symptoms (Hinze et al., 2024) while poverty (Amroussia et al., 2017) and easier access to alcohol in adolescence (Thern et al., 2017) increase mental health problems. Knowledge about associated factors can be utilized when supporting the mental health of children and adolescents. Based on a comprehensive systematic review and meta-analysis, interventions targeting adolescent depression should focus on lifestyle factors such as sleep, diet, and substance use (Cairns et al., 2014).

2.1.3 Current trends and future needs in mental health support for children and adolescents

The help needed for children and adolescents with mental health issues has significantly increased for over the last decade (Gyllenberg et al., 2018; Olfson et al., 2014; Sourander et al., 2016). The growth in the demand for support and even treatment appears to have been greater than the increase in the prevalence of disorders (Mishina et al., 2018, Collishaw 2015). Children and adolescents are experiencing and self-reporting mental health symptoms (potentially falling below diagnostic criteria) significantly more frequently than before (for example, THL 2023b). However, current evidence suggests that the prevalence of actual mental health disorders (excluding eating disorders) appears to have remained nearly unchanged (Castelpietra et al., 2022). In addition to children and adolescents, parents and healthcare personnel also seem to interpret symptoms as disorders more frequently than is actually the case. This is reflected in Finland by the notably high number of ADHD diagnoses. For example, in Eastern Finland, over 20% of boys have been given an ADHD diagnosis (THL 2024a), while the international prevalence is around 5% (Salari et al., 2023; Sayal et al., 2018). Nevertheless, the need for help and support for children, adolescents, and families is real.

Mental health services have been congested for a long time (WHO, 2021a), but with the COVID-19 pandemic, the situation worsened even further. For example, in the worst month in Finland in 2022, almost 50% of referred children and adolescents

had to wait over 90 days to access specialized mental health care (OECD, 2022). In high-income countries, between 25% and 50% of individuals of all ages with severe mental disorders do not have access to treatment (WHO, 2021a). During the early phase of COVID-19, the use of mental health services decreased (Wan Mohd Yunus et al., 2022), but the prevalence of symptoms of certain mental health problems doubled (Racine et al., 2021; OECD, 2022). The prevalence of symptoms has not yet returned to pre-pandemic levels (Kiviruusu et al., 2024). In Finland, the number of new mental health diagnoses among children and adolescents also increased by almost a fifth in a few months after the beginning of the pandemic (Gyllenberg et al., 2023).

In addition to the COVID-19 pandemic, various other societal changes and challenges threaten the mental health of children and adolescents. In Finland, these changes include the increase in poverty (Amroussia et al., 2017; OSF 2024a), the easier availability of alcohol (Thern et al., 2017) following the initiation of alcohol home delivery, and the expansion of alcohol selections in grocery stores, as well as cuts in funding for NGOs supporting children and families due to the recent Program of Prime Minister Petteri Orpo's Government (Finnish Government 2023). The global shortage of healthcare workers (WHO 2016) is also evident in Finland in the form of long waiting times, despite the fact that the country has the highest number of nurses per capita in the EU (OECD 2021). The situation appears as not having *"the right number of people with the right skills in the right place at the right time, to provide the right services to the right people*" (Lopes et al., 2015).

The discrepancy between the need for help and the available amount of support may be one reason why help may finally be provided once problems have already emerged or even become severe. However, both the parents and adolescents have reported their desire to receive support in the early stages or even preventively before the onset of actual mental health symptoms or urgent matters (Putkuri et al., 2023; Granrud et al., 2020). Moreover, unlike many other countries, psychosomatic symptoms also have become more prevalent in the Nordic countries (Potrebny et al., 2017). This may be particularly evident in the context of school health services, where children and adolescents often seek help for these symptoms (Dina & Pajalic 2014; Skundberg-Kletthagen & Moen 2017).

Many risk factors for mental health issues also appear to be increasingly common nowadays. For instance, only a small percentage of adolescents obtain enough sleep and physical activity (Kosola et al., 2024). Although alcohol consumption among adolescents is gradually decreasing, the use of cannabis, the most common drug among youth, has increased in Finland and other European countries (ESPAD Group 2020). In Finland, the number of child welfare notifications has doubled, and the number of children subject to child welfare notifications has increased by as much as 67% in the last ten years. Among middle school-aged children, one in six has

received a child welfare notification in the past year. (THL 2024b). Based on the increasing prevalence of risk factors, it is possible, and even likely, that the need for mental health support will not decrease in the coming years.

2.2 Mental health support for children and adolescents

The primary providers of mental health support for children and adolescents are their parents or caregivers and other close individuals, including friends; they are the sources from which support is most often sought (Kanste et al., 2016; Kanste et al., 2017; Moen & Hall-Lord 2019; Radez et al., 2021). In a professional context, school nurses play a key role as they work in schools and meet with all pupils during regular health check-ups (Government Decree 338/2011; Dina & Pajalic, 2014; Jansen et al., 2019).

In addition to school nurses, mental health support can be provided by anyone who interacts and works with children and adolescents. These individuals include professionals working in early childhood education and care, educational institutions, youth services, and health and social services. Additionally, leaders in leisure activities and activities provided by the church or third-sector organizations are significant adults in the lives of many children and adolescents. Thus, the National Mental Health Strategy and Programme for Suicide Prevention 2020–2030 (Vorma et al., 2020) proposes several measures to strengthen the mental health support provided by these professionals.

Providing mental health support in the school environment is an EU-wide and global goal (Rampazzo et al., 2016; WHO, 2021a). One of the targets of WHO's Mental Health Action Plan 2013–2030 is to *"provide comprehensive, integrated and responsive mental health and social care services in community-based settings"* and another to *"implement strategies for promotion and prevention in mental health"*. The former includes, among other things, providing mental health interventions in schools and integrating mental health care into general child and adolescent health services. The latter includes, among other things, the development of school-based promotive and preventive interventions. (WHO, 2021a.)

2.2.1 Mental health actions

Mental health actions can be divided into promotion, prevention, treatment, and rehabilitation (WHO 2021a). Promotion of mental health is usually associated with mental well-being, while prevention emphasizes the perspective of illness (Tamminen et al., 2016). Health promotion in general aims to support individuals' capacity to influence their own health. Health can and should be promoted even in

the presence of illness; health is not primarily the absence of disease, but rather the resources that enable a good and satisfying life. In accordance with the Ottawa Charter, health promotion should be considered not only at the individual level but also at the levels of communities and society. (WHO 1986.)

Prevention can be divided into universal, selective, and targeted prevention. Universal prevention is targeted to the entire population, selective to individuals with higher than average risk, and targeted to individuals with symptoms below the diagnostic level. (Gordon 1983; Mrazek & Haggerty 1994.) Prevention can also be divided into primary, secondary, and tertiary prevention. Primary prevention aims to prevent disorders from occurring, secondary to prevent the exacerbation of symptoms and shorten the duration of the disorders, and tertiary to prevent negative effects of disorders and long-term disability through rehabilitation (Caplan 1964). Treatment is focused on those with diagnosed mental disorders. It is defined as *"the administration of appropriate measures (e.g., drugs, surgery, psychotherapy) that are designed to relieve a pathological condition"* (APA 2018). Rehabilitation means *"a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment"* (WHO 2023).

In this dissertation, I will use the term 'mental health support', which includes both mental wellbeing and mental health problems, and all four dimensions of mental health actions (promotion, prevention, treatment, and rehabilitation). In Figure 1, the relationships between these key concepts are illustrated. As shown in Figure 1, mental health promotion should target all individuals regardless of their mental health status. Similarly, prevention with various focuses should also be targeted towards everyone. Treatment and rehabilitation should be provided for those with mental health problems.

Additionally, Figure 1 illustrates that the same individual can simultaneously be targeted with promotion, prevention, and treatment or rehabilitation. In a real-life situation, for example, professionals can promote the mental health of a person by encouraging physical activity, prevent the negative effects of a disorder (such as self-harm) by discussing suicidal thoughts, and provide treatment through medication. From the example, it can be noticed that the boundary between promotion, prevention, treatment, and rehabilitation is often blurred, and many professional interventions can be interpreted as belonging to any of these categories. For this reason, limiting the services provided by school nurses exclusively to promotion and prevention (as outlined in both legislation and the professional description) is challenging, although focusing on these areas is essential.

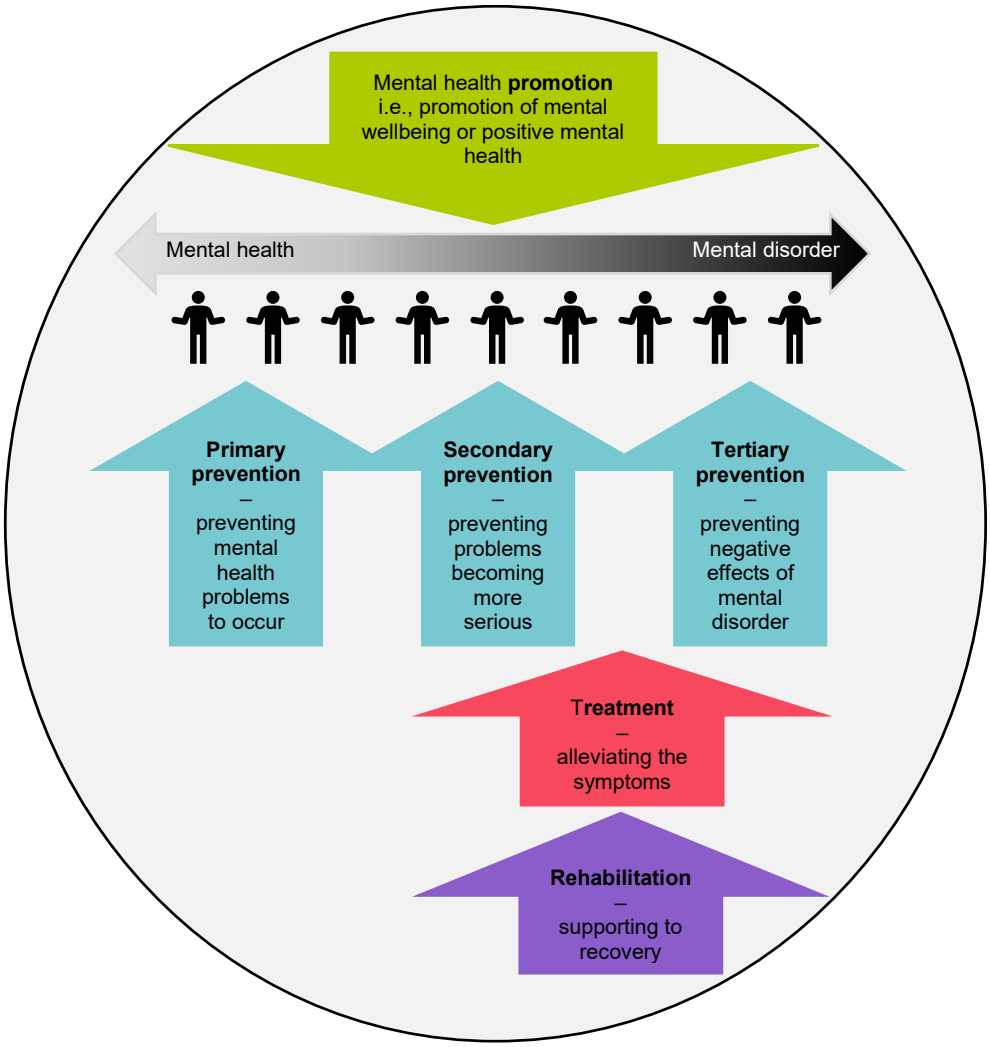

Figure 1. Mental health actions. Figure by author, license: CC-BY-SA.

2.2.2 Providers of mental health support

It is often thought that providing mental health support to children and adolescents requires specialized expertise. However, in reality, anyone who interacts or works with them can promote their mental health and help prevent problems. Professionals working in schools are central, as children and adolescents spend a significant portion of their time with them. Mental health support provided in a school

environment is discussed in more detail in the next chapter. Outside of schools, social services such as child guidance and family counseling or child protection provide mental health support. Such statutory services include guidance and counseling related to protective and risk factors for mental health, appropriate psychosocial support, and the provision of social services that support mental health (Social Welfare Act 1301/2014).

Treatment and rehabilitation are primarily provided within the healthcare system. In Finland, mental health treatment and rehabilitation are provided in primary health care and specialized health care (child psychiatry and adolescent psychiatry) (Health Care Act 1326/2010), but also in private health care. The rehabilitation of mental disorders of adolescents over 16 years often includes rehabilitative psychotherapy, which in Finland is provided by private service providers and compensated by Kela (an independent social security institution supervised by the Finnish Parliament) (Kela N.d.). In the Finnish context, both social services and healthcare services are provided also in the school environment by school social workers, school psychologists, school nurses, and school doctors. These services are organized by the wellbeing services counties (Laki sosiaali- ja terveydenhuollon järjestämisestä 612/2021).

Supporting mental health in the school environment is a globally relevant topic. A recent review (Margaretha et al., 2023) identified as many as seven different global school mental health policy approaches. According to a recommendation formulated by a broad team of experts, prevention, and interventions targeted at children and adolescents are one of the six research priorities for policy action in mental health and wellbeing research. One of the objectives of the research, according to them, should be to improve mental health promotion in schools. (Wykes et al., 2015.) According to mental health strategies (Vorma et al., 2020; WHO 2021a), the focus has not been sufficiently placed on the prevention of mental health problems. The Finnish government's program also emphasizes the prevention of mental health problems in children and adolescents, and shifting the focus of support towards early-stage low-threshold services is highlighted (Finnish Government 2023). Hence, it is crucial to investigate how professionals specializing in promotion and prevention and working with children and adolescents, i.e., school nurses, could optimally support mental health in the future.

2.2.3 Mental health support in the school environment

Providing mental health support in the school environment is not solely the responsibility of school nurses or school health care but is carried out through multidisciplinary collaboration. In Finland, **promoting** the well-being of pupils and students is a legal obligation for all individuals working in the school environment

under the administration of the education, social, and health sectors (Student Welfare Act 1287/2013). The Finnish national core curriculum for basic education guides teachers in promoting pupils' mental health, in part through emotional skills education, which begins as early as the first grades. In addition, teachers are expected to provide support for learning difficulties, being bullied, and other challenges that threaten mental well-being of pupils. The Finnish curriculum also includes health education as a school subject beginning in the 7th grade, which further supports the mental health skills of children and adolescents. (Finnish National Agency for Education, 2014.) The teaching of health education may be one of the factors contributing to the exceptionally high level of health literacy among Finnish adolescents (Paakkari et al., 2020).

Moreover, teachers can implement specific programs or interventions aiming to promote mental health (O'Reilly et al., 2018; Sanchez et al., 2018). Through these school-based promotive interventions – mainly focused on improving the social and emotional competence of children and adolescents, sometimes involving also staff and parents – it seems possible to produce positive results on pupils' mental health (O'Reilly et al., 2018). Furthermore, digital promotive interventions – targeted on teachers' knowledge and attitudes or pupils' behavior and delivered in school settings – have also emerged as promising (Sakellari et al., 2018). However, according to document analysis from one region in Finland, the promotion of mental health is scarcely reflected in municipal strategies and plans regarding schools and education (Savolainen et al., 2021a).

Teachers can also implement **preventive** mental health support (O'Reilly et al., 2018; Sanchez et al., 2018). In a recent comprehensive meta-analysis, dozens of preventive mental health interventions implemented by teachers at the universal, selective, and targeted levels within schools were identified. Based on the meta-analysis, selective and targeted interventions – ranging from one week to three years in duration and having varying targeted outcomes – were found to be more effective than universal interventions. (Sanchez et al., 2018.) Likewise, school-based selective and targeted preventive mental health interventions seem to be more cost-effective than universal ones (Vartiainen et al., 2022). School-based mental health interventions implemented daily or several times a week were also more effective than those implemented less frequently. Integrating mental health interventions into other educational activities also significantly increased their effectiveness. (Sanchez et al., 2018.) However, the evidence concerning the effectiveness of school-based interventions targeted to prevent specific disorders, such as anxiety or depression, is still insufficient because of the high risk of bias (Caldwell et al., 2019).

In addition to teachers, many other professionals working in schools collaborate with school nurses to promote pupils' mental health and prevent problems. In Finland, these providers are usually the members of the school welfare service team.

This team includes a public health nurse (school nurse), a physician (school doctor), a school psychologist, and a school social worker. Student welfare services aim to promote and maintain learning, mental and physical health, as well as social well-being. Student welfare is organized as a joint effort between the education sector and the social services and health care, in collaboration with students and their parents. (Student Welfare Act 1287/2013.) The work of the school nurse is described in more detail in the following chapters.

Treatment of mental health problems is usually provided by healthcare professionals. In Finland, school health care provides treatment only in higher secondary schools and higher education (pupils aged over 15 years), but not in primary schools or lower secondary schools (pupils aged between 7 and 15 years) (Government Decree 338/2011). However, in some municipalities, psychiatric nurses have been hired by schools to provide treatment for primary school pupils. Psychiatric nurses working in Finnish schools are not part of school health services but are either part of other primary health care services within the wellbeing services county or, alternatively, under child or adolescent psychiatric special health care. In Finland, interventions provided by psychiatric nurses working in schools have shown promising results (Tornivuori et al., 2023).

In addition to nurses, there are also other healthcare professionals working in school environments: doctors and psychologists. The results of a review mapping mental health interventions provided by healthcare professionals indicate that, for example, interventions such as cognitive-behavioral therapy (CBT) and interpersonal counseling (IPC) provided mainly by psychologists in school environments seem to reduce symptoms of mental health problems effectively (Karukivi et al., 2021). In Finland, there is the Kasvun Tuki -webpage where school nurses and other healthcare professionals, as well as policymakers, can find descriptions of over 30 psychosocial interventions and their evidence-based evaluations (www.kasvuntuki.fi).

Perhaps the least discussed dimension of mental health support in the school environment is **rehabilitation**. Although the actual mental health rehabilitation of children and adolescents is mainly provided outside schools, for example in specialized health care and psychotherapy, schools play an important role in cooperation. Schools are a key rehabilitation environment, and rehabilitation should be planned in cooperation with school personnel. Student welfare services and teaching-related arrangements, such as special needs education, can be utilized as part of rehabilitation. (Autti-Rämö et al., 2022; Munck et al., 2022; Piha & Tainio, 2016.) However, a Finnish study found that support from schools during the rehabilitation phase, such as personalized plans concerning education, was experienced as insufficient by adolescents (Heinonen & Järvinen, 2018).

2.3 School health services as a provider of mental health support

School health services are defined as "*Health services provided to enrolled students by health care and/or allied professional(s), irrespective of the site of service provision; the services should be mandated by a formal arrangement between the educational institution and the provider health care organization"* (Baltag et al., 2015, 269). The organization of these services is either school-based, community-based, or integrated into primary care in almost every EU country, with only Spain and the Czech Republic being the exceptions (Jansen et al., 2019). Supporting mental health is one of the tasks of school health services in many countries (Baltag et al., 2015).

The activities of school health services provide opportunities to implement all forms of mental health support (promotion, prevention, treatment, and rehabilitation). One rationale for this is that in many countries all students are seen in health check-ups provided by school health services either annually or less frequently (Government Decree 338/2011; Dina & Pajalic, 2014; Jansen et al., 2019). This provides a natural opportunity to address mental health issues, identify support needs, and provide support. Moreover, regular health check-ups provide an opportunity to establish a trusting relationship with the students (Dina & Pajalic, 2014).

However, the role of school nurses as providers of mental health support is still unclear (Bohnenkamp et al., 2019; Svensson & Warne 2024). For example, the division of responsibilities between school staff and school health services is unclear regarding when mental health support discussions could and should be conducted with a teacher, and when a student should be referred to school health services for these conversations. (Svensson & Warne, 2024). Similarly, the division of responsibilities between school health services and specialized healthcare is also unclear, particularly in terms of whether school health services should be limited to the identification of problems and referral for treatment, or whether therapeutic interventions could also be provided in the school health services (Bohnenkamp et al., 2019). In Finland, even the roles and division of work between the public health nurse and the doctor in school health care are not defined at the national level; instead, organizations and individuals themselves negotiate the division of work, including mental health issues (THL 2023b).

2.3.1 School health services in Finland and abroad

In Finland, school health services (named school health care) are part of primary health care services (Health Care Act 1326/2010) and provided in the school environment (Laki terveydenhuoltolain muuttamisesta 378/2022). Organization of

school health services is a statutory obligation of the wellbeing services county (Laki sosiaali- ja terveydenhuollon järjestämisestä, 612/2021). In Finnish school health services, the school nurse and the school doctor work as a team, although the school nurse is responsible for a larger portion of the statutory tasks in school health care and usually works at one or two schools. The doctor primarily participates in the extensive health check-ups and meetings that require medical expertise, usually visiting multiple schools. (Government Decree 338/2011; Hietanen-Peltola et al., 2022.) School health care is also a part of student welfare services (Student Welfare Act 1287/2013). Finnish school health care is a well-organized, integrated, and high-quality service (Grym & Borgermans, 2018), compared to many other countries (WHO 2021b).

School health services are organized with varying content, scope, and expenditure in different countries (Baltag et al., 2015; van der Pol et al., 2020). In many EU countries, such as Finland, pupils can contact professionals in the school health services as often as needed, but in many countries, visits are limited to three to nine times during their entire school career (Jansen et al., 2019). The Finnish school health care is legislated to provide health check-ups for every pupil in primary schools and lower secondary schools once a year. The extensive health check-ups are conducted in the 1st, 5th, and 8th grades with an emphasis on the well-being of the whole family and through multi-professional collaboration between the teacher, school nurse, and school doctor. The students in higher secondary education are met by a school nurse in their first year and by a school doctor in their second year. (Government Decree 338/2011.) In Finland, the costs of school health care are about 0.4% of total health expenditure; compared to neighboring countries, this is slightly more than in Iceland but significantly less than in Norway (van der Pol et al., 2020).

School nurses are the most usual profession in school health services; although there are also doctors, psychologists, dentists, and social workers. (Baltag et al., 2015; Jansen et al., 2019; van der Pol et al., 2020). The work of Finnish school nurses is highly independent and responsible (Grym & Borgermans, 2018). In Finland, school nurses have a degree in public health nursing from a University of Applied Sciences (UASs). The professional title of a public health nurse requires the completion of a four-year bachelor's degree program. The studies include theoretical coursework and clinical training. Those who have completed a degree in public health nursing are also qualified to work as registered nurses. (Government Decree 1129/2014). The education of school nurses varies by country but is quite similar in neighboring countries (Alstveit et al., 2022). For example, in Sweden, school nurses have degrees of Bachelor of Nursing (3 years) and Master of Public Health, Children's Health, and/or School Health (1 to 1.5 years), and they are also registered nurses (Garmy 2013). In Norway, school nurses are public health nurses, which

means that they are registered nurses with 1 year of postgraduate studies in public health nursing (Dahl & Clancy 2015).

According to a recent recommendation, in Finland, one school nurse working in primary schools and lower secondary schools (pupils 7 to 15 years old) should be responsible for no more than 460 students, and one school doctor for no more than 2 100 pupils (Hietanen-Peltola et al., 2023). However, in reality, the number of pupils is much larger (van der Pol et al., 2020), with the number of pupils extending to over 600 pupils per school nurse and over 7 700 pupils per school doctor (Wiss et al., 2022). In higher secondary education (students over 15 years old), the recommended student-to-nurse and student-to-doctor ratios are slightly higher: 570 students per nurse and 1 800 students per school doctor (Tuovila et al., 2021). The situation regarding personnel resources is also weak in this sector; in 2021, only 45% of health centers (which were still providing services at that time) met these recommendations for school nurses, and only 10% for school doctors (Wiss et al., 2022). Both the worsening situation in the student-to-nurse ratio and the high workload of school health personnel have been identified as problems in many other countries too (Baltag et al., 2015; Jansen et al., 2019).

According to the systematic review of systematic reviews by Levinson and colleagues (2019), the effectiveness of school health services has been investigated in several studies, and interventions targeted at preventing anxiety, for example, seem to have been effective. However, they found only studies concerning single interventions: the effectiveness of comprehensive, routinely delivered school health services has not been studied. (Levinson et al., 2019.)

2.3.2 Mental health support as a part of school health care

Mental health support is provided in school health services in many, but not all countries. Mental health is, among nutrition and sexual health, one of the most common areas of services provided in school health services. (Baltag et al., 2015.) School nurses spend a significant portion of their working hours addressing mental health issues (Bohnenkamp et al., 2019). In Finland, mental health related issues account for an average of 25% of the face-to-face working time of school nurses and 30% of school doctors (Hietanen-Peltola et al., 2022). The percentages related to school nurses are the same or even greater in Norway (Moen & Skundberg-Klethagen, 2018).

The school health services in most EU countries provide the promotion of mental health and prevention of mental health problems (Jansen et al., 2019). In Finland, the promotion of mental health is a statutory part of the work in school health care (Government Decree 338/2011). It should also include the prevention of mental health problems (Health Care Act 1326/2010). However, the treatment of mental

disorders is restricted by legislation as being outside the scope of the school health services provided in primary schools or lower secondary schools (pupils aged between 7 and 15 years) (Government Decree 338/2011). The situation is similar for example in Sweden, where Swedish school law (Sveriges Riksdag 2010) stipulates that school health services (SHS) must primarily be promotive and preventive. However, for higher secondary school and higher education students (aged over 15 years), Finnish school health services have a statutory obligation to also provide treatment for mental disorders (Government Decree 338/2011).

Promoting health and well-being is one of the key mental health services provided by school nurses (Markkanen et al., 2021). While mental well-being and mental illness are distinct concepts, a high level of mental well-being correlates with the absence of mental disorders (Keys 2005; WHO 2022). Thus, promoting mental health and preventing mental health problems can be seen as at least partially overlapping functions. According to a recent review, school nurses **promote** the mental health of children and adolescents at individual and community levels by actively listening to students, creating positive relationships with families, and attempting to increase students' empowerment and sense of participation (Flodin et al., 2024). In addition, they listen to (Granrud et al., 2020) and actively build trusting relationships with pupils, and affirm their self-confidence (Dina & Pajalic, 2014). School nurses utilize individual counseling (Dina & Pajalic, 2014; Markkanen et al., 2021), group counseling (Markkanen et al. 2021), family counseling, and motivational interviewing when supporting students' mental health (Dina & Pajalic 2014). These methods can also be utilized in guiding toward healthy lifestyles such as physical activity.

Prevention can be universal, selective, or targeted (Gordon 1983; Mrazek & Haggerty 1994). Universal prevention, as previously noted, intersects with health promotion. For example, the results of a Swedish study show that school nurses prevent students' stress by promoting healthy living habits and supporting students' learning (Persson et al., 2022). Stress, especially school stress, is relatively common among adolescents and associated with anxiety and depressive symptoms (Anniko et al., 2019).

Selective prevention requires awareness and identification of risk factors, which can be individual or societal. The individual factors increasing the risk of mental health problems are psychological or biological, such as low levels of emotional skills, substance use, and genetics. The societal factors are divided into social, economic, geopolitical, and environmental circumstances, such as poverty, harsh parenting, or bullying. (WHO 2022.) School nurses are, for example, aware that bullying is a risk factor for mental health problems and feel themselves quite capable of identifying bullying. Moreover, they support bullied children and adolescents through discussion and empowerment. (Pigozi & Bartoli, 2016.)

Targeted prevention requires the identification of symptoms at an early stage, but also knowledge about methods to alleviate the symptoms and skills to use them. For some mental health problems, such as depression, psychosomatic symptoms (manifested as physical pain) are particularly common during childhood and adolescence (Karlsson et al., 2016; Luntamo et al., 2012). With these issues, students often turn to school nurses, which provides an opportunity to identify the underlying psychological causes behind the somatic symptoms (Dina & Pajalic, 2014; Skundberg-Kletthagen & Moen, 2017). However, the school nurses have emphasized that they do not want to be mere problem identifiers (Moen & Jacobsen 2022) and that it is not possible to refer all those in need of help to mental health experts either (Moen & Jacobsen, 2022; Vejzovic et al., 2022).

Although **treatment** should not be included in school health services in primary or lower secondary schools (Government Decree 338/2011), the Finnish school nurses working in lower secondary schools have been trained to provide treatment by methods such as IPC (interpersonal counseling), Cool Kids, and brief cognitive intervention for anxiety (Terapiat etulinjaan 2023). The first of these, IPC, is a method for treating clinical depression. In a Finnish study, depressive symptoms were effectively reduced with IPC and both the adolescents and professionals were satisfied with the method (Parhiala et al., 2020). However, school nurses have perceived a definite need for guidance in utilizing this method. The guidance has been recognized as not only enhancing competence but also increasing the meaningfulness of their work. (Karhulahti-Nordström et al., 2023.) However, symptoms also decreased in the control group with BPS (brief psychosocial support), which was based on methods and techniques used by school nurses in their routine work, only in a more intensive and focused way. (Parhiala et al., 2020.) The implementation of treatment methods into the work of school nurses has also been challenging, for example, due to a lack of coordination and collaboration, as well as because of insufficient resources (Ranta et al., 2018). It should also be noted that in addition to certain therapeutic methods, mental health symptoms can be treated in other ways. For instance, a recent systematic review and meta-analysis indicated that physical exercise is an effective treatment for depression (Noetel et al., 2024).

Mental health **rehabilitation** is not intended to be provided within school health services. However, mental health promotion supports rehabilitation and can therefore be seen as part of the rehabilitation process. In school health services, all pupils and students are met annually or less frequently, including those in need of rehabilitation or already undergoing rehabilitation (Government Decree 338/2011; Jansen et al., 2019). The comprehensive assessment of children and adolescents' overall situation during health check-ups provides an opportunity to identify those in need of rehabilitation and factors hindering rehabilitation. One of the roles of school nurses, identified by themselves, is to refer pupils to appropriate services, and

another is to work with schools to meet the needs of students with long-term health conditions (Hoekstra et al., 2016).

Regarding the mental health support provided by school health services, several challenges have been identified, such as the lack of time and resources (Bohnenkamp et al., 2019; Dina & Pajalic, 2014; Granrud et al., 2020; Skundberg-Kletthagen & Moen, 2017), a lack of adequate workspace (Muggeo & Ginsburg, 2019; Skundberg-Kletthagen & Moen, 2017), and difficulties in interdisciplinary collaboration (Granrud et al., 2019; Skundberg-Kletthagen & Moen, 2017). Such problems with collaboration include, for example, a lack of information sharing between professionals, the negative attitude of teachers towards the time children and adolescents spend with the school nurse during the school day (Skundberg-Kletthagen & Moen, 2017), and the need to clarify the roles between school staff and school health services (Svensson & Warne, 2024). The lack of other services and professionals, such as psychologists, as well as the geographical distance to specialists have been identified as barriers to implementing mental health support in interdisciplinary collaboration (Skundberg-Kletthagen & Moen, 2017).

In several studies, school nurses have expressed a lack of self-confidence and competence in mental health issues (Kaskoun & McCabe, 2022; Markkanen et al., 2021; Skundberg-Kletthagen & Moen, 2017). The lack of training and continuing education opportunities is a common problem in school health services. Furthermore, the practices are not always evidence-based. (Baltag et al., 2015.)

2.3.3 School nurses' competence in mental health issues

The competence of school nurses in mental health issues has been previously examined through various domains of the concept. Competence in the context of nursing can be seen as *"the ability to perform the task with desirable outcomes under the varied circumstances of the real world"* (Benner 1982, 304) or as *"functional adequacy and capacity to integrate knowledge and skills to attitudes and values into specific contextual situations of practice"* (Meretoja et al., 2004, 330–331). In this dissertation, the concept of 'competence' includes values, attitudes, knowledge, and skills according to the latter definition by Meretoja. Previous research concerning school nurses' competence in mental health issues was examined with a specific search strategy, presented in Appendix 1. This search was targeted at peer-reviewed empirical studies published in English between 2014 and 2024. A summary of the results of analyzed publications (n=12) is presented next.

Previous research concerning school nurses' **values** in mental health issues is scarce but indicates that they appreciate this part of their work. School nurses have expressed gratitude for the opportunities to provide mental health support: the work is considered to have a huge impact on the lives of children and adolescents. They

also value the personal and professional growth opportunities that taking care of children and adolescents with mental health issues provides. (Jönsson et al., 2019.) According to school nurses, mental health work offers experiences of meaningfulness and even increases job satisfaction (Jönsson et al., 2019), despite the demanding nature of this work (Jönsson et al., 2019; Moen & Skundberg-Klethagen, 2018).

School nurses' **attitudes** toward mental health work are consistent with their values. School nurses are willing to implement mental health promotion (Anttila et al. 2020; Moen & Jacobsen, 2022) and early prevention of mental health problems, but also to help those children and adolescents who already have mental health problems (Moen & Jacobsen, 2022). They have experienced themselves well-positioned to help for example depressed adolescents and see this kind of work as rewarding. Concerning the treatment methods for depression, school nurses have been rather skeptical about the helpfulness of medication and have seen psychotherapy as a better option (Moen & Skundberg-Klethagen, 2018.) School nurses are willing to learn and implement manualized interventions to support children and adolescents with mental health issues (Markkanen et al., 2021). They are eager to learn more about mental health issues and desire more training concerning the identification and screening of mental health problems, implementation of mental health interventions (Bohnenkamp et al., 2019), and the use of evidence-based strategies (Muggeo & Ginsburg, 2019).

School nurses have assessed that they do not have enough **knowledge** to optimally support the mental health of children and adolescents (Markkanen et al. 2021). For example, the nurses have felt that their knowledge is deficient when they need to select and implement suitable interventions (Markkanen et al., 2021) and also as regards psychotropic drugs (Steffenak et al., 2015). School nurses desire more knowledge about key areas of mental health (Skundberg-Klethagen & Moen, 2017), mental health problems in general, and the care system (Anttila et al., 2020). Moreover, knowledge is needed about the etiology and symptoms of mental health problems (Moen & Jacobsen, 2022) and the assessment tools that can be used (Moen & Jacobsen, 2022; Skundberg-Klethagen & Moen, 2017). In addition to qualitative studies or studies based on self-evaluation, the mental health related knowledge of school nurses has only been measured in a few studies. The results of these studies show that school nurses have too little knowledge for the identification of depression (Al-Yateem et al., 2018; Haddad et al., 2018), psychosis, or post-traumatic stress disorder (Al-Yateem et al., 2018). The school nurses themselves have seen their limited knowledge as a barrier to working with mental health issues (Vejzovic et al., 2022).

In addition to knowledge, school nurses have also assessed their **skills** related to mental health issues as insufficient (Markkanen et al., 2021). For example, they

require more skills to deal with the mental health problems of adolescents and to conduct motivational interviews (Skundberg-Klethagen & Moen, 2017). School nurses have expressed uncertainty about their ability to identify children and adolescents who would need more support for their mental health problems than those they can provide. They have also assessed their competence to provide treatment for those children and adolescents as insufficient. (Moen & Jacobsen, 2022; Vejzovic et al., 2022.) School nurses have requested training in many areas. Such as: assessment of mental health problems, recognition of depression and anxiety disorders, assessment of suicide risk, management of self-harm, and implementation of psychological interventions (Moen & Skundberg-Klethagen, 2018). The use of manualized interventions or other evidence-based strategies to intervene for one of the most common mental health problems, i.e., anxiety, is scarce among school nurses (Muggeo & Ginsburg, 2019), perhaps indicating a lack of skills.

The other concept, closely associated with competence and used in this dissertation, is self-efficacy. Self-efficacy refers to a person's belief in their ability to perform a specific task now and in the future (Bandura, 1977; Zulkovsky, 2009). Thus, self-efficacy can be seen as self-evaluated competence. Self-efficacy and self-confidence are related concepts, but the latter refers to a more stable experience and a person's confidence at a more general level (Zulkovsky 2009). Self-efficacy is associated with the level of knowledge (Schiele et al., 2014), behavior, and performance (Bandura, 1977; Schiele et al., 2014; Zulkovsky, 2009), but also with patient health outcomes (Caron et al., 2022). Self-efficacy affects the person's thinking, motivation, and concrete actions (Bandura, 1977; Zulkovsky, 2009).

Instead of **self-efficacy**, previous studies have often utilized the concept of self-confidence, which is related, but more general concept. School nurses have highlighted a lack of self-confidence in promoting mental health and preventing mental health problems (Skundberg-Kletthagen & Moen, 2017), but on the other hand they have confidence in their ability to help children and young people with mental health issues (Anttila et al., 2020). In the study measuring the attitudes of school nurses, they asses themselves as quite comfortable in dealing with the needs of depressed pupils (mean 5.23, scale 1–10) (Moen & Skundberg-Klethagen, 2018). School nurses have expressed feelings of uncertainty about their competence in mental health issues (Vejzovic et al., 2022) and feelings of frustration because they do not feel sufficiently prepared to support children and adolescents with these issues (Jönsson et al., 2019). However, studies indicate that mental health interventions provided by school nurses, such as FRIENDS and CALM, significantly reduce anxiety symptoms in adolescence (Fjermestad et al., 2020; Ginsburg et al., 2021). The study of Caron et al. (2022) proved that by improving school nurses' mental

health related self-efficacy it is possible to make observable and measurable improvements in the well-being of their clients.

There is limited research on continuing education programs to improve mental health competence for healthcare personnel not specialized in psychiatry (Caulfield et al., 2019). Specifically, there are only a few studies investigating training programs for school nurses and their impact on competence, but their results are promising. The previously developed *Child Anxiety Learning Modules 'CALM'* and *Mental Health Training Intervention for Health Providers in Schools 'MH-TIPS* interventions have been met with satisfaction (Bohnenkamp et al., 2019; Bohnenkamp et al., 2024; Ginsburg et al., 2021; Muggeo et al., 2017). Moreover, school nurses' professional confidence concerning mental health issues was improved with a short training program called *Quality Improvement Evaluation for School Nurses and Teachers 'QUEST'* (Haddad et al., 2018). Despite the popularity of e-learning as a form of continuing education (Rohwer et al., 2017), none of the aforementioned interventions are fully online. E-learning can effectively enhance professionals' mental health competence (Lahti et al., 2014; Hofman et al., 2021; Leiferman et al., 2023); the results regarding the impact on self-efficacy in mental health matters are also promising (Leiferman et al., 2023). Online training enables large numbers of participants and allows them to complete the training regardless of time and location (Longhini et al., 2021). For these reasons, there is a need to develop and study a fully online continuing education intervention aiming to improve school nurses' competence in mental health issues.

2.4 Continuous learning as a response to current requirements and future needs in the work of school nurses

School nurses' experiences of insufficient competence (Kaskoun & McCabe, 2022; Markkanen et al., 2021; Skundberg-Kletthagen & Moen, 2017) may indicate imperfections in public health nurse education. When examining the curricula of public health nurse education in Nordic countries, it can be observed that mental health issues are not mentioned at the course title level, except in Iceland, where the curriculum includes a course titled 'Assessment of Physical and Psychological Health' (Alstveit et al., 2022). Finnish public health nurses already in the working life have assessed that the mental health nursing course – provided as a part of the registered nurse education included in the public health nurse education – primarily focuses on adults experiencing severe mental health disorders. According to school nurses, the education has not provided the necessary competence in mental health issues required in the work of a school nurse. (Putkuri et al., 2021). However, the subject has been sparsely researched, and to our knowledge, there is a lack of

information on the mental health competencies that current curricula provide for public health nurses.

One approach to examining the competence and role of school nurses as providers of mental health support is to apply the nursing process theory. According to this theory, there are five steps in the nursing process: assessment, nursing diagnosis, planning, implementation, and evaluation (Hamers et al., 1994; Melin-Johansson et al., 2017). This theory is also used in mental health nursing, in which there is one additional stage after planning: outcome identification. In the assessment phase, the nurse collects and analyses comprehensive data through interaction about the client's health and situation. A nursing diagnosis is made based on the information gathered in the previous stage, and it describes the client's actual or potential health problem, including the level of risk. Based on the diagnosis, the desired outcomes are identified and formulated to be measurable and observable. After these stages, the nurse plans, in collaboration with the client, individualized interventions to achieve the identified outcomes. There are classification systems to help make diagnoses (NANDA, international Nursing Diagnosis Classification by North American Nursing Diagnosis Association), identify outcomes (NOC, Nursing Outcomes Classification), and plan interventions (NIC, Nursing Intervention Classification). In the fifth stage, the selected interventions will be implemented and in the last stage, the whole progress is evaluated as regards the attainment of the desired outcomes. The process is dynamic and if necessary, starts again from the first stage. (Townsend, 2014.) As mentioned earlier, it is not clear whether school health services should be limited to the identification of problems and referral for treatment, or also provide therapeutic interventions (Bohnenkamp et al., 2019). However, it is not possible to refer everyone to mental health experts (Moen & Jacobsen, 2022; Vejzovic et al., 2022) and the school nurses themselves do not want to be mere problem identifiers (Moen & Jacobsen 2022).

The school nurses' need for more competence can, among other things, be addressed through continuous learning. Nowadays, continuous education is often provided by e-learning (Rohwer et al., 2017). In addition to the content, the design of e-learning courses should also incorporate evidence-based approaches in the pedagogical solutions. One of the useful designs is Merril's First Principles of Instruction (2002). The First Principles of Instruction -design is suitable especially when the content is mainly new information for the learners. It helps to make e-learning courses practical and supports items learned to become part of the learner's work tasks. (Merrill, 2007.) According to the principles, training should be based on: real-world problems, activate the learner's prior experiences, provide demonstrations of the subject matter in addition to mere information, support the application of learned subjects to new situations, and help integrate the learned subjects into practice (Merrill, 2002). The five First Principles of task-centered instructional

design combine key elements from several theories and models (Merrill, 2007). E-learning courses developed by these principles have been shown to improve the satisfaction and learning outcomes of learners compared to conventional methods (Badali et al., 2022).

When designing continuing education, it is important to consider the level of learning outcomes being targeted. In this context, the framework originally developed by Moore and colleagues (2009) for continuing medical education can be utilized. According to this framework, the learning outcomes can be divided into seven levels. These are: 1) Participation, 2) Satisfaction, 3) Knowledge, 4) Competence, 5) Performance, 6) Patient Health Outcomes, and 7) Health Status of the Community (Moore et al., 2009; Zaghab et al., 2015). The highest-level learning outcomes might most likely be achieved when two or more of the following factors are found in the e-learning course: active learning exercises focus on competencies, multimedia-based skills illustrations, role reflection, self-assessment, real-world tasks in authentic settings, practice coaching, and authentic practice assessments. In addition, such courses are considered relevant, easy to use, and evidence based. (Zaghab et al., 2015.) The interactivity and practicality of the e-learning course are also linked to effectiveness (Noesgaard & Orngreen, 2015).

2.5 Summary of the literature review

Children and adolescents both in Finland and internationally need support for mental health issues at an ever-increasing rate (Gyllenberg et al., 2018; Olfson et al., 2014; Racine et al., 2021; Sourander et al., 2016). Services targeted towards existing problems, such as specialized healthcare, have become overwhelmed and cannot respond to the need for help in a timely manner (OECD, 2022; WHO, 2021a). There has not been sufficient focus on the prevention of mental health problems in services (Vorma et al., 2020; WHO 2021a), despite compelling research evidence on the risk factors. From both economic and humanitarian perspectives, focusing on promoting mental health and preventing problems makes sense, although existing symptoms and disorders naturally require appropriate treatment too (Finnish Government 2023).

Anyone working with children and adolescents can provide mental health support, but the role of school nurses is central as they work in the everyday environments of children and adolescents, meet pupils regularly during health check-ups, and serve as experts in promotion and prevention. Moreover, healthcare professionals, including school nurses, have both a legal obligation (Government Decree 338/2011; Health Care Act 1326/2010) and the expertise through their training to provide this support. Based on the results of previous research, school nurses have shown that they are willing to engage in mental health promotion,

prevention of mental health problems, and treatment of disorders (e.g., Moen & Jacobsen, 2022). However, the competence needed by school nurses to do this work is insufficient (e.g., Al-Yateem et al., 2018; Haddad et al., 2018; Markkanen et al. 2021), and the self-confidence of school nurses as providers of mental health support should also be strengthened (Jönsson et al., 2019; Skundberg-Kletthagen & Moen 2017; Vejzovic et al., 2022). One way to strengthen their competence is through continuous education. When developing continuous e-learning education, it is important to consider not only the subject matter but also evidence-based practices in pedagogical and technical solutions.

Existing research has largely focused on activities such as disorder identification, medication, and psychotherapeutic methods. The specific expertise of school nurses as promoters of children's and adolescents' health and preventers of diseases (Jansen et al., 2019; Government Decree 338/2011; WHO, 2021b) has not been strongly emphasized in these studies. The current and future roles and responsibilities of school nurses as providers of mental health are unclear.

3 Aims

The purpose of this study was to examine the role of school nurses as providers of mental health support now and in the future. The overall aim was to investigate how the potential of school nurses could be optimally utilized in the future. The study had two phases with specific goals:

Phase I: National and organizational levels (i.e., macro and mezzo levels) perspective

- **Goal 1**: To describe alternative future visions regarding mental health services in the school environment (Paper I)
- **Goal 2**: To describe the needed actions to improve mental health services provided in school health care (Papers I & II)

Phase II: Individual level (i.e., micro level) perspective

- **Goal 3:** To describe mental health related competence needed in school health care (Papers II & III)
- **Goal 4:** To develop an e-learning course aimed at improving school nurses' competence in mental health issues (Paper III)
- **Goal 5:** To explore levels of school nurses' self-efficacy in mental health issues and the associated factors (Paper IV)
- **Goal 6:** To explore preliminary learning outcomes of the developed e-learning course (Papers III & IV)

4 Materials and Methods

4.1 Philosophical base of the study

The ontological and epistemological base of this convergent mixed-method study was pragmatism, as recommended in the publication of Creswell and Plano Clark, (2018). The ontological base conveys the researchers' assumptions about the nature of reality and the epistemological base provides the assumptions about the knowledge and ways to gain it. In pragmatism, both singular and multiple realities are possible (Creswell & Plano Clark, 2018) and reality is not perceived as static, but changing depending on the individual or point in time (Kaushik & Walsh, 2019). In pragmatism, the focus is on practicality; truth is primarily evaluated based on the outcomes and how well the outcomes will help to achieve the goal. The knowledge is based on experience. (Kaushik & Walsh, 2019.) Data used in pragmatistic research can be both qualitative and quantitative. The process of the research combines inductive and deductive methods. (Creswell & Plano Clark, 2018.)

Furthermore, various philosophical orientations were utilized in the sub-studies. In a mixed-method study combining two or more philosophical orientations is allowed. (Creswell & Plano Clark 2018.) The ontological and epistemological base of the purely qualitative sub-studies (Papers I & II) was constructivism. In this philosophical orientation, the nature of the truth is seen as a construction in which multiple realities are concurrently possible. In constructivism, science finds or creates subjectively different kinds of interpretations of the world. (Creswell & Plano Clark 2018; Merriam & Tisdell, 2015.) The truth is seen based on the perceptions of human beings. These perceptions are subjective, depending on the context and the worldview of the individual. Knowledge of these perspectives can be attained by qualitative methods, for example, by interviewing individuals or groups. The process of the research in constructivism is inductive. (Creswell & Plano Clark, 2018; Kaushik & Walsh, 2019.)

The ontological and epistemological base of the purely quantitative sub-study (Paper IV) was post-positivism. In this philosophical orientation, there is only one singular reality (Creswell & Plano Clark, 2018). The researcher seeks an objective, replicable truth (Kaushik & Walsh, 2019). According to post-positivistic orientation, knowledge can be attained by quantitative methods, for example, by collecting data

with standardized instruments. The process of research in post-positivism is deductive. (Creswell & Plano Clark, 2018; Kaushik & Walsh, 2019.)

4.2 Study design

The methodology of this study was convergent mixed-method. In a convergent mixed method study the quantitative and qualitative data are combined after analysis (Creswell & Plano Clark, 2018). Qualitative methodology were used in two sub-studies (Papers I and II), quantitative methodology in one sub-study (Paper IV), and mixed methodology in one sub-study (Paper III). Detailed information about the methodology and the methods used in this study is provided in Table 1.

In Phase I, we used a qualitative, descriptive design to describe future visions regarding mental health services in the school environment and needed actions to improve mental health services provided in school health care (reported in Papers I & II). Qualitative methods are suitable for person-centered research, where the aim is to explore and understand people's perspectives or experiences on the researched topic. It is also suitable for investigating topics that have received little research or none at all. (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015.)

In addition to the aforementioned, visioning (O´Brien & Meadows, 2001) and phenomenography (Marton, 1988) were utilized in the study reported in Paper I. The visioning was utilized to design the interview guide used in the study. According to O´Brien & Meadows (2001), there are five key dimensions in visioning: analysis of an organization's current situation, assessment of the external environment, identification of desired future vision, connection of the future to the present state, and testing the vision. Vision is defined as a description of a desirable state in the future (O´Brien & Meadows, 2001). The interview guide included the first four dimensions, the fifth (testing the vision) was not used.

Phenomenography is specifically used to explore qualitative variation in participants' conceptions. (Marton, 1988.) The study reported in Paper I was less concerned with how things are but rather with the conceptions held by stakeholders about the phenomenon under investigation (mental health services in the school environment and school nurses' roles in these). In phenomenography, it is central to investigate qualitatively different ways in which people experience or think about various phenomena. Individual participant contexts are not considered; instead, the meaningful statements are examined within the broader context provided by the pool of meanings. In phenomenography, the term '*pool of meaning*' refers to a collection of excerpts from interviews that respond to the research question. (Marton, 1988, Sjöström & Dahlgren, 2002.) The results of the analysis were represented via the outcome space, which illustrates the structural relationships between the categories

of descriptions (i.e., the qualitatively different ways of experiencing the phenomenon (Åkerlind, 2012).

In Phase II, we used a descriptive design (Paper II), a convergent mixed-method study with a descriptive, posttest only design (Paper III), and a one-group quasi-experimental study with pre-and posttest design (Paper IV). With the convergent mixed-method design, it is possible to gain a more complete understanding: quantitative data tells something about general trends, and qualitative data gives in-depth perspectives (Creswell & Plano Clark, 2018). A quasi-experimental study differs from a randomized controlled trial primarily in that the participants are not randomly assigned to intervention and control groups (Drennan, 2013). A non-randomized one-group quasi-experimental study was used because the e-learning course was already published and available, i.e., full implementation was ongoing (Craig et al., 2013).

Table 1. A summary of the methodology and the methods used in this study.

Phase (Paper)	Design	Setting	Sampling & Sample	Data collection (method & time)	Data analysis (method)
I (I)	Qualitative, descriptive design	Stakeholders of school health care	Non-probabilistic snowball sampling, stakeholders of school health care (n=25)	Individual interviews and focus group interviews, February 2020 to February 2021	Phenomenographic analysis
I (II)	Qualitative, descriptive design	Three healthcare organizations in Southern and Eastern Finland	Non-probabilistic convenience sampling, public health nurses working in child health clinics or school health care (n=24)	Focus groups (n=5), March 2018	Inductive and deductive content analysis
II (III)	Convergent mixed-method study with a descriptive, posttest only design	Oppiportti-learning portal, four PHN student groups in two UASs in Finland, and members of the Finnish	Non-probabilistic sampling for a quantitative part, health and social care professionals or	Learning portal, electronic questionnaire, and focus group interviews, February	Descriptive statistics, the Mann-Whitney U -test Inductive content analysis

		Association of PHNs working as SNs (n=739)	undergraduate students (n= 690 to 954 per module). Non-probabilistic convenience sampling for qualitative part, PHN students (n=12) and school nurses (n=2)	2021 to November 2022.	
II (IV)	Non-randomized one-group quasi-experimental study with pre- and posttest design	Five PHN student groups in two UASs in Finland and members of the Finnish Association of PHNs working as SNs (n=739)	Non-probabilistic sampling, PHN students (n=53) and school nurses (n=21)	Electronic questionnaire, October 2021 to September 2023	Descriptive statistics, paired t-test, and the McNemar -test

PHN=Public Health Nurse
UAS=University of Applied Sciences
SN=School Nurse

4.3 Sample and setting

For **Paper I,** representatives of stakeholders of school healthcare (i.e., individuals who could affect or could be affected by the work of school nurses or individuals with an interest in the work of school nurses) were interviewed. A non-probabilistic snowball sampling (Merriam & Tisdell, 2015) was used to identify adults (age at least 18 years) with perceptions regarding mental health services in the school environment from Finnish non-governmental organizations (NGOs), social and healthcare entities, as well as expert organizations. Potential interviewees were contacted via e-mail. The desired sample size was not predetermined; instead, data collection was continued until there was no new variation found in the participant's responses (Sjöström & Dahlgren, 2002).

For **Paper II**, non-probabilistic convenience sampling (Merriam & Tisdell, 2015) was used to select public health nurses working at least half of their work time with children or adolescents in child health clinics (CHCs) or school health care (SHC) from three organizations in southern and eastern Finland. Participants were reached through a designated contact person within the organization. The desired sample size was four focus groups, generally considered sufficient to identify over 90% of the codes and achieve code-level saturation (Hennink et al., 2019). For Paper II, five focus groups were conducted.

In **Paper III**, there were two samples. In the qualitative part, non-probabilistic convenience sampling (Merriam & Tisdell, 2015) was used to select final-year public health nursing students and school nurses for focus group interviews. The desired (Hennink et al., 2019) and achieved sample size was four focus groups. In the quantitative part, non-probabilistic sampling (Creswell & Plano Clark, 2018) was used to select health and social care professionals or undergraduate students from the Oppiportti learning portal: every course participant answering the feedback questionnaire was included.

For **Paper IV**, a non-probabilistic sampling (Creswell & Plano Clark, 2018) was used to select public health nurses working as a school nurse or final year public health nursing students who had access to the Oppiportti learning portal and had not previously completed the developed e-learning course. The sample size of 79 participants was calculated for self-efficacy with a power analysis (statistical power 0.9, significance level of 0.05 (two-tailed), desirable mean increases 0.5). This sample size calculation assumed a 15% dropout rate. (Crispino, 2013.)

For Papers III and IV, the students were recruited from two Finnish UASs, and an invitation to participate was presented to a total of five public health nursing student groups by remotely attending their lessons. School nurses were sought as respondents through the Finnish Public Health Nurses Association's newsletter and the School Nurses' Facebook group. The invitation to participate in the study was included in the newsletter, which was sent to all members of the association working in school health care (n=739); the number of recipients who received the invitation through other means is unknown.

All sub-studies were conducted in Finland, where school nurses have completed a four-year education of public health nurses in UAS. They have a bachelor's degree in health care in Public Health Nursing (Government Decree 1129/2014). It is a dual-degree program, during which students complete both the public health nursing and the registered nurse (RN) bachelor's degree program. Nearly half of the education consists of clinical training. Public health nurses are trained to work independently as experts in preventive work, health promotion, and public health. Around 9,500 Finnish public health nurses (OSF, 2024b) work in settings such as maternity and child health clinics, school health services, occupational health care, and outpatient clinics.

4.4 Development of the e-learning course used in the study

Based on the results of Phase I, the e-learning course '*Mental health promotion in school health care'* was developed in Phase II (see timeline in Figure 2). The target group of our e-learning course was school nurses, but it was designed to also be

suitable for other professionals. The asynchronous e-learning course consisted of three modules: 1) Prevention of mental health problems in school health care, 2) Meeting mental health problems in school health care, and 3) Depression, anxiety, and suicidality in school health care.

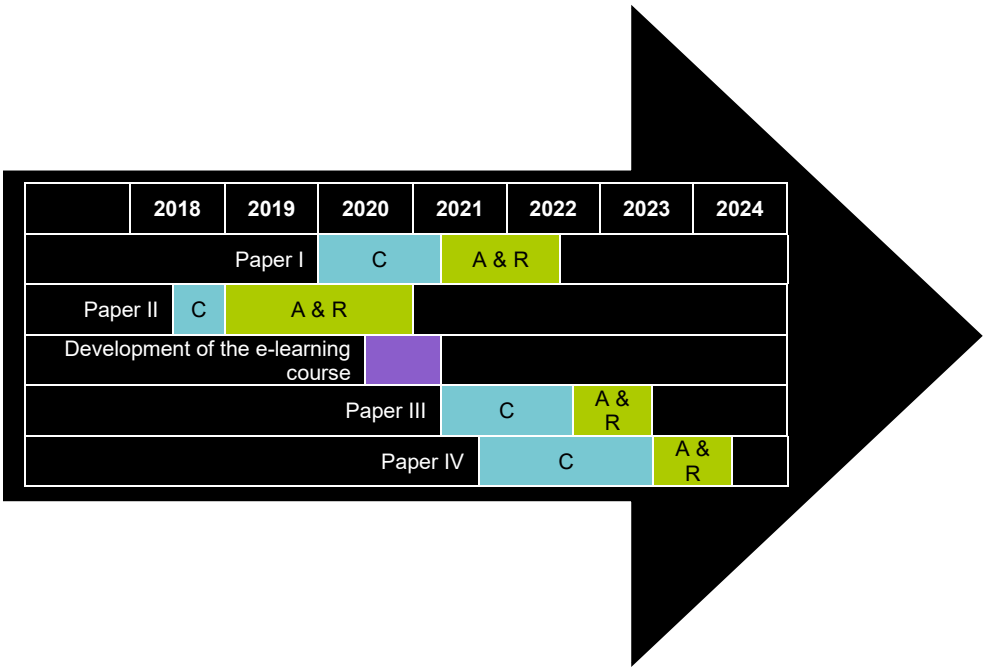

Figure 2. Timeline of the study process. C = Data collection, A = Data analysis, R = reporting.

The content of the e-learning course was developed based on the competence needs identified during this study (see Chapter 5 *Results* and Table 2), and the views of experts in the field. Three experts were involved in the development phase (in addition to the doctoral researcher): an associate professor of health promotion, a former President of the Association of PHNs in Finland, and a specialist in adolescent psychiatry. Following the Quality Indicators of Postgraduate Medical E-Learning (deLeeuw et al., 2018), we selected the development team of these people with expertise in content, education, and/or information technology.

Table 2. Learning needs and content of the e-learning course.

Competence needed in the work of school nurses (Paper II)	Example of the content in the Mental health promotion in school health care -e-learning course
Assessment rating scales	Introduction of rating scales such as the Social Phobia Inventory (SPIN) and the Prodromal Questionnaire (PQ-B). (Module 2)
Etiology and symptoms of mental disorders	Case descriptions such as eating disorders, mutism (Module 2), depression, and anxiety. (Module 3)
The chain of care	Presentation of the grading of care and providers of care at different levels, such as a third sector and specialized health care. (Module 2)
Preventive interventions	Introduction of tools addressing various risk factors, such as unstable home environment, somatic illness, and financial difficulties. (Module 1)
Methods and instruments of psychosocial treatment	Presentation of methods such as psychoeducation, self-care programs, emotional skills training, and exposure exercises. (Modules 2 and 3).
Medical treatment	Providing information on the pharmacotherapy of depression and anxiety. (Module 3)

The development of the e-learning course was guided by constructivist learning theory, which is a common theory used in technology-enhanced learning in nursing education (O'Connor et al., 2022). Merril's First Principles of Instruction (2002) were used to guide the development of the e-learning course (Table 3). Although Merrill's design is best suited for teaching mostly new information (Merrill, 2007), the e-learning course was mainly designed to structure participants' pre-existing knowledge and skills by addressing familiar situations and working methods adapted to the context of mental health support.

Table 3. Principles of instruction and learning activities in the developed e-learning course.

Five Principles of Instruction (Merril 2007)	Examples of learning activity in the Mental health promotion in school health care -e-learning course
Problem-centered: Engagement in solving real-world problems	Welcome page, which addresses the participant through the challenging situations he or she encounters in everyday life. (All modules)
Activation: The activation of existing knowledge and skills	Drag and drop task: Distinguish changes in normal adolescence from signs of mental health problems. (Module 2)
Demonstration:	Multi-media-based case demonstrations including solutions to the situation in the case. (All modules)
Application: Applying the learned things to new situations	A task: Combine a mental disorder with a questionnaire suitable for assessing its symptoms. (Module 2)
Integration: Integrating the learned things into everyday life	Instructions to try out the methods taught in the module in one's work and discuss them with colleagues. (All modules)

The e-learning course was developed following Vygotsky's theory of the zone of proximal development. According to this theory, learning is most effective when the tasks are just slightly more difficult than the learner is already able to conduct alone (Ketterer, 2008). Additionally, Bandura's Self-Efficacy Theory was utilized. According to this theory, the sources of self-efficacy are verbal persuasion, vicarious experiences, positive experiences, and physiological feedback. (Bandura, 1977.)

Verbal persuasion, i.e., social encouragement from others, fosters belief in one's own capacity to achieve (Bandura, 1977). By directing a brief e-learning course to school nurses, we aim to communicate that we believe they are capable of providing mental health support after this training and to encourage them to provide this support to children and adolescents. Vicarious experiences, i.e., observing others succeeding in challenging situations, increase confidence in one's own ability to succeed (Bandura, 1977). This was pursued through case examples, with the hope that by observing them, learners would gain more confidence in handling similar situations themselves. Previous positive experiences of performance outcomes improve one's sense of self-efficacy, not only in the same situations but also transferring to substantially different situations (Bandura, 1977). These experiences were provided in the e-learning course by ensuring that issues in the course were not too difficult. Physiological feedback also plays a crucial role; people are more likely to expect success in a situation when their body and mind are not tense, stressed, or fearful (Bandura 1977). Our e-learning course aimed to provide skills for practical work, and it also included multimedia skill illustrations (i.e., videos). The content and tasks of the course were related to the reality of school health care and focused on competence, including self-assessment tasks based on an authentic work environment (Zaghab et al., 2015).

At the end of the development phase, the course was pilot tested by six persons representing experts in both the content and the target group of the course. They commented for example on the assessment tools (questionnaires) introduced in the course. Final modifications were made according to their comments before publication. The course was published in February 2021 in the Duodecim Oppiportti e-learning portal (www.oppiportti.fi/op/okk00024). Duodecim Publishing Company Ltd owns and publishes this Finnish portal of continuous education for health care professionals.

4.5 Data collection in Phase I

In Phase I, the data was collected by interviews. Interviewing is seen as a suitable method for qualitative studies. Focus group interviews were favored because engaging participants in a collective discussion and hearing others' perspectives was the desired goal in order to stimulate participation and lead to rich data (Holloway

& Wheeler, 2010; Merriam & Tisdell, 2015). All interviews were recorded, with the participants' permission, by audio recorder and later transcribed verbatim in Finnish.

For **Paper I**, as preferred in phenomenographic research (Marton, 1988; Sjöström & Dahlgren, 2002), a semi-structured interview guide was developed. It was designed based on the first four dimensions of visioning (O'Brien & Meadows, 2001) and included four topics: 1) The current state of mental health services in school health care, 2) Desired mental health services in school health care in the future, 3) Barriers to the vision, and 4) Identification of necessary competencies needed for the vision. The entry questions were: 1) What are the mental health services that school nurses currently provide? 2) What are the mental health services that school nurses should provide in the 2020s? 3) What are the greatest barriers that will hinder the future vision from becoming true? and 4) What competencies should school nurses have to achieve this future vision? The interview guide was tested in a pilot interview (not included in the analysis) with a mental health specialist, leading to minor adjustments concerning wording.

The interviews were conducted between February 2020 and February 2021. Interviews with professional stakeholders (n=15) were conducted individually, either face-to-face or remotely. Representatives of NGOs reflecting the perspectives of adolescents (n=4) and parents (n=6) were interviewed in two focus groups. Participants' background information (age, current position, and length of working experience) was collected using a separate form (paper or electronic) during the interview sessions. The length of individual interviews ranged from half an hour to one hour. Group interviews lasted approximately an hour.

For **Paper II**, public health nurses working with children or adolescents were interviewed. A semi-structured interview guide was used, consisting of four topics: 1) Mental health work in child health clinics and school health services, 2) Required competency in mental health issues, 3) Utilizing data collected from health examinations to promote mental health, and 4) Preparedness provided by the public health nurse degree and additional educational needs regarding mental health issues. The entry questions were: 1) In which situations in your work do you need competency in mental health issues? 2) In which situations concerning mental health problems you are competent to help your clients? 3) There is much information about clients and their families collected in health examinations. How do you use this information for mental health promotion? and 4) What kind of preparedness does the education of public health nurses give as regards mental health work?

The interviews were conducted face-to-face in March 2018, in focus groups of four to six participants. The groups were formed according to the workplace: Those working in child health clinics (n=9) formed 2 groups and those working in school health care (n=15) formed 3 groups. Participants' background information (age, current position, and length of working experience) was collected using a separate

paper form during the interview sessions. The interviews lasted from one to one and a half hours.

4.6 Data collection in Phase II

Data for Phase II was collected using both interviews and three questionnaires: Oppiportti feedback questionnaire, Knowledge-test (WHO, 2017), and Self-efficacy- questionnaire (Spagnolo et al., 2018). The data collection for Paper II, utilized in both phases (I and II), has been documented in the previous chapter '*Data collection in Phase I'*.

4.6.1 Data collection tools in Phase II

For Paper III, a semi-structured interview guide was used, consisting of six topics: 1) experiences regarding completing the course, 2) pedagogical solutions in the course, 3) the scope of the course, 4) the relevance of the content, 5) the level of difficulty, and 6) the effectiveness of the course. The entry questions were: 1) How did the completion of the course proceed? 2) Which features or solutions within the course specifically supported your learning? 3) The course consists of three modules. What is your opinion on the scope of the course? 4) How did the content of the course meet your expectations? 5) How would you evaluate the difficulty level of the course? 6) How would you assess the impact of completing the course on your skills and competencies? The interviews were conducted remotely; background information was inadvertently collected only from student participants.

The data collected by interviews was supplemented with The Oppiportti feedback questionnaire. This questionnaire is developed by the company owning the e-learning course under study. It is part of the company's normal feedback process; the same questions are asked of everyone completing any of the e-learning courses in the Oppiportti learning portal. The questionnaire includes closed and open-ended questions; in this study, we used only answers to the closed questions answering our research questions (Table 4).

Table 4. Questions of Oppiportti Feedback questionnaire used in Phase II.

No	Question/Statement	Answer options
1	Grade	1 to 5
2	Profession	27 options: physician (non-specialized), physician (specializing), physician (specialized), medical student, nurse student, other health care student, registered nurse, public health nurse, practical nurse, midwife, radiological nurse or medical laboratory technologist, first-aider, practical nurse (older degree), first responder, other nursing professional, pharmacist, community pharmacist, dentist, dental hygienist, other oral health professional, physiotherapist, other health care professional, social counselor, social worker, psychologist, other social care professional, other professional, unknown.
4	I can apply the knowledge from the e-learning course in my clinical practices.	1 to 4: 1 = poor, 2 = average, 3 = good, 4 = excellent
5	My competence has developed through the e-learning course.	1 to 3: 1 = disagree, 2 = somewhat agree, 3 = strongly agree
6	The e-learning course has motivated me to learn and think about the topic	1 to 4: 1 = not at all, 2 = a little, 3 = somewhat, 4 = yes

For Paper IV, two questionnaires were used: the knowledge test (developed by WHO, 2017) and the Self-efficacy questionnaire (developed by Spagnolo et al., 2018). In this study, we utilized a pre-post knowledge test designed for trainers, which comprises 22 questions with answer options. The topics of these questions were essential care and practice, depression, psychoses, child and adolescent mental and behavioral disorders, self-harm and suicide, and other significant mental health complaints. (WHO, 2017.) The questionnaire has good intra-rater reliability based on the two pre-test measures taken 6 weeks apart (Spagnolo et al., 2018). For this study, questions related to substance use, dementia, and epilepsy were removed, as these topics were not covered in the examined e-learning course. This resulted in 13 questions and two case descriptions (Table 5). The face validity and relevance of the questionnaire were not tested.

Table 5. Modified knowledge test (originally WHO 2017) used in Phase II. Correct answers are marked in **bold.**

No	Question	Answer Options
KNOWLEDGE: ESSENTIAL CARE AND PRACTICE		
1	Which of the following is considered a core effective communication skill?	A Speaking to the person only and not the carer **B Start by listening** C Using an open space for safety D Limited eye contact
2	Which of the following is consistent with promoting respect and dignity for people with an MNS condition?	A Making decisions on behalf of a person with an MNS condition, with their best interests in mind. B Using correct medical terminology to explain things, even if complicated. C Ensuring consent to treatment is received from the carer and/or family. **D Ensuring privacy in the clinical setting**.
KNOWLEDGE: DETECTION		
3	Which of the following cluster of symptoms best fits with an episode of depression?	A Marked behavioural change, agitated or aggressive behaviour, fixed false beliefs. B Decline in memory, poor orientation, loss of emotional control. C Inattentive, over-active, aggressive behaviour. **D Low energy, sleep problems, and loss of interest in usual activities**
4	Which of the following cluster of symptoms fits best with an acute manic episode?	A Confusion, disorientation to time, place and person, marked functional decline B Admits to consuming alcohol, has slurred speech and uninhibited behavior C Has recently stopped taking regular benzodiazepines, and presents with agitation, sweating and poor sleep D Decreased need for sleep, increased activity and reckless behaviour
5	Which of the following statements concerning psychosis and bipolar disorder is correct?	A People with psychosis or bipolar disorder do not need evaluation for medical conditions B People with psychosis or bipolar disorder are best cared for with long-term hospitalization C People with psychosis or bipolar disorder are unlikely to be able to work or contribute to society **D People with psychosis or bipolar disorder are at high risk of stigmatization and discrimination**
6	Which of the following is the best description of a child developmental disorder?	A Child developmental disorders have a relapsing and remitting course B Child developmental disorders are always associated with abuse and neglect C Child developmental disorders category includes attention deficit hyperactivity disorder and conduct disorder **D Child developmental disorders involve impaired or delayed functions related to central nervous system maturation**

KNOWLEDGE: TREATMENT		
7	Which of the following is a good combination treatment for depression?	A Vitamin injections and increasing exercise **B Psychosocial interventions and an antidepressant** C An antipsychotic medication and a mood stabilizer D Hypnotherapy and relaxation
8	Which of the following is part of a psychosocial intervention in psychoses?	A Encourage participation in daily activities but recommend against work or serious relationships as they may be too stressful B Discuss with the carer and family whether long-term institutionalization may be appropriate **C Provide psychoeducation, especially to avoid sleep deprivation, stress, and drugs and alcohol** D Discuss with the carer different ways that they might be able to challenge the delusions of the person
9	Which of the following is good advice for any child and adolescent mental and behavioural disorder?	A The carer can use threats or physical punishment if a child has problematic behaviour B The carer should remove the child from mainstream school as soon as possible C The carer can use other aids such as television or computer games instead of spending time with the child **D The carer should give loving attention to the child every day and look for opportunities to spend time with them**
10	Which of the following is the best first-line treatment for child and adolescent developmental disorders?	**A Psychosocial intervention** B Pharmacological treatment C Referral to specialist D Referral to outside agency
11	Which of the following should be given as advice to an adolescent with a mental or behavioural disorder?	A They should avoid community and other social activities as much as possible **B They should avoid the use of drugs, alcohol and nicotine** C They should avoid school if it makes them anxious D They should avoid being physically active for more than 30 minutes each day
12	Which of the following should you tell the carer of someone who has had an episode of self-harm or a suicide attempt?	A Medication will be made available so that they can keep the person sedated B Restrict the person's contact with family, friends and other concerned individuals in case it is too overwhelming **C Remove access to any means of self-harm and try and provide extra supervision for the person** D Forced vomiting is an emergency treatment option if they suspect any self-harm or suicide
13	Which of the following is part of a psychosocial intervention where the person seeking help witnessed the death of a loved one to violence?	A They should talk about the incident as much as possible, even if they do not want to **B It is normal to grieve for any major loss, in many different ways, and in most cases grief will diminish over time** C Avoid discussing any mourning process, such as culturally appropriate ceremonies/rituals, as it may upset them further D Refer to a specialist within one week of the incident if they are still experiencing symptoms

14	Case 1	Mikko is a 20-year-old man who is brought to your clinic by his friends. They are very worried about him because he is afraid that the government are monitoring him and keeps saying that he can hear people talking about him. When you ask them for more information, they say that he has not been himself for several months, at times does not make sense, and has not been coming to university much. He is about to fail the semester. There is nothing remarkable on physical history, examination, or blood tests, and his urine drug screen is negative. When you speak to him, he seems suspicious of you, does not make a lot of sense, and does not think that there is anything wrong with him. He wants to leave and starts to become quite aggressive when you ask him to stay, saying that he is unsafe here and people are watching him.
15	Case 2	Jere is a 14-year-old boy who is referred to you by his school teacher. The teacher tells you that Marc has always gotten into trouble at school as he is very disruptive to the other students. He does not seem to be able to concentrate for very long. The teacher wants you to see him in case there is something that can be done. You meet with Marc, who does not want to sit still to talk to you. In the brief time that you talk he tells you that he hates school and finds it boring. In your assessment you do not think that he is depressed, or that he has any delusions or hallucinations. He denies using any substances. A physical examination is normal. You meet with Marc's parents, who tell you that they have had trouble with Marc for years. He can never sit still when they take him somewhere, such as church or a friend's house, he is always getting bad reports at school, and wants to constantly be moving around the house and doing something.

The training program of WHO also includes more extensive and detailed questionnaires aimed at trainees. The choice of the shorter questionnaire was due to its user-friendliness, while the longer questionnaire comprises eight to fifteen questions per topic, totaling 96 questions. Furthermore, many of these questions were deemed overly disease-centered for use by public health nurses.

The official translator translated the questionnaires from English to Finnish, after which the research group further ensured correspondence of the translations with the original questionnaire. The order of the questions was modified from the original, and they were categorized under topics identification, treatment, etc. Correct answers were scored as 1 point and incorrect answers as 0 points, the maximum points being 15. The points were converted to a scale of 0–10 by dividing the total points by 1.5. The knowledge test was freely available online with the license CC BY-NC-SA 3.0 (WHO, 2017).

The Self-Efficacy questionnaire was originally developed by Spagnolo and colleagues (2018) for their study investigating physicians' self-efficacy in mental

health issues. The self-efficacy questionnaire has good intra-rater reliability based on the two pre-test measures taken 6 weeks apart (Spagnolo et al., 2018). Permission to use the self-efficacy questionnaire in this study was obtained from its developers.

The Self-efficacy questionnaire consists of 35 statements (Table 6), which were scored using five response options as follows: Strongly disagree (0 points), somewhat disagree (1 point), neutral (2 points), somewhat agree (3 points), and strongly agree (4 points) (Spagnolo et al., 2018; Spagnolo et al., 2020a; Spagnolo et al., 2020b). Since the original questionnaire was developed for physicians, the wording was slightly modified to be more suitable for nurses (see Paper IV). The maximum score was 140 points. The Translation Office originally translated the questionnaires from French to Finnish, after which the research group further ensured correspondence of the translations with the original and the English version of the questionnaire.

Table 6. Self-Efficacy Questionnaire with modified wording used in Phase II.

Sub-scale	Statement*
Self-efficacy: Detection	I feel confident in my capability to detect… …depression …problems relating to anxiety …problems relating to drug use …problems relating to alcohol use …psychosis (including schizophrenia)
	I feel confident in my capability to… …collect information to detect a mental health problem …use tools and techniques to detect a mental health problem …assess a mental health problem …explain the diagnosis-related matters to patients
Self-efficacy: Treatment and management	I feel confident in my capability in pharmacological treatment for patients presenting with… …depression …problems relating to anxiety …problems relating to drug use …problems relating to alcohol use …psychosis (including schizophrenia)
	I feel confident in my capability to provide support (ex: active listening) for patients presenting with…. …depression …problems relating to anxiety …problems relating to drug use …problems relating to alcohol use …psychosis (including schizophrenia)

	I feel confident in my capability to provide psychoeducation for patients presenting with… …depression …problems relating to anxiety …problems relating to drug use …problems relating to alcohol use …psychosis (including schizophrenia)
	I feel confident in my capability to treat patients having issues relating to… …self-harm …suicide
	I feel confident in my capability to develop a treatment plan for patients presenting with… …depression …problems relating to anxiety …problems relating to drug use …problems relating to alcohol use …psychosis (including schizophrenia)
	I feel confident my capability to… …involve other professionals in the management plan …refer my patient …involve family members/friends in the management plan

4.6.2 Data collection procedures in Phase II

For **Paper III**, PHN students (n=12) and SNs (n=2) were interviewed in four focus group discussions between May 2021 and February 2022. The data collected in interviews was supplemented with anonymous data collected from the e-learning portal, as a part of the portal's normal feedback process. The data concerning participation (openings of the modules and course attainments) was collected directly from the learning portal. The data concerning learners' satisfaction was collected via four questions in the portal feedback questionnaire (Table 5). The profession of the participants was the only background information requested. This data was collected between February 2021 and November 2022.

For **Paper IV,** participants (n=74) completed an electronic questionnaire, including the Knowledge test (Table 3) and the Self-efficacy questionnaire (Table 4), and questions about their background information (age, current status (PHNS or SN), length of working experience, previous mental health related continuing education and e-mail address). The participants were asked to conduct the developed e-learning course and answer the questionnaire again after the course (pre-and posttest, see Fig. 3). The pre- and posttest responses were linked together by the e-mail address given as a part of background information in the pre-test-questionnaire

and requested again at the beginning of the posttest questionnaire. In total, 35 participants answered the posttest. This data was collected between October 2021 and September 2023.

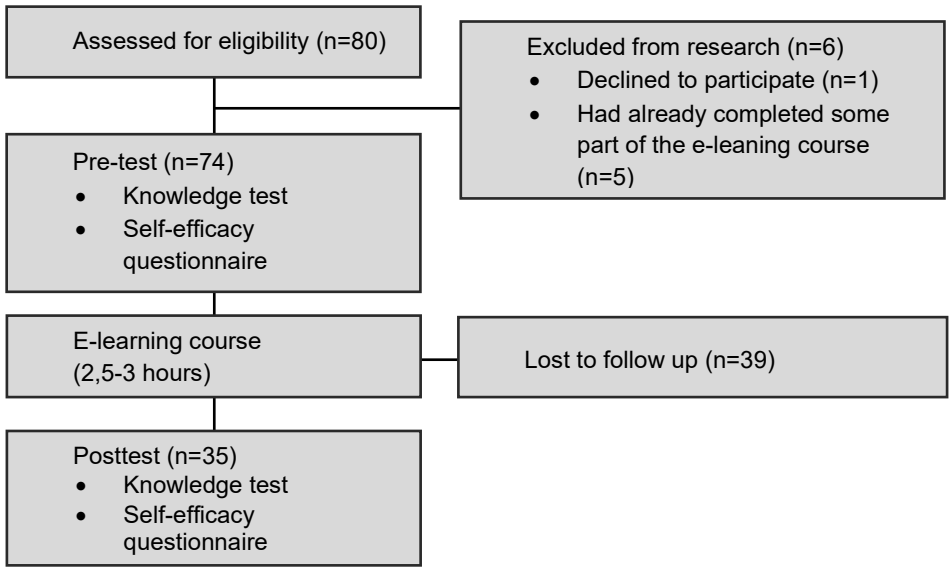

Figure 3. Flow chart of the pre- and posttest study (Paper IV).

4.7 Data analysis

The data reported in **Paper I** was analyzed inductively with a phenomenographic approach (Marton, 1988). The analysis began by carefully reading through the transcriptions. Subsequently, sentences describing desires related to mental health services provided in the school environment were selected. These sentences formed a pool of meanings. Similar statements were grouped and labeled according to the identified perception. Finally, among the identified perceptions, a search for themes was conducted. Based on these themes, the perceptions were organized and abstracted into categories of description, i.e., qualitatively different perceptions about the phenomenon. (Sjöström & Dahlgren, 2002.) In the last stage, an outcome space was formulated depicting the relationships between these categories of description (Åkerlind, 2012). The nVivo12 analysis software was used to help the analysis.

The data reported in **Paper II** was analyzed using inductive and deductive content analysis (Elo & Kyngäs, 2008). At first, the transcriptions were read through to obtain an overall understanding. Next, all sentences describing the strengths or deficiencies in the competence of the public health nurses in mental health issues

were selected. These sentences were condensed into in vivo codes (i.e., codes based on participants' exact words). Initially, the data was analyzed inductively: codes with similar meanings were grouped into subcategories and named descriptively. Then, similar subcategories were grouped into categories and named according to the competence being described. At the end of the inductive phase, the categories were combined and abstracted into main categories, which were named based on the content's meaning. After this, the analysis was finalized deductively with the help of Nursing process theory. Based on these six steps of the Nursing Process Theory (Hamers et al., 1994; Melin-Johansson et al., 2017; Townsend, 2014), we created an analysis framework into which the results obtained through an inductive analysis were reflected, organized, and named as the final results. The analysis framework was structured according to the stages of the nursing process: assessment, nursing diagnosis, outcome identification, planning, implementation, and evaluation. The identified categories (i.e., competencies) were grouped according to this analysis framework. Finally, the names of the categories were validated using the nursing process theory.

The data reported in **Paper III** was analyzed with content analysis (Elo & Kyngäs 2008) and statistical methods (Comiskey & Dempsey, 2013). The qualitative data was analyzed with inductive content analysis: all phrases reflecting participants' perceptions of the course were selected and these meaning units were coded, grouped, and categorized. Sub-categories and categories were named by describing their content (Elo & Kyngäs, 2008). The quantitative data from the e-learning platform was analyzed using descriptive statistics such as frequency, percentages, mean, and standard deviation. The Mann-Whitney U test was used to assess the differences between public health nurses and other learners.

The data reported in **Paper IV** was analyzed with descriptive statistics including frequency, percentage, mean, standard deviation, and range. The normality of outcome variables was tested with the Shapiro-Wilk test. For the evaluation of correlation between background variables and outcome variables, the Independent Sample t-test (for normally distributed data) and the Mann-Whitney U test (for non-normally distributed data) were used. The data from questionnaires (pre- and posttest) was analyzed with descriptive statistics (mean, SD), paired t-test (comparing means), and McNemar test (comparing dicotomic variables). (Comiskey & Dempsey, 2013.) We examined whether the mean scores for the knowledge test or the self-efficacy questionnaire changed after the intervention. Moreover, we examined whether the proportion of confident participants (those agreeing with items in the self-efficacy questionnaire) changed after the intervention.

The framework of continuing medical education (Moore et al., 2009) was used as a theoretical approach to guide the assessment of learning outcomes of the developed e-learning course and analysis of the data reported in **Papers III and IV.**

The nVivo12 analysis software was used for qualitative analysis and SPSS 27 (IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp) for quantitative analysis. All the analyses were conducted by a doctoral researcher (TP); the other members of the research team commented on the results. The statistician reviewed the methods used in the analysis of the quantitative data.

4.8 Research ethics

All the studies were conducted following the Declaration of Helsinki (WMA 2013) and the national guidelines of The Finnish Advisory Board on Research Integrity (TENK, 2019; TENK, 2023). During the study, ethical principles of health care research –informed consent, beneficence and non-maleficence, and justice (Scott, 2013) – were followed. Informed consent was requested and obtained from all participants, except for those in the quantitative portion of Paper III. The quantitative data for Paper III consisted of learning portal data and responses to feedback questions collected previously as a part of the portal's normal feedback process. This anonymous data was used without separate informed consent. All other participants were informed about the study, and they gave written informed consent. They were informed about voluntariness and the option to terminate their participation if they wished. All data were reported so that the participants or their clients could not be identified. Research Data Management was fulfilled according to the guidelines of the Finnish Social Science Data Archive. These guidelines include the EU's General Data Protection Regulation (GDPR) instructions. (FSD, 2022).

The entire study was conducted in a manner that aimed to ensure no harm would come to the participants. Through careful planning and conduction, efforts were made to ensure that the time participants invested was not wasted but instead contributed to something beneficial. The inclusion criteria for participants were chosen to be justified in terms of the study's objectives, ensuring fair treatment of potential participants and preventing exclusion based on personal characteristics, minority status, or other irrelevant reasons. (Scott, 2013.)

In Phase I, for the study reported in Paper I, a favorable statement from the Ethics Committee of the University of Turku was obtained (ID 5/2020, Date of statement 24 February 2020). All interviewees were asked to provide information as to whether applying for a research permit for the interview would be necessary according to their organization's practices. For most, a permission was not needed. Approvals for the study, when needed, were obtained beforehand from the participating organizations (ID TUR/2020, Decision date of permission 6 April 2020; ID ESS/2020, Decision date of permission 7 April 2020; ID MET/2020,

Decision date of permission 28 April 2020; ID HUS60/2020, Decision date of permission 25 June 2020).

For the study reported in Paper II, a statement from the Ethics Committee was not required in the Finnish context, because participants were professionals, and the topic was not sensitive (TENK, 2023). The permissions to carry out the study were asked for and granted by organizations of participating PHNs (ID HEL 2018-000838, Decision date of permission 9 February 2018; ID SIU/2018, Decision date of permission 13 February 2018; ID VD/1351/13.00.00/2018, Decision date of permission 19 February 2018).

In Phase II, a statement from the Ethics Committee was not required in the Finnish context, because participants were professionals or students, and the topic was not sensitive (TENK, 2023). The permissions to carry out the study were requested from and granted by the organizations of the participating students (ID 111021[43545], for the Decision date of permission 11 October 2021 and ID TL15_2021, for the Decision date of permission 13 October 2021) and from the Finnish Association of Public Health Nurses (Decision date of permission 4 March 2021). Regarding the data collected from the learning portal, the act of providing the data for research purposes by the company owning the portal was considered to be permission.

In the qualitative research, reflexivity, which involves examining one's own position and its potential impacts on the study, is part of an ethically sound approach to conducting research (Berger, 2015; Holloway & Wheeler 2010). These potential impacts can relate to: the setting, the individuals being studied, the questions being asked, the data being collected, and the interpretations made from the data. The positions of the researcher can affect the possibilities to contact possible participants, their willingness to participate, the information provided by them, and the researcher's own actions, such as the types of questions posed and how the responses are interpreted. The researcher can be in an outsider position, in an insider position, or both. (Berger, 2015.)

When conducting this research, I found myself in many positions. First of all, my previous role as a school nurse placed me in an insider position with the participating school nurses sharing the experiences of school nurses' work and identity. However, at the same time, I was also in an outsider position through my previous role as a nurse in an adolescent psychiatric outpatient clinic. In interview situations, these shared experiences may have been beneficial, and participants may have spoken about things differently than they would to someone completely external. Additionally, my understanding of the research topic may have helped me to notice certain meanings between the lines and even particular subtle signals. Both of these roles likely influenced my preconceptions about the expertise school nurses have in mental health issues and the expertise they should have. My perceptions may

have colored the results; thus, it is important to consider them in comparison with the results of other researchers.

Secondly, my role as one of the developers of the e-learning course under investigation may have influenced the research. It is natural to hope that the educational material one has created is of high quality, satisfying, and effective. To decrease the possibility of this bias, the part of the research concerning the e-learning course has been conducted using both qualitative and quantitative methods. It is also possible that this role has influenced the participants in the research, among whom there may have been former colleagues or current/former students. People may perceive teaching material created by a familiar person more negatively or positively, depending on the relationship.

Third, my role as a teacher of public health nursing students, mainly teaching mental health nursing and school nursing to my students, may also have influenced the research. As a teacher, I know what topics are taught to students on courses. Additionally, I have gained insight into the level of competence of graduating students in these subjects. This may have particularly influenced the questions I posed and the interpretations I made during the research. My role as a teacher may have also affected the participating students and their responses. During the research situations, I have strived verbally and in writing to emphasize that the research does not affect the student's studies, assessments, or grades in any way. Despite this, it is possible that a student consciously or unconsciously has wanted to please the researcher, whom they inevitably also saw as a teacher. To minimize this bias, participants were recruited from two different UASs, and also school nurses already in working life were included.

5 Results

5.1 Characteristics of the participants

In Phase I, participants were from national-, organizational-, and individual levels regarding the phenomenon under research. In Paper I, the participants were stakeholders in school healthcare. There were stakeholders from three non-governmental organizations (NGOs) advocating for adolescents and parents (n=10) and professional stakeholders (n=15). Among the professional stakeholders were for example ministerial advisers, senior specialists, heads of the units, and chairs of professional organizations. In Paper II, the participants were public health nurses (n=24) working either in child health clinics or school health care.

In Phase II, participants were from an individual level regarding the phenomenon under research. In Paper III, the participants were health and social care professionals or undergraduate students participating in three modules of an e-learning course (n=690 to 954 per module), school nurses (n=2), and public health nursing students (n=12). In Paper IV, the participants were school nurses (n=21) and public health nursing students (n=53). (Table 7.)

Table 7. Participants and their demographic data.

Paper	Participants	Age	Length of working experience
I	Specialist of MHSs (n=6)	44–58 years (Mean 49 years)	6–30 years with mental health matters (Mean 17 years)
I	Specialist of SHC (n=9)	36–62 years (Mean 52 years)	0.5–30 years with school health care matters (Mean 15 years)
I	Advocates of parents (n=6)	39–59 years (Mean 49 years)	
I	Advocates of adolescents (n=4)	28–51 years (Mean 37 years)	
II	PHNs working in CHCs (n=9)	26–64 years (Mean 46 years)	2–40 years as a PHN (Mean 13 years)
II	PHNs working in SHC (n=15)	28–61 years (Mean 43 years)	0–29 years as a PHN (Mean 11.5 years)
III	PHN students (n=12)	22–45 years (Mean 33 years) [a]	0.5–12.5 years in healthcare (Mean 6 years) [a]
III	School nurses (n=2)	Data is missing	Data is missing
III	Health and social care professionals (n=690 to 954 per module)	Data is missing	Data is missing
IV	PHN students (n=53)	21–53 years (Mean 34 years)	0 months–20 years in healthcare (Mean 7.5 years)
IV	School nurses (n=21)	24–56 years (Mean 40 y)	2 months–25 years in school health care (Mean 8 years)

[a]The data of two participants is missing
MHS=Mental Health Services
SHC=School Health Care
PHN=Public Health Nurse

5.2 Results of the Phase I, National and organizational levels

5.2.1 Future mental health services in the school environment – Stakeholders' conceptions

Based on the stakeholders' conceptions, four alternative future visions were formulated (Table 8). They were especially examined as regards which entity should provide treatment for mental health problems in primary care services, what would be considered as the mission and focus of school health care, and what primary values were associated with the vision.

In **Vision I,** *Non-medicalizing school environment focusing on promotion and the mental health of the community*. It was deemed important to limit the individual mental health problem treatments provided outside of the schools. According to the vision, the focus in schools should be on community work. Key values were seen as equality between somatic and mental health, non-medicalization, and protecting students from undue burdens. Because somatic health and mental health were seen as equal, it was not considered appropriate to offer treatment only for mental health problems in the school environment; if they were to be treated, somatic illnesses such as asthma or diabetes should also be treated. Non-medicalization aimed to avoid seeing symptoms related to development or life situations as symptoms of mental health problems. In the vision, the underlying causes of mental health problems were often seen to lie outside of individual pupils, such as family problems or societal issues. Thus, individual meetings offered in schools were not seen as a suitable means to address these problems. The mission of school health care was seen as providing promotion and prevention for all pupils via regular health check-ups, focusing on both physical and mental health.

In **Vision II**, *Specialists in school environments providing treatment for the mental disorders of individuals thus enabling SNs to intervene early and extensively*. It was considered important to offer treatment for mental health problems in the school environment but to also protect the ability of school nurses to focus on promotion and prevention. For this reason, it was desired that psychiatric nurses be introduced into schools to provide treatment, allowing school health services to continue focusing on promoting the somatic and mental health of all students and preventing diseases.

In **Vision III**, *A multiprofessional team of school welfare services focusing on promotion, prevention, and treatment of individuals' and communities' physical and mental health questions*. It was considered important for the existing multidisciplinary student welfare teams in schools to provide treatment for mental health problems. Principal values included the familiarity of the support providers to students as they already work in schools, '*one-stop-shop*' services, and service development from the perspective of primary healthcare. The mission of school health care was seen as promoting the somatic and mental health of individuals and the community, as well as disease prevention, but also mental health treatment for those in need. The focus of school health services should be, in this vision as in the previous two, on both physical and mental health.

Vision IV, *Professionals in the school's welfare services focusing on mental disorders,* was otherwise similar to Vision III, however, in this vision the mission of school health care was seen as providing mental health treatment and focusing on mental health. Thus, according to the vision, the entire school's student welfare team should primarily focus on providing mental health treatments for students.

Table 8. Mental health services in the school environment – Future visions.

	Focus of School Health Services	The mission of School Health Services	Provider of treatment in the school environment	Principal values
VISION I	Physical and mental health	Promotion and prevention for all	Services outside of schools	• Non-medicalizing • Protecting children from the burden of others • Equality of physical and mental health
VISION II	Physical and mental health	Promotion and prevention for all	Psychiatric nurses	• Bringing in special professionals to school • Protect the possibility of SNs to intervene early and extensively
VISION III	Physical and mental health	Promotion and prevention for all and treatment for those who need it	School welfare services	• The familiarity of the treatment provider with the child or adolescent • 'One-stop-shop' services • Development of services from the perspective of primary healthcare
VISION IV	Mental health	Treatment for those who need it	School welfare services	• The familiarity of the treatment provider with the child or adolescent • "One-stop-shop" services • Development of services from the perspective of primary healthcare

5.2.2 Actions needed to improve mental health support provided in school health care

According to the stakeholders of school health care, there were several actions needed at the national level (macro level) and organizational level (mezzo level) to improve mental health support provided in school health care. In the original paper (Paper I) actions were reported regarding the whole school environment and services outside of schools, in this summary only those concerning school health care are considered. When analyzing the interviews of the public health nurses (Paper II), more mezzo level actions were identified that were needed. (Figure 4.)

At the macro level, changes were sought in legislation and resources. The current legislation excludes the treatment of mental health problems from the school health services provided in primary schools. It was hoped that this would change so that in the future, providing treatment would also be included in statutory duties. It

was also hoped that legislation would change so that health check-ups would not be obligatory for everyone but only when necessary; this was thought to save time for addressing pupils' mental health issues. The third legislative change sought was the conversion of the current recommended nurse-to-student ratio into a mandatory requirement, ensuring that the number of pupils per nurse would not exceed the recommended ratio. The assurance of adequate resources was discussed in every interview. The current resources were not perceived as sufficient even for health promotion and disease prevention. According to the interviewed stakeholders, if the treatment of mental health problems were to be added to the tasks of school health services, resources would need to be significantly increased. Sufficient time for meeting with pupils was emphasized. More school nurses as well as more school doctors were considered necessary for school health services.

At the mezzo level, changes were sought in various aspects to improve the provision of mental health support in school health services. Some stakeholders felt that psychiatric nurses should be employed in schools, while others viewed them as unnecessary since school health nurses in Finland who as registered nurses have a nursing degree are proficient for that work in schools. Other desired changes included: regeneration of the management, ensuring supervision, easing the flow of the distribution of work, multi-professional cooperation, and modeling the procedures.

When interviewing the public health nurses, another mezzo level need for change was identified. Nursing practice should be based on the nursing process, which consists of five stages: assessment, nursing diagnosis, planning, implementation, and evaluation (Hamers et al., 1994; Melin-Johansson et al., 2017). In mental health nursing, there is one additional stage after planning: outcome identification (Townsend 2014). However, two stages were not mentioned at all in the interviews: outcome identification, and evaluation of achieved outcomes. This may indicate that the approach to working with mental health issues should be more guided, in the future, and the work should proceed in a more systematic and goal-oriented manner according to the stages of the nursing process.

Figure 4. Actions needed to improve mental health support provided in school health care at the macro level and mezzo level.

5.3 Results of Phase II, the Individual level

5.3.1 Mental health competence required in school health care – Public health nurses' perceptions

One of the identified micro level needs for change reported in Paper I was to improve the competence of school nurses and other professionals in mental health issues. Based on interviews with public health nurses, it was evident that they require competence in mental health promotion, prevention of mental health problems, and treatment of mental health problems when working in school health care. (Paper II). The results of the e-learning course feedback questionnaire verified this finding (Paper III).

Concerning **mental health promotion**, public health nurses perceived their competence as sufficient. Strengths of the competence included a holistic approach and family-centered orientation. Public health nurses felt proficient in supporting mental health-promoting habits, such as sufficient sleep, regular and healthy eating, and physical activity. A key aspect of public health nurses' ways of working included bolstering self-esteem in children and adolescents and focusing on positive aspects

even in challenging situations. Public health nurses also support children and adolescents to work with their emotions and improve their emotional skills.

Concerning the **prevention of mental health problems**, public health nurses expressed a need for further education, particularly about preventive interventions. While they felt themselves competent at identifying situations and problems threatening mental health at an early stage, they were unsure how to address them other than through general discussions or, if necessary, by creating a child welfare notification. Furthermore, public health nurses perceived a lack of knowledge regarding the etiology of mental health problems. If risk factors are not fully understood, their identification may also be inadequate. In a feedback questionnaire from the e-learning course, public health nurses (n=185–189 per question, scale 1–4) assessed that they could utilize the content of the prevention-focused module in their work more frequently than other social and healthcare professionals and students (n=281–287 per question) did; the difference was statistically significant (Mean 3.24 vs 3.02, p <.001, scale 1–4). They also felt more frequently than others that the prevention-focused module had motivated them to ponder on the topic and learn from it; however, the difference was statistically significant (Mean 3.73 vs 3.59, p .002, scale 1–4). This result is reasonable considering the specialized expertise of public health nurses, compared to other healthcare professionals, in health promotion and disease prevention.

Concerning **the treatment of mental health problems**, the public health nurses perceived they had excellent interpersonal and intuitive competence and the ability to establish trustful relationships with children and adolescents. These aspects can be seen as a basis of all the mental health support provided by professionals: Without them, providing mental health support might be challenging. Public health nurses also felt proficient in motivating children and adolescents for the treatment of mental health problems, organizing mental health care, and collaborating with those providing treatment and care. However, providing the treatment of mental health problems was perceived as challenging, and for this further education was desired. More competence was needed concerning assessment tools for symptom evaluation, symptoms of mental disorders, psychosocial treatment methods, and medical treatment. In a feedback questionnaire from the e-learning course, nurses (n=87–103 per question) rated both the module focused on mental health problems in general and the module specifically focusing on depression, anxiety, and suicidality as motivating and applicable to their work (Means 3.11–3.76, scale 1–4). There were no statistically significant differences in ratings compared to other social and healthcare professionals and students (n=168–239 per question).

5.3.2 School nurses' self-efficacy in mental health issues

The level of the participants' (final year undergraduate PHN students and school nurses) self-efficacy in mental health issues was highest concerning Management by referring and involving, and second highest on Detection. The mean sub-score of PHN students (n=53) in theme Management by referring and involving was 7.1, and the mean sub-score of school nurses (n=21) was 7.5. The mean sub-score of PHN students in the theme Detection of mental health problems was 6.5, and the mean sub-score of school nurses was 6.3. There was no statistically significant difference between undergraduate students and those already working as school nurses in these two themes.

The level of self-efficacy was lowest concerning Treatment by pharmacology, followed by Management by developing clinical plans and Treatment by psychoeducation. The mean sub-score of PHN students (n=53) in the theme Treatment by pharmacology was 3.2, and the mean sub-score of school nurses (n=21) was 1.8. The mean sub-score of PHN students in theme Management by developing clinical plans was 3.8, and the mean sub-score of school nurses was 3.0. The mean sub-score of PHN students in the theme Treatment by psychoeducation was 3.8, and the mean sub-score of school nurses was 3.3. The difference between undergraduate students and those already working as school nurses was statistically significant only concerning the theme of Treatment by pharmacology (p .003).

Higher self-efficacy was associated with previous completion of mental health-related continuing education and work experience in mental health care. The mean total score of those with previous mental health education was 5.9 and those without 4.1, p <.001. The mean total score of those who had worked previously in mental health care was 6.0 and for those not 4.1, p <.001. Among PHN students, the length of work experience in healthcare, in general, did not explain differences in self-efficacy, nor did the length of work experience in school healthcare among school nurses. (Tables 4 & 5 in Paper IV.)

5.3.3 Preliminary outcomes of e-learning course 'Mental health promotion in school health care'

The learning outcomes of the e-learning course were examined concerning the first four levels of Moore's framework: participation, satisfaction, knowledge, and competence (Moore et al., 2009; Zaghab et al., 2015). The last three levels (performance, patient health outcomes, and health status of the community) were not studied. (Figure 5.)

Participation is the initial goal of the training. The e-learning course was launched in February 2021 on the Oppiportti platform, making it widely accessible to social and healthcare professionals as well as students in the field. By November

2022, three modules of the course had been opened a total of 12,922 times. Module 3 (Depression, anxiety, and suicidality in school health care) was opened the most, 6,517 times. Only a portion of the participants in the course had registered and logged into the system with their personal accounts. Depending on the module, approximately one in four or one in three (23.5% – 35.9%) of them were the actual target group, i.e., public health nurses. (See Table 4 in Paper III). Based on this data, the online course was considered to have achieved a good result in terms of participation. In addition to the target group, the course also generated significant interest among other social and healthcare professionals and undergraduate students.

Satisfaction was measured using both quantitative and qualitative methods. The participants who completed the course scored the modules on a scale of 1 to 5. All the modules received an average rating of at least 4 from the target group (public health nurses). Module 2 '*Mental health problems in school health care'* was the most highly rated module in overall scores, both among the public health nurses and other participants. There was no statistically significant difference in overall satisfaction between PHNs and others. The qualitative results provided information about factors improving satisfaction within the course. The participants reported the e-learning course as filling the gaps in earlier education, having a clear and concise structure and content, an inspiring and interesting design, and being suitable for clinical use. (See Paper III)

Knowledge was tested before and after the e-learning course with a knowledge test, with a maximum score of 10. Participants (n=35) scored high on both tests, but there was no statistically significant difference between the scores of the pre- and post-tests. The overall mean score before the e-learning course was 9.39 (SD 0.5, range 8–10), and after 9.31 (SD 0.6, range 8–10), p .55. Before the e-learning course 28.6 % (n=10) and after 34.3 % (n=12) of the participants received full points. (See Paper IV)

Competence was tested with the self-efficacy questionnaire; the maximum score was 10. The mean scores between the pre-and posttest increased significantly. The overall mean score in the self-efficacy questionnaire before the e-learning course was 4.8 (SD 1.9) and after 6.8 (SD 1.5), p <.001, a mean difference of 1.93 (SD 1.4), 95% confidence interval 1.46–2.40. The mean score related to self-efficacy about the detection of mental health problems before the e-learning course was 6.1 (SD 1.5), and after 7.4 (SD 1.3), p <.001, the mean difference was 1.2 (SD 1.4), with a 95% confidence interval 0.75 to 1.69. The mean score related to self-efficacy about treatment and management before the e-learning course was 4.3 (SD 2.3) and after 6.5 (SD 1.6), p <.001, the mean difference was 2.2 (SD 1.6), with a 95% confidence interval 1.68 to 2.75. (See Paper IV)

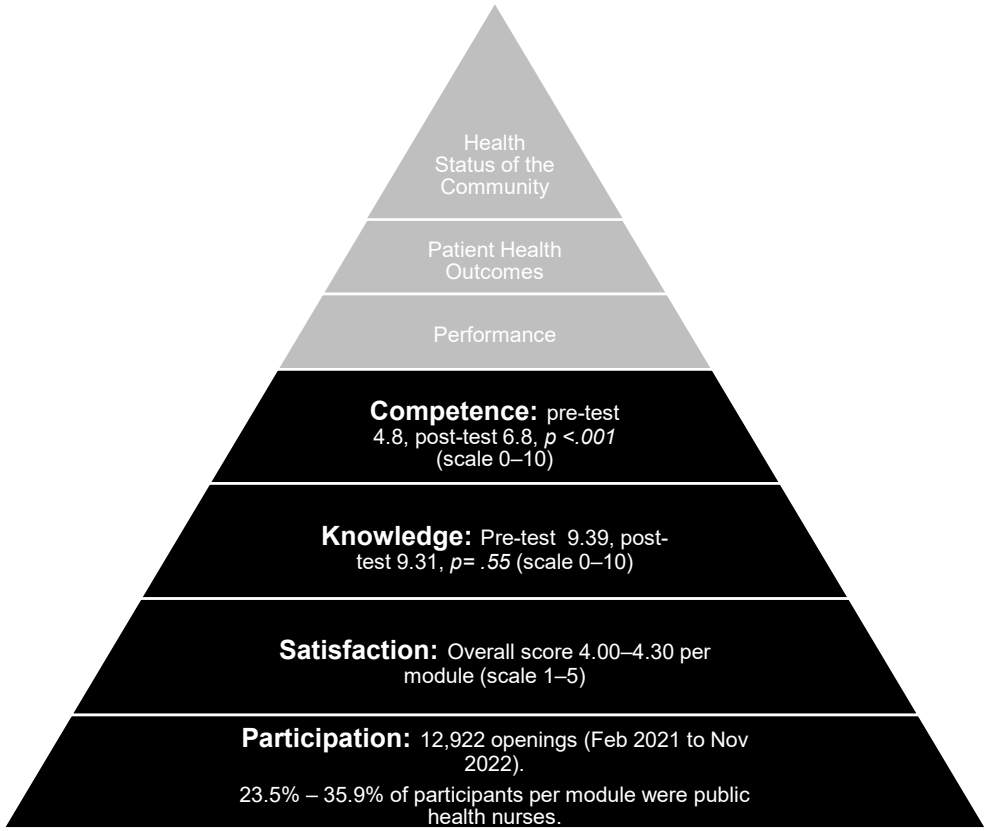

Figure 5. Outcomes of the e-learning course according to the levels of Moore's Frameworks of continuing education (Moore et al., 2009; Zaghab et al., 2015). The last three levels were not studied.

5.4 Summary of the main results

The purpose of this study was to examine the role of school nurses as providers of mental health support in the future. The overall aim was to investigate how the potential of school nurses could be optimally utilized in the future.

In phase I, it was observed that there is no clear future vision for mental health services provided in the school environment and the role of the school nurse in these services is unclear. Moreover, improving the provision of mental health support in school health care requires several national and organizational level changes. A shared vision needs to be established, and these macro and mezzo level needs must be addressed before the potential of school nurses as providers of mental health support is optimally realized.

In phase II, public health nurses were identified as having both the willingness and capabilities to provide mental health support in school health services. The

special expertise of public health nurses in health promotion and disease prevention should be considered when planning their role as mental health support providers. Additionally, it should be acknowledged that public health nurses encounter individuals in need of mental health treatment in their work, and there appears to be a willingness to also help also these individuals based on the findings. Public health nurses require further education in goal-directed prevention of mental health problems and in the treatment of mental health problems. The short e-learning course seems to offer a potential avenue to enhance nurses' perceived competence and self-efficacy in mental health issues.

6 Discussion

6.1 Discussion of the results

The purpose of this study was to examine the role of school nurses as providers of mental health support now and in the future. The overall aim was to investigate how the potential of school nurses could be optimally utilized in the future.

In this study, we formulated four alternative future visions regarding mental health services in the school environment (Phase I, Paper I) and identified the actions needed at national and organizational levels to improve the mental health support provided in school health care (Phase I, Papers I & II). Moreover, we described the mental health related competence needed in school health care (Phase II, Papers II & III), and explored the levels of self-efficacy of school nurses and public health nursing students in mental health issues and the associated factors (Paper IV); we also explored the preliminary learning outcomes of the developed e-learning course aiming to improve school nurses' competence in mental health issues (Papers III & IV).

Future mental health services in the school environment

Our research findings indicate that future visions regarding the mental health services provided in school environments vary considerably. In our study, some preferred to direct services toward individuals already experiencing mental health problems, principally through interventions employing psychotherapeutic methods. Others, in contrast, argue for the school environment to solely focus on communal mental well-being promotion. The remainder see the optimal solution as something between these two extremes. These findings appear to share a significant amount of commonality with those of the recent review of global school-based mental health promotion policy documents. These documents identified that the United Nations (UN) policies were oriented around a comprehensive school-health framework including two complementary elements: environment-centered and student-centered. The first focuses on improving the atmosphere related to education and relationships, while the second concentrates on addressing individual problems through means such as resilience-building or enhancing self-esteem but also includes

access to health services when required. Crucially, these two subdomains were perceived as complementary rather than mutually exclusive. (Margarethe et al., 2023.)

Although the UN documents, in a review by Margarethe et al., (2023) addressed the entire school community and perhaps particularly the teaching staff, the results can be reflected in our findings, which focused more strongly on the activities of school health services and student welfare services. In the visions presented in our study, Vision III '*A multi-professional team of school welfare services focusing on promotion, prevention, and treatment of individuals' and communities' physical and mental health questions'* is closest to the findings of Margarethe et al. (2023) and is the most comprehensive of the visions. Comprehensiveness can be examined through aspects of scope, focus, and approach.

Through the aspects of scope, activities should include promotion, prevention, and treatment (Margarethe et al., 2023). In Vision III, all these activities are included, and support is provided for the whole school community and its members, as well as those with a higher risk for mental health problems and those already suffering from mental health problems. According to the guidelines, the focus of school health services should be on promotion and prevention (Jansen et al., 2019; Government Decree 338/2011; WHO, 2021a). In reality, treating mental health problems that have already manifested consumes a significant portion of the available time of school nurses and school doctors (Hietanen-Peltola et al., 2022). School nurses have also highlighted that although their task is not to treat mental health problems, they cannot leave children or adolescents who come to them without help (Vejzovic et al., 2022).

Through the aspects of focus, mental health is perceived as an integral, inseparable component of overall health, whereby, for instance, promoting physical activity is also seen as promoting mental health (Margarethe et al., 2023). A recent meta-analysis regarding this so-called '*lifestyle psychiatry*' indicates that this approach is both timely and potentially highly impactful (Firth et al., 2020). This closely aligns with the current role of the school nurse, in which one aspect of the work involves counseling related to health behaviors. There is already substantial evidence of the possibilities of preventing mental health problems or alleviating symptoms through measures such as physical activity (Firth et al., 2020; Recchia et al., 2023; Rodriguez-Ayllon et al., 2019), a sufficient amount of sleep (Firth et al., 2020; Marino et al., 2021), and healthy eating (Firth et al., 2020).

Through the aspects of the approach, school health services are simply one service connected to other activities for improving students' mental health. (Margarethe et al., 2023.) In our Vision III, the multi-professional collaboration is crucial. Collaboration should be established both within the school's student welfare team and with other school staff, primary healthcare providers, social services,

specialized psychiatric care, and the family itself. Moreover, collaboration with NGOs, particularly directing individuals toward the peer support they provide, appears to be a desired form of collaboration by service users themselves (January et al., 2016; Putkuri et al., 2023). Peer support seems to be a valuable addition to other services (de Beer et al., 2023; Simmons et al., 2023). It can, among other things, reduce isolation, facilitate the formation of a positive identity, assist in finding appropriate services, and enhance engagement in treatment (de Beer et al., 2023). In addition, peer support may also reduce depression and anxiety symptoms (Simmons et al., 2023).

School nurses themselves have highlighted their experience that, apart from the work they do, no one else seems to be engaged in preventive mental health work in society (Jönsson et al., 2019). The situation is particularly concerning now, as funding for NGOs supporting the well-being of children, adolescents, and families has been reduced in Finland (Finnish Government 2023). Thus, the strong integration of psychotherapeutic treatment methods into school health services should be considered with caution to avoid jeopardizing the possibility of preventive work.

Actions needed to improve mental health support provided in school health care

Many of the identified needs for change in our study are consistent with previous research findings. For instance, issues such as problems with multi-professional collaboration (Dahl & Crawford, 2018; Moen & Skundberg-Kletthagen, 2018; Savolainen et al., 2021b), and the need for supervision (Gee et al., 2021; Moen & Skundberg-Kletthagen, 2018) have been highlighted in several earlier studies. Moreover, the need for a more systematic and goal-oriented way of working has also been identified earlier, for example in the studies by Vejzovic et al. (2022) and by Moen and Skundberg-Kletthagen (2018). To our knowledge, the mental health competence of school nurses has not been previously examined concerning the nursing process; therefore, our findings regarding deficiencies in two stages of the process (outcome identification and evaluation of achieved outcomes) contribute new insights into the topic. It is important to determine whether the school nurse should be responsible for only certain phases of the nursing process (such as assessment) or the entire process more broadly. This will assist in both defining the job description and identifying potential continuing education needs. Moreover, it helps in the development of multi-professional collaboration as roles become clearer.

One desired need for change identified in our study was the deregulation of the health examinations provided for everyone. In practice, this will mean transition from annual and universal health check-ups to those conducted only as needed, thereby allowing more time for mental health issues. However, adolescents

themselves are not always sure if their problems are severe enough to justify seeking help (Helland Lindborg et al., 2024) and they may not be willing to seek help for mental health issues (Granrud et al., 2020; Helland Lindborg et al., 2024; Moen & Hall-Lord 2019). This desire reflects a perspective where supporting mental health is seen as a separate activity from other aspects of life. This, in turn, contradicts the previously presented comprehensive framework advocated by the policy documents (Margarethe et al., 2023). Additionally, it conflicts with both national (Vorma et al., 2020) and international mental health strategies (WHO, 2021a) which emphasize promotion and prevention in mental health issues.

If mental health support is conceptualized according to a comprehensive framework with a central focus on the lifestyle that promotes mental health, prevents mental health problems, and alleviates symptoms, then regular health check-ups would provide an excellent opportunity to implement these actions. The annual health check-ups enable the establishment of a dialogue and a confidential relationship with children and young people, making it possible to address mental health issues with ease and provide support before problems arise. A recent systematic review identified that one barrier to seeking help for mental health issues is the reluctance of young people to discuss their concerns with an unfamiliar professional (Radez et al., 2021). Moreover, regular check-ups provide a ready-made model for regular meetings and involvement of parents. On the other hand, as-needed health check-ups would raise questions about the criteria for selecting individuals for examination, how to identify them, and how to proceed in situations where the child, adolescent, or parent does not see the need for an examination or does not want to participate. Adolescent boys in particular find visits to school nurses and seeking help for mental health issues embarrassing, even feeling the need to keep such visits secret from their friends (Granrud et al., 2020; Helland Lindborg et al., 2024). Discontinuing regular health check-ups might therefore prevent adolescents, particularly boys, from seeking and getting help from school health services.

While it may not be deemed sensible to pursue resources for mental health issues by reducing health check-ups, adequate resources must nonetheless be ensured. Lack of resources has also been identified in previous studies (Dina & Pajalic 2014; Hoekstra et al., 2016; Skundberg-Kletthagen & Moen, 2017). Mental health support, which includes facilitating lifestyle habits, requires sufficient time to meet with children, adolescents, and their parents; this may require more than one meeting if needed, in order to build a good and trusting relationship with them, and to engage in interdisciplinary collaboration. In addition to the results of our own study, the need to ensure that the school nurse has time to meet with all students and engage in confidential interaction with them has also been highlighted in numerous previous studies (Granrud et al., 2020; Kaskoun et al., 2022; Moen & Jacobsen 2022; Vejzovic et al., 2022).

Mental health competence required in school health care

The results of our study indicate that school nurses have a particular strength in excellent interaction skills and the ability to establish trusting relationships with children and adolescents. Previous research also corroborates this finding (THL, 2022; Granrud et al., 2020). These skills can be considered the foundation of all mental health support.

Interaction skills are also needed in promoting mental health-supportive health habits. Discussing health habits, such as sleep, nutrition, and exercise, is one of the key tasks of school nurses in Finland and abroad (Jansen et al., 2019). According to our research findings, school nurses felt themselves competent when discussing these matters with children and adolescents. However, 35% of Finnish children and adolescents sleep too little and even 75% engage in insufficient physical activity (Kosola et al., 2024). As noted in a recent study, simply encouraging exercise does not necessarily lead to a decrease in mental health symptoms; rather, what is effective is actually persuading individuals to change their behavior and engage in more physical activity (Noetel et al., 2024). Based on the numbers presented above, the traditional methods of school nurses for achieving changes in health habits to promote mental health, prevent problems, and alleviate symptoms seem insufficient and ineffective. Instead, an approach based on the model of psychological flexibility, for example, Acceptance and Commitment Therapy (ACT) interventions, appears promising for promoting changes in health habits (Manchón & López-Roig 2020; Pears & Sutton 2021). Perhaps it is time to innovate new approaches for influencing health habits and, in the future, implement some methods from therapy interventions, applying them to school health care. In addition to the findings of the present study, school nurses have also highlighted a lack of competence concerning psychosocial methods in previous research (Moen & Skundberg-Kletthagen, 2018).

In Finland, the lack of competence with psychosocial methods has been addressed by providing training for school nurses and other school professionals on focused therapeutic interventions utilizing a psychotherapeutic approach, like IPC and Cool Kids (Parhialal et al., 2020; Terapiat etulinjaan, 2023). Both methods have their place, and it might be sensible to provide them in the school environment due to the easy accessibility and familiarity of the providers. The problem is that these interventions target only those exhibiting symptoms exceeding certain diagnostic criteria. Instead, training school nurses in effective methods of behavior change aimed at changes in lifestyle habits, could potentially lead to mental health-promotion, problem-preventive, and symptom-alleviating changes for a significantly larger group at an earlier stage (Firth et al., 2020). This would also reduce the need to allocate resources to assess symptoms, deliberate over which intervention might be the best one, or determine by whom and where appropriate intervention would be provided. Instead, it would make it possible to offer rapid, needs-based support that

actively involves the child and their family; a format that children, adolescents, and parents desire (Kirk et al., 2023; Putkuri et al., 2023). These same principles are central to the open dialogue model developed in Finland, which has proved to be beneficial (Bergtröm et al., 2023) and is also mentioned as a good practice in the World Health Organization's guidelines (WHO, 2021c).

According to our findings, school nurses feel competent in identifying mental health-threatening situations and symptoms at an early stage. This result enriches the perspective provided by previous research, indicating that school nurses' skills in identifying various mental health disorders are inadequate (Al-Yateem et al., 2018; Haddad et al 2018; Moen & Jacobsen, 2022; Vejzovic et al., 2022). It appears that the school nurse can recognize that something is wrong, even though they may not always be able to identify the specific disorder. Nevertheless, influencing health habits seems to be an effective support regardless of the disorder in question (Cairns et al., 2014; Firth et al., 2020). Support should ideally be provided at an early stage, but service users themselves have experienced that help is often available once problems become serious or exceed diagnostic criteria (Granrud et al., 2020; Radez et al., 2021). It is worth considering whether the mental health support provided in school health care should be similar to the treatment offered in specialized mental health units, or if it could focus on the comprehensive approach and health habits utilizing the professional expertise of school nurses. After defining the required competence, it is crucial to ensure that the content of public health nurse education aligns with the requirements of the work. There are some previous studies indicating that this is not the case (Moen & Skundberg-Klethagen, 2017; Putkuri et al., 2021). The Norwegian study's observation that health promotion appears to play a relatively minor role in the curriculum for public health nurses is particularly concerning (Dahl et al., 2014). However, education has probably developed over the years, and it is important to explore the current situation in different countries.

Self-efficacy in mental health issues of school nurses and public health nursing students

In our study, the self-efficacy of school nurses and graduating public health nursing students in mental health issues was found to be low and significantly variable. The finding regarding low self-efficacy confirms previous research that have investigated levels of self-confidence (Jönsson et al., 2019; Skundberg-Kletthagen & Moen, 2017). However, previous research has mainly been qualitative and focused on the broader concept of self-confidence. Therefore, our results regarding measured self-efficacy levels provide new and more precise information on the subject.

The self-efficacy was stronger regarding the identification of mental health problems than regarding treatment and management. This result is consistent with

previous findings: school nurses feel confident in recognizing issues but are uncertain about their abilities to provide support and treatment for them (Moen & Jacobsen, 2022; Putkuri et al., 2021; Vejzovic et al 2022). The highest self-efficacy was observed concerning referring and involving family members. Organizing mental health care and involving families were identified as strengths of the public health nurses in the study reported in Paper II. The results from other researchers (Flodin et al., 2024; Granrud et al., 2020; Hoekstra et al., 2016) also confirm this finding. Engaging parents is crucial, as numerous studies indicate that parents and other close individuals are the primary sources of support for children and adolescents with mental health issues (Kanste et al., 2016; Kanste et al., 2017; Moen & Hall-Lord, 2019; Radez et al., 2021).

The lowest self-efficacy was observed concerning treatment by pharmacology, management by developing clinical plans, and treatment by psychoeducation. These three areas of lowest self-efficacy can be viewed as illness-focused and thus falling outside the scope of the school nurse's duties. On the other hand, these three areas could be incorporated into the future role of school nurses according to Vision III, if they are considered from a slightly broader perspective and applied within the context of school health care. The school nurse can be perceived as a natural and easily accessible healthcare professional, from whom a child, adolescent, or parent could easily seek advice and guidance, for example, regarding medication-related side effects. Due to their comprehensive approach to work (Government Decree 338/2011), school nurses would also have good capabilities to participate and contribute with an important perspective in the development of clinical plans. Psychoeducation, also referred to as educational therapy, is defined as the "*process of teaching clients with mental illness and their family members about the nature of the illness, including its etiology, progression, consequences, prognosis, treatment, and alternatives"* (Barker, 2003). The goal is to empower and assist in coping with the situation. Essential to this approach is the professional's strong interpersonal skills and genuine engagement, which many public health nurses and school nurses perceive as strengths, according to both our study reported in Paper II and other researchers' studies (for example, Granrud et al., 2020). Psychoeducation as a working method closely resembles health counseling, one of school nurses' primary working methods (Government Decree 338/2011). School nurses could particularly use preventive psychoeducation, where psychoeducation is provided as soon as risk factors are identified.

According to our findings, higher self-efficacy was associated with previous mental health related training and work experience in mental health care. However, unlike previous studies (Moen & Jacobsen, 2022; Moen & Skundberg-Kletthagen, 2017; Vejzovic et al., 2022), longer work experience was not associated with higher self-efficacy. The finding concerning the association between previous mental health

related training and higher self-efficacy is aligned with prior studies (Bohnenkamp et al., 2024; Moen & Skundberg-Kletthagen, 2017).

Based on our findings, it would be beneficial to further investigate whether the setting of work experience has a greater impact on self-efficacy than its duration. Since mental health is one of the most significant public health challenges (Rehm & Shield, 2019; WHO, 2021a), it is crucial to ensure that all graduating public health nurses have sufficient self-efficacy to provide mental health support. Currently, in Finnish nursing education, only one clinical training course is mandatory in a mental health setting, and it can be as short as just a few weeks (for example, Laurea, N.d; Turku UAS, N.d). If the association between work experience in mental health care and self-efficacy is confirmed in future research, it might be worthwhile to consider opportunities to increase the duration of clinical training in mental health care during education.

Outcomes of the e-learning course '*Mental health promotion in school health care'*

Our results indicate that school nurses and nursing students are interested in learning more about mental health topics, thus reinforcing previous research findings (Bohnenkamp et al., 2019; Markkanen et al., 2021; Muggeo & Ginsburg, 2019). Participants were satisfied with the e-learning course developed using Merrill's Task-Centered Instructional Design (Merrill, 2007). Although the e-learning course, based on the used measure, could not be shown to have impacted their level of knowledge, their sense of self-efficacy significantly increased. Previous studies have also proved Merrill's instructional design to be associated with the satisfaction of learners and better learning outcomes (Badali et al. 2022). Our results reinforce these previous findings, and also provide new insights into the suitability of Merrill's design for the development of continuing education in the healthcare sector.

The results of our study are also consistent with Bandura's Self-Efficacy Theory (1977). According to this theory, the experiences of self-efficacy are conducted from four sources of information: verbal persuasion, vicarious experience, performance outcome, and physiological feedback. In our study, the developed e-learning course is a signal of confidence to school nurses in their ability to provide support; there is an expectation in the social environment that school nurses will perform the task (verbal persuasion). Through the e-learning course, we offered vicarious experiences; learners observed several model situations where a school nurse provided mental health support and by comparing themselves to these models, could recognize that they too have the potential to handle these situations. We also aimed to provide experiences of positive performance outcomes in the course by ensuring that the issues taught were not too difficult. Utilizing Vygotsky's Zone of Proximal

Development (Ketterer, 2008) and the expertise of the developers of the course, the topics to be learned were selected to be only slightly more challenging than those the school nurses typically already perform. When the learning material is within the Zone of Proximal Development and thus appropriately matched to the learner's existing abilities, they learn better than if the material is too difficult for their current skill level (Ketterer, 2008). Additionally, we used familiar situations and working methods adapted to the context of mental health support. Through this approach, we sought to create a learning environment that fosters a sense of familiarity, thereby reducing tension and enhancing self-efficacy.

Our findings provide encouragement for the future, suggesting that even brief continuing education programs can lead to a significant and meaningful change in self-efficacy. This may influence learners' behavior and performance (Bandura, 1977; Zulkovsky, 2009) and thereby the support received by service users, potentially leading to improvements in their well-being, as demonstrated in previous studies by Fjermestad and colleagues (2020) and Ginsburg and colleagues (2021). In the future, it is important to continue research following Moore's framework and to explore how this educational intervention affects the performance of professionals, patient health outcomes, and ultimately, the health status of the community. Our results are a promising indication that change might be possible to observe at these levels as well.

6.2 Reliability and validity of the qualitative studies

The reliability and validity in qualitative research have traditionally been examined through the four perspectives introduced by Lincoln and Guba in 1985: credibility, transferability, dependability, and confirmability (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015). There were both strengths and limitations in this study.

Credibility examines the correspondence of the results with reality. In qualitative research, the goal is not to achieve a comprehensive picture of reality but to describe people's views or perceptions of reality. Additionally, these perceptions are transformed into results through the interpretations made by the researcher. Credibility of the qualitative studies (Papers I, II and partly III) was enhanced by selecting participants through a purposeful sampling method, ensuring that they have personal experience and understanding of the phenomenon being studied. Additionally, the researcher's background as a school nurse has helped in gaining a deeper understanding of the interviewees. Credibility can be strengthened also through triangulation. (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015.) In this study, we utilized triangulation using multiple sources of data (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015): data was collected from people with different perspectives on the phenomenon. Credibility could have been strengthened

more by employing other forms of triangulation as well: the use of multiple methods, multiple investigators, or multiple theories (Merriam & Tisdell, 2015).

Credibility was also strengthened by collecting data until no new perceptions emerged (in phenomenographic sub-study I), and by reaching the data saturation of the sub-studies II and III. Moreover, the researcher openly described her position (reflexivity) and was aware of its effects during the research process (Merriam & Tisdell, 2015). As a limitation, member checking (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015) was not conducted; this could have particularly reduced the potentially distorting effects of the researcher's internal position during the data interpretation phase.

Confirmability examines whether the results are consistent with the collected data. This goal is challenging in qualitative research: even from the same data, different interpretations can be made. In this study, confirmability was sought to be enhanced by the audit trail, which documented the research process in detail. Additionally, an internal peer review within the research team was employed, wherein aspects such as the results of data analysis were collectively discussed, comparing them to the original data. As a limitation, only one researcher conducted the analysis. Triangulation using multiple investigators may have strengthened the findings. (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015.)

Transferability assesses how well the obtained results can be transferred to another environment. The transferability of results to different contexts can be facilitated by adequately describing the participants. Transferability can be enhanced by striving to move from concrete to abstract levels in the analysis, making it easier to apply the findings to another situation. In this study, transferability was sought to be strengthened especially through thick description: the setting and participants were described, as well as findings with adequate evidence presented in the form of quotes from the interviews. Moreover, a maximum variation was utilized: participants included both public health nursing students, public health nurses working in maternity and child health clinics and school health care, as well as stakeholders from various backgrounds. (Holloway & Wheeler, 2010; Merriam & Tisdell, 2015.) However, this can also be a weakness, especially considering the relatively small number of participants; the perspectives of those working specifically as school nurses may have remained limited.

6.3 Reliability and validity of the quantitative studies

The reliability and validity of quantitative research are primarily related to the instruments. Reliability examines how consistently a measure provides the same result across different measurement occasions. However, this does not indicate how

accurately the measure assesses the desired construct. In contrast, validity indicates how accurately a measure assesses the desired construct. (Bannigan & Watson, 2009; Watson, 2013.)

We aimed to identify and select instruments that reliability and validity had already been studied in previous research. Concerning the instruments used in this study, the reliability or validity of the feedback survey has not been tested to our knowledge. Instead, the intra-rater reliability of the knowledge test and self-efficacy questionnaire (Table 9) has been tested and reported in a study by Spagnolo et al. (2018). The intra-rater reliability indicates the stability of the instrument, i.e., how reliably the same individual provides consistent responses to a questionnaire on repeated occasions (Bannigan & Watson, 2009; Watson, 2013). The validity of the instruments was not tested, to our knowledge. The validity of this study would have been enhanced by testing the validity of the questionnaire before its implementation in the research.

Table 9. Intra-rater reliability of the instruments. Test-retest 6 weeks apart (Spagnolo et al., 2018).

Instrument	ICC	CI 95%
Feedback questionnaire	NA	NA
Knowledge test	.708	.478 to .837
Self-efficacy questionnaire	.781	.606 to .878

ICC=Intraclass Correlation Coefficient
CI=Confidence Intervals
NA=Not Available

In our study, all participants scored high on the knowledge test both in the pretest and posttest. The knowledge test used was not developed for school nurses, and our results raise concerns that the test may have been too easy for participants, and its specificity may not have been sufficient. Specificity refers to the instrument's ability to refrain from providing false positive results (Watson, 2013). Despite numerous searches, a suitable knowledge test for the purpose could not be found. A limitation concerning the instruments used is that their validity was not tested.

The validity of a quantitative study should also be examined in terms of internal and external validity. In quasi-experimental research (Paper IV), internal validity measures how reliably the observed changes (outcomes) can be attributed to the intervention used (Drennan, 2013). Validity was sought to be enhanced by calculating the required sample size with a statistician. Although the target sample size was not achieved, the difference between the pre- and post-tests was sufficient

to conduct the study. Since participants in this study were neither randomly assigned to intervention and control groups nor selected through random sampling, it is possible—and perhaps even likely—that factors other than the intervention may have influenced the outcomes.

The primary factors threatening internal validity in one-group pretest-posttest quasi-experimental research in this study were history, maturation, selection, and attrition (Drennan, 2013). History refers to events occurring between the pretest and posttest (Drennan, 2013). We try to primarily recruit school nurses already in the workforce as participants. Despite multiple attempts, this was not achieved, and final-year nursing students were also included as participants. Maturation refers to the natural development or improvement that occurs over time. (Drennan, 2013.) In this study, a large portion of the participants were students whose other studies continued alongside the research. Therefore, it is possible that through their studies, some other event, or simply over time, the participants' self-efficacy in mental health matters increased.

Selection refers to the process by which participants are chosen for the study and assigned to different groups based on criteria other than randomization. Attrition refers to the dropout of participants during the study. (Drennan, 2013.) In this study, participants were selected based on their interests (self-selection). The different groups can be considered those who responded to the questionnaires only before the intervention and those who responded both before and after. The selection between these groups was also based on the participant's own choice. It is possible that factors such as interest in the subject may have influenced the selection process, and self-selection bias (Florczak, 2022) may have influenced the sample. A limitation of the study is also that despite numerous attempts, only a few practicing school nurses were recruited for Paper IV. The majority of participants were undergraduate public health nursing students. Thus, assessing changes in competence reliably becomes more challenging compared to a situation where participants are not concurrently involved in other educational activities or coursework during the research.

External validity describes how safely the obtained results can be generalized or transferred to another setting or group (Pierce, 2013). As a main limitation in the quantitative part of the study, there was no control group (Watson, 2013). Thus, reliable statements are not possible to make about the causes behind the change in self-efficacy levels. The research design used in the quantitative part of this study does not allow for the transfer of the obtained results to another setting; additional research with a stronger, preferably randomized controlled trial (RCT) design is needed for that purpose.

6.4 Suggestions for future research, education, and healthcare guidelines and policy

Based on the study conducted, the following recommendations are suggested.

Recommendations for future research:

- According to our knowledge, the mental health-related knowledge required for school nurses in their work has not been universally defined. In the future, investigations should establish what mental health knowledge school nurses specifically need, develop a measurement tool for assessing their knowledge level, and evaluate the knowledge level of graduating public health nurses and school nurses already in working life.
- In previous studies, self-efficacy has been associated with the performance of professionals. In the future, research is needed on the mental health-related self-efficacy levels of graduating public health nurses and school nurses already in working life.
- In this study, promising results were obtained regarding the effects of the developed e-learning course on self-efficacy levels. In the future, the obtained results need to be confirmed with a more reliable research design.
- The association of lifestyle with mental well-being and mental health has already been documented in research. In the future, further research is needed, particularly focusing on the potential and effects of lifestyle interventions implemented by school nurses on the mental well-being of children and adolescents, the prevention of mental health problems, and the treatment of mental health symptoms.

Recommendations for public health nursing education:

- The curricula of public health nursing education programs should be reviewed to ensure that an adequate amount of education is directed not only towards the treatment of mental health problems (which is included in the studies of registered nurses within the public health nursing degree) but also towards promoting mental well-being and preventing mental health problems.
- In the future, it is recommended that investigations are made into whether there is a need and space for a mandatory mental health course tailored for public health nursing students, taking into account the specific characteristics of the profession.

- In the future, it is recommended that opportunities are considered to enhance the competency of graduating public health nursing students in mental health work by increasing the amount of clinical training in mental health environments.
- Education must ensure that graduating public health nurses have sufficient up-to-date knowledge based on behavioral science to guide lifestyle changes effectively.

Recommendations for health policy and guidelines:

- At the national level, it is recommended that a judgment be made of which of the alternative visions offered in this study should be the goal in the future. Based on the rationale presented in this summary, Vision III (*A multiprofessional team of school welfare services focusing on promotion, prevention, and treatment of individuals' and communities' physical and mental health questions*) is considered to be the one most recommended. It also best take into account the school welfare teams that are already functioning in Finnish schools.
- The identified national and organizational level needs for change should be addressed, taking into account the chosen vision.
- The evidence-based methods for preventing mental health problems should be identified and provided for use by school health services and other stakeholders in student welfare services. Sufficient resources must be secured to obtain the necessary continuing education and to implement these methods in the work.

7 Conclusions

In this study, the future role of school nurses as providers of mental health support was examined. The overall aim was to determine how the potential of school nurses could be optimally utilized. There has been limited research on the mental health competence of school nurses both in Finland and internationally. Previous research has mainly focused on describing the current situation or limited topics. The results obtained in this study complement previous research and direct attention toward the future, considering the dimensions of mental health support more comprehensively than previously.

School nurses and public health nursing students indicated that providing mental health support is an area of training that interests them. Both the school nurses themselves and representatives of various stakeholders highlighted the need for competence improvement as well as identifying other necessary changes at the national and organizational levels to facilitate optimal mental health support. The results reveal that mental health support is often perceived as the treatment of already manifested mental health issues using psychotherapeutic methods. In comparison, the promotion of mental health and the prevention of mental health problems appeared vague and received less attention, as did the significance of lifestyle changes in supporting mental health. The self-efficacy of school nurses and public health nursing students in mental health issues proved to be low, which may affect their performance. It seems possible to enhance self-efficacy through work experience in mental health settings and continuing education, including short e-learning courses.

The strengths of school nurses in providing mental health support include their interest and willingness to offer mental health support to children and adolescents, their desire to learn more about the subject, their good interpersonal skills, and their holistic approach. Through their profession, school nurses are experts in healthy lifestyles, which recent research has shown to be a significant factor in promoting mental well-being, preventing mental health issues, and alleviating symptoms. However, the implementation of lifestyle changes appears to be insufficient according to previous research findings.

To fully utilize the potential of school nurses as providers of mental health support, a clear future vision and goal-oriented efforts are required. This includes ensuring a well-defined job description, clear procedures, adequate competence, sufficient resources, and seamless interdisciplinary collaboration. Because of their expertise in health promotion and prevention, the efforts of school nurses should be directed towards these areas. In line with their expertise, the most suitable role for school nurses in supporting mental health would be to provide psychoeducation, involve parents, promote health habits that encourage mental health, prevent problems, and alleviate symptoms. These areas are precisely those that should be emphasized in mental health work according to both national and international mental health strategies both currently and in the future.

Acknowledgements

First and foremost, I would like to express my gratitude to all those who participated in my research. Without your contribution, this study would not have been possible. Each of you has given valuable time to my research in the middle of your other commitments.

I am deeply grateful to the Department of Nursing Science at the University of Turku and the Head of the Department, Professor Anna Axelin, for the opportunity to conduct my research under your auspices. I am also thankful to every member of our department's staff, whose guidance and support have allowed me to gradually evolve into a researcher during these years. Particularly, I would like to mention Professor Leena Salminen who supervised my master's thesis.

I warmly thank my supervisors Professor Anna Axelin and Senior Lecturer Mari Lahti, the members of my follow-up committee Head of Education and Research Camilla Laaksonen and Associate Professor Anna Sofia Sarvasmaa, and other co-authors of the articles included in this thesis: Professor Leena Salminen, and University Lecturer Rauno Huttunen. Our collaboration has been rewarding, seamless, and educational.

I express my sincere gratitude to Professor Terhi Saaranen for agreeing to serve as the official opponent for my doctoral defense. I would also like to deeply thank the official pre-examiners of my dissertation, Professor Øyfrid Larsen Moen from the Norwegian University of Science and Technology, and Docent Marjorita Sormunen from the University of Eastern Finland. Thank you for your careful attention to the pre-examination of my dissertation, for our inspiring discussions, and for your valuable comments and suggestions.

I also want to express my gratitude to Duodecim Publishing Company Ltd and the Oppiportti team, which enabled the development and investigation of the e-learning course as part of my doctoral dissertation process. Thank you also for the encouragement in my studies, especially to my former professional supervisor, Hanna.

I wish to thank all the people who helped me during this process: Heini Radi and other people in Oppiportti who helped with the research data, Miko Pasanen and Eliisa Löyttyniemi who provided consultation with statistical analysis, and Elizabeth

Nyman who provided language consultation. ChatGPT was used for the language translations. I also thank Associate Professor Tuovi Hakulinen and President of the Finnish Association of Public Health Nurses (2018-2022) Tiina Mäenpää for developing the e-learning course with me and Anna Sofia Sarvasmaa. Tuovi and Tiina: My sincere thanks for the encouragement and support you have provided throughout my studies and research.

I thank my family and friends. Sami, you have always encouraged and supported me in my studies. Kids, I hope that during my studies, you have seen the joy of learning and that you will find the same delight in your own studies. Sami and kids: I love you! My parents Sinikka and Tapani and my grandmother Maija-Liisa: Thank you for raising me to believe in myself, to learn the things I don't know yet, and to face challenges with humor. These skills have been invaluable during my studies. My brother Tatu, I want to thank you for showing me the way to doctoral studies and encouraging me by your example. My sister-in-law Sini, thank you for the many enriching discussions concerning our studies and work, as well as the important trips to the forest to break up sessions at the study desk. Thank you to all my relatives, colleagues, and friends for their encouragement and support during my studies. A special thank you to Meeri; you have been by my side since the first day of university studies and have always reminded me that even an elephant is eaten one bite at a time.

The following institutions and foundations are acknowledged for their financial support for this study: The Finnish Association of Public Health Nurses, Akavan sairaanhoitajat ja Taja ry, The Finnish Cultural Foundation, The Zonta International District 20, the Research Foundation of The Mannerheim League for Child Welfare (MLL) and the University of Turku.

Kirkkonummi, 25th October, 2024
Tiina Putkuri

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Appendix 1. Search strategy for school nurses' competence in mental health issues

The literature review on school nurses' mental health competence was conducted by initially searching material from one database (PubMed). On 7th April 2024, 191 publications were founded with the search query presented below. Headings of these publications were read and based on the inclusion and exclusion criteria (see below), 21 publications were selected. Abstracts, and if needed the whole texts, of those 21 publications were read and 15 publications were excluded. The six publications selected were read through and a manual search was conducted using references of them. Through this manual search, four additional publications were found. The manual search was repeated using reference lists of these additional publications, resulting in the discovery of two more articles. The final result yielded a total of 12 publications.

Subsequently, using the same search terms, the search was conducted in another database (CINAHL) on 11th May 2024. This search did not find any new articles. (Table 10.)

Inclusion criteria:

- Examined the competence of school nurses in mental health issues.
- Empirical studies

Exclusion criteria:

- Examined the competence of school nurses with particular groups of children or adolescents (for example among bullied individuals, refugees, individuals with somatic illnesses, or within the LGBT community).
- Examined mental well-being or mental health of children or adolescents.
- Examined mental well-being or mental health of school nurses.
- Study protocols.
- Reviews.
- Research publications part of this dissertation.

Table 10. Literature search strategy.

Database	Search query	Publ. founded	Publ. included
PUBMED ENGLISH 2014–2024	("school nurse"[Title/Abstract] OR "school health"[Title/Abstract] OR "public health nurse"[Title/Abstract]) AND ("mental health"[MeSH Terms] OR mental*[Title/Abstract] OR emotional*[Title/Abstract] OR depress*[Title/Abstract] OR anxie*[Title/Abstract] OR psycho*[Title/Abstract]) AND ("Education, Nursing, Continuing"[MeSH Terms] OR "Education, Nursing "[MeSH Terms] OR competenc*[Title/Abstract] OR knowledg*[Title/Abstract] OR skill*[Title/Abstract] OR self-efficac*[Title/Abstract])	191 (7.4.2024)	6
MANUAL SEARCH USING PUBLICATIONS SELECTED FROM PUBMED			6
CINAHL ENGLISH 2014–2024 PEER-REWIEVED	AB ("school nurse" OR "school health" OR "public health nurse") AND AB ("mental health"[MeSH Terms] OR mental* OR emotional* OR depress* OR anxie* OR psycho*) AND AB ("Education, Nursing, Continuing"[MeSH Terms] OR "Education, Nursing "[MeSH Terms] OR competenc* OR knowledg* OR skill* OR self-efficac*)	88 (11.5.2024)	After duplicates: 0
TOTAL			12

TURUN
YLIOPISTO
UNIVERSITY
OF TURKU

Painosalama, Turku, Finland 2024

ISBN 978-951-29-9939-2 (PRINT)
ISBN 978-951-29-9940-8 (PDF)
ISSN 0355-9483 (Print)
ISSN 2343-3213 (Online)