



# Mental health problems among adolescents

Public health nurses' work and interprofessional collaboration  
within the school health service

Marie Dahlen Granrud

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Faculty of Health, Science and Technology

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Nursing Science

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## **ABSTRACT**

Mental health problems among adolescence, public health nurses' work and interprofessional collaboration within the school health service

**Aim:** The overall aim of this thesis was to study adolescents with mental health problems, factors that are associated with mental health problems, visits to the public health nurse (PHN), and how PHNs and other professionals experience the collaboration in school and school health services related to mental health problems.

**Methods:** Quantitative and qualitative methods were used. Study I included data from Ungdata in which 8052 adolescents aged 13–16 years participated. The data were analysed with descriptive statistics and multiple hierarchical regression. In study II twelve boys were interviewed and qualitative content analysis was used to analyse the interviews. In study III 14 participants, eight teachers, one social worker, one child welfare worker, one psychologist, one PHN and two specially educated teachers participated in four focus group interviews. The interviews were analysed using content analysis. In study IV 18 PHNs participated and a phenomenographic approach was used for interviewing and analysing the interviews.

**Main results:** Gender differences were seen in symptoms of depression, family conflict and economics, lifestyle habits, school satisfaction and use of the school health service where girls reporting were in a higher proportion (I) than boys. Boys described several barriers such as finding the PHN inaccessible, difficulty talking about their mental health problem to the PHN and classmates, and uncertainty about confidentiality when visiting the PHN. After crossing these barriers the boys experienced the PHN as a trustworthy, confident and supportive person, and the visit was positive (II). Interprofessional collaboration (IPC) in schools and the school health service is important to identify adolescents who struggle with mental health. Factors such as accessibility, having different obligations, lack of criteria and goals, and being dependent on others were described as affecting IPC (III, IV).

**Conclusion:** More girls than boys report mental health problems, and there were gender differences in the use of the school health service. The boys described several barriers to visiting the PHN. When they had successfully crossed these barriers, the visit was experienced as positive. The PHN has an

important role in health promotion among adolescents with mental health problems and, in this setting, IPC is important. Several factors such as accessibility, confidentiality and being dependent on others affected IPC in school and the school health service. There were variations in how the involved professionals experienced it, but when it worked it was experienced as positive.

**Keywords:** adolescents, interprofessional collaboration, mental health problems, public health nurse, secondary school.

## **SAMMENDRAG**

Psykiske plager hos ungdom, helsesykepleiers arbeid og tverrfaglig samarbeid i skolehelsetjenesten

**Hensikt:** Avhandlingens overordnede hensikt var å studere ungdom med psykiske plager, faktorer assosiert med psykiske plager, besøket hos helsesykepleier, og hvordan helsesykepleier og andre profesjoner opplever det tverrfaglige samarbeidet i skolen og skolehelsetjenesten relatert til ungdom med psykiske plager.

**Metode:** Kvantitativ og kvalitative metode er benyttet. Studie I er basert på data fra Ungdata hvor 8052 ungdommer fra 13 – 16 år deltok. Dataene ble analysert med deskriptiv statistikk og multippel hierarkisk regresjon. I studie II ble tolv gutter intervjuet og kvalitativ innholdsanalyse ble benyttet for å analysere intervjuene. I studie III deltok 14 deltakere; åtte lærere, en sosialarbeider, en barnevernspedagog, en psykolog, en helsesykepleier og to spesiallærere i fire fokusgruppeintervjuer. Intervjuene ble analysert med kvalitativ innholdsanalyse. I studie IV ble 18 helsesykepleiere intervjuet. En fenomenografisk tilnærming ble gjennomført for analyse av intervjuene.

**Resultat:** Kjønnforskjeller sees i symptomer på depresjon, familiekonflikt og økonomi, livsstilsfaktorer, skoletilfredsstillelse og bruk av skolehelsetjenesten. Her rapporterte jenter høyere andel en gutter (I). Guttene beskrev flere barrierer for å oppsøke helsesykepleier slik som; helsesykepleier var lite tilgjengelig, vanskeligheter å snakke om sine psykiske plager og usikkerhet rundt taushetsplikten. Når disse barrierene var krysset så opplevde guttene helsesykepleier som en troverdig, tillitsfull og støttende person, og besøket opplevdes positivt (II). Tverrfaglig samarbeid i skolen og skolehelsetjenesten er viktig for å fange opp ungdom men psykiske plager. Faktorer som tilgjengelighet, ulike forpliktelser, mangel på kriterier og mål og å være avhengig av andre, var beskrevet å påvirket samarbeidet (III, IV).

**Konklusjon:** Flere gutter enn jenter rapporterer psykiske plager og det var kjønnforskjeller i bruk av skolehelsetjenesten. Guttene beskrev flere barrierer for å oppsøke helsesykepleier. Når guttene hadde krysset disse barrierene så opplevde de besøket positivt. Helsesykepleiere har en viktig rolle i det helsefremmende arbeidet blant ungdom og i skolehelsetjenesten er tverrfaglig samarbeid viktig. Faktorer som; tilgjengelighet, taushetsplikt og det å være

avhengig av andre påvirket samarbeidet i skolen og skolehelsetjenesten. Det var variasjoner i hvordan de involverte profesjonene oppfattet det tverrfaglige samarbeidet, men når det fungerte så ble oppfattet som positivt.

**Nøkkelord:** ungdom, tverrfaglig samarbeid, psykiske plager, helsesykepleier, ungdomsskole

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## **Abbreviations**

IPC	Interprofessional collaboration
ECTS	European Credit Transfer and Accumulation System
HSCL	Hopkins Symptoms Check List
KoRus	Regional Centres for Drug Rehabilitation
NOVA	Norwegian Social Research
NSD	Norwegian Centre for Research Data
PHN	Public Health Nurse
WHO	World Health Organization

## Original papers

This thesis is based on the following four papers, which are referred to in the text by their Roman numerals:

- I. Granrud, M. D., Steffenak, A. K. M. & Theander, K. (2017). Gender differences in symptoms of depression among adolescents in Eastern Norway: Results from a cross-sectional study. *Scandinavian Journal of Public Health*, 47, 157-165. [doi.org/10.1177/1403494817715379](https://doi.org/10.1177/1403494817715379)
- II. Granrud, M.D., Bisholt, B., Anderzén-Carlsson, A. & Steffenak, A.K.M. Overcoming barriers to reach for a helping hand: Adolescent boys' experience of visiting the public health nurse for mental health problems. (submitted)
- III. Granrud, M.D., Theander, K., Anderzén-Carlsson, A. & Steffenak, A.K.M. (2019). Experiences of interprofessional collaboration in a special school programme for adolescents who struggle with school life: an explorative study. *Journal of Interprofessional Care*, 1-8, [doi.org/10.1080/13561820.2019.1565755](https://doi.org/10.1080/13561820.2019.1565755)
- IV. Granrud, M.D., Anderzén-Carlsson, A., Bisholt, B. & Steffenak, A.K.M. (2019). Public health nurses' perceptions of interprofessional collaboration related to adolescents' mental health problems in secondary schools: A phenomenographic study. *Journal of Clinical Nursing*, 28, 2899-2910. [doi.org/10.1111/jocn.14881](https://doi.org/10.1111/jocn.14881)

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## Introduction

Over the last number of years, there has been increased focus on mental health problems among adolescents, and mental health problems are often identified in school. The public health nurse (PHN) in the school health service is a central professional who can identify adolescents' needs and provide them with resources. To help and identify adolescents with mental health problems the PHNs depend on interprofessional collaboration (IPC) with teachers and other professionals who are connected to school. Mental health problems are complex and require more than a single professional in isolation.

Today's adolescents are expected to succeed in many arenas, such as school, leisure time and other social settings. This may lead to stress, which could reflect the increased number of mental health problems among adolescents. Stressful life events such as school transition, family conflict (Lewis et al., 2015), parental divorce, stress related to school performance (Skundberg-Kletthagen & Moen, 2017), and stress and worry about things (Young & Dietrich, 2015) are all associated with mental health problems.

Gender differences in mental health problems have been reported, with girls reporting more symptoms of mental health problems than boys (Derdikman-Eiron et al., 2011; Schulte-Körne, 2016). Differences in gender may reflect the pattern of help-seeking behaviours in which boys, to a lesser extent than girls, seek help for their problems (Moen & Hall-Lord, 2018). The reason for this could be that boys express their need for support differently to girls. Therefore, it is important that the PHN be aware of this and know how to reach the boys.

I am an intensive care nurse who has work experience in a neonatal, child and adolescent health clinic but no experience as a PHN. The current PhD project was initiated when a PhD position was advertised as part of a larger project aimed at public health nursing with the title 'Health promotion in school – interprofessional collaboration'.

The importance of health promotion in nursing is emphasized on the Norwegian political platform. Adolescents are a group who struggle with mental health problems, and they are entitled to good health. Therefore, it is necessary to focus on them because they are the future. The PHN is in a position to promote and prevent mental health problems among adolescents. The school health service

is important in health promotion work and is an under-investigated topic in public health. Often the PHN is the only professional in the school health service. Research on how PHNs collaborate with other professionals in school in relation to mental health problems is scarce. This was my motivation for this thesis.

## **Background**

### **Adolescence**

In this thesis, adolescents aged 13–19 with mental health problems were the focus. These adolescents are students at secondary schools (13–16 years) and upper secondary schools (16–19 years). The World Health Organization (WHO) uses the concept of adolescence as age 10–19 years, and describes it as a unique and formative period (WHO, 2018a). The common use of the word ‘adolescence’ is often defined as the period between the onset of puberty and the achievement of relative self-sufficiency (Blakemore & Mills, 2014).

The transition from child to adult can be experienced as difficult. Adolescence is a developmental period characterized by complex changes both mentally and physically (Moksnes, Byrne, Mazanov, & Espnes, 2010), and can be divided into phases: early and late adolescence. Early adolescence is described as the period from ten years to 14 years, and is characterized by fast growth in physical, cognitive, social and emotional development. Both genders experience significant physical development. Despite the fast cognitive and emotional development, adolescents have limited capacity for abstract thinking, but their intellectual interest expands and becomes more important. Late adolescence is defined as the years from age 15 to age 19. In this phase, the physical development slows for girls but continues for boys (Sawyer et al., 2012). A continued growth in the capacity for abstract thinking, an increased capacity for setting goals, an interest in moral reasoning and reflections on the meaning of life are essential in this phase (Blakemore & Mills, 2014).

From a physical perspective, puberty is part of the changes occurring in the transition from a child to an adolescent. The time of puberty varies from person to person, and there are differences between boys and girls. In addition, puberty is not unaffected by social conditions (Haanes & Hjermand, 2009). The age of onset of puberty has decreased over the last decades and young people spend more time in education. The combination of early puberty and taking on adult roles at an older age has increased the length, and changed the perception, of the term ‘adolescence’ (Sawyer et al., 2012).

From a psychological perspective, adolescence is a period when young people go through different stages of mental development. They start to be liberated from their parents and develop more individual personalities (Heggen & Øia, 2005).

Peers take on more significance and popularity within the peer group may be important (Blakemore & Mills, 2014). From a social perspective, the integration of norms and values is essential within the process of developing identity (Hyggen & Stefansen, 2016). This process is formed through the socialization process, which is defined by Berger and Luckmann (2011) as a consistent introduction of an individual into the objective world of the society. The socialization contributes to how adolescents identify with society's norms and culture (Berger & Luckmann, 2011). Belonging, a network of friends and social participation are essential (Hyggen & Stefansen, 2016). School is one of the main socialization arenas during adolescence (Berger & Luckmann, 2011). The culture of adolescence influences how they develop and adapt to society. The culture is learned and transferred through the generations, and is a part of the socialization process (Frønes, 2018). The establishment of deeper relationships is important and adolescents take more responsibility for their own lives and choices of education and careers (Glavin & Erdal, 2017). Social and emotional development are characterized by an intense self-involvement, alternating between high expectations and poor self-identity, with a continuing need to adjust to the changing body by worrying about being normal (Blakemore & Mills, 2014).

The brain and body undergo extensive reorganization, which can lead to changes in behaviour (Sawyer et al., 2012). Gender differences in brain development during adolescence have been described. One difference is the ability to express thoughts verbally; boys are about one to one and a half years later in development, compared with girls. Boys are also one to one and a half years later than girls in developing their limbic system, which regulates their emotional behaviour. In addition, seeking out the meaning of life and identity is central to this phase (Frønes, 2011). Adolescence is a phase in which adolescents are exposed to emotional and mental health problems because, at this stage, they are hypersensitive to stress (Jensen & Nutt, 2016). Stress can be understood as demands and expectations related to adolescents' lives and can cause physical and mental reactions (Lillejord, Børte, Ruud, & Morgan, 2017).

During the period of adolescence, both normative and maladaptive patterns can shape future trajectories. It is also an important period in life, when the opportunity for good health and the foundation for future patterns of adult health are established (Sawyer et al., 2012). There is evidence that the health of adolescents is affected by social factors. Safe and supportive families and

schools, together with supportive peers, are crucial in helping adolescents develop to their full potential and attain the best health in the transition to adulthood (Viner et al., 2012).

Adolescents in Norway grow up with good welfare in one of the richest countries in the world, and are among the healthiest adolescents in the world (Grøholt, 2014; Skogen, Smith, Aarø, Siqveland, & Øverland, 2018). They are an active, well-adapted generation who are satisfied with their parents, friends and school. Most of them have an active leisure time in which social media, computer games, training, organized leisure activities, schoolwork and socializing with peers characterize their everyday life. Most adolescents have good physical and mental health, and view their future with optimism (Bakken, 2018).

### **Mental health problems among adolescents**

The WHO has developed a distinct definition of mental health 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, 2018b). The WHO points out that mental health problems during adolescence are an important public health issue worldwide and an emerging priority (WHO, 2014). Common to mental health problems are that they affect thoughts, feelings, behaviours and social relationships with others (Holen & Waagene, 2014). Mental health problems in adolescence have consequences that lead to a cost to both the individuals and society (Skogen et al., 2018).

Defining mental health problems is complex and different terminologies such as mental disorder, mental disease, mental illness and mental distress are used. Mental disorder or disease is used when the symptoms meet the criteria for a diagnosis by a physician or other medical expert. In Norway the *International Classification of Disease*, 10th revision (ICD-10) (WHO, 1999) is used to classify mental disorders among children and adolescents (Reneflot et al., 2018). Mental health problems in this thesis refer to a wide range of mental conditions, ranging from self-reported symptoms such as worries and mildly depressed mood to symptoms that meet the criteria for a diagnosis. Some mental health problems, such as symptoms of anxiety and depression, can be normal reactions to a stressful life event and are often temporary (Bremberg & Dalman, 2015).



Worldwide, mental health problems among adolescents have been increasing (Collishaw, 2015), and affect between 10% and 20% of adolescents (Kieling et al., 2011; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015; Schulte-Körne, 2016) which is in line with studies from Norway (Bakken, 2018; Steffenak et al., 2012). A cross-sectional study in Norway showed that the prevalence of self-reported mental health problems has increased since 2010, especially among girls, but also among boys over the last year (Bakken, 2018).

Mental health problems among adolescents may appear in different forms, for example internalizing and externalizing problems. Internalizing problems refer to emotional problems and externalizing ones to behavioural problems (Gustafsson et al., 2010). Boys report more externalizing problems such as conduct problems and hyperactivity, whereas girls report more internalizing problems such as symptoms of anxiety and depression, as well as personal issues (Aebi, Giger, Plattner, Metzke, & Steinhausen, 2014; Sagatun, Heyerdahl, Wentzel-Larsen, & Lien, 2014).

Depression and anxiety are the most commonly reported mental health problems among adolescents (Bakken, 2018; Collishaw, Maughan, Natarajan, & Pickles, 2010; Siegel & Dickstein, 2011), where gender is a strong predictor for both anxiety and depression (Dardas, Silva, Smoski, Noonan, & Simmons, 2017; Lewis et al., 2015; Siegel & Dickstein, 2011). Depression is characterized by low mood, loneliness, sadness and low self-esteem. Anxiety is characterized by worry, phobia, fear of different situations such as social situations, and avoiding whatever is feared (Helland & Mathiesen, 2009). Anxiety is reported as a prevalent mental health problem among adolescents and is an undertreated health concern (Siegel & Dickstein, 2011). The gender difference is less in anxiety than in depression. Girls tend to report that everything is a struggle, and feeling unhappy, sad or depressed, and worrying about things more often than boys. Stress and stressful life events may lead to more symptoms of depression, and a review indicates that girls are more sensitive to stressful life events than boys (Oldehinkel & Bouma, 2011).

Different factors are described as affecting mental health problems among adolescents. Living with both parents and having good relationships with them are associated with a lower degree of reported mental health problems (Skrove, Romundstad, & Indredavik, 2013). A high level of perceived support from family is also related to better mental health (Inchley & Currie, 2013). On the other

hand, family economics are described as a predictor of mental health problems, poor family economics being associated with higher levels of such problems (Bøe, Øverland, Lundervold, & Hysing, 2012). Adolescents who are victims of bullying and cyberbullying are at greater risk of having mental health problems (Williams, Langhinrichsen-Rohling, Wornell, & Finnegan, 2017). A study found that adolescents who are bullied reported negative emotions such as feeling rejected, stupid and misunderstood and having suicidal thoughts (Kvarme, Helseth, Sæteren, & Natvig, 2010). Similarly, adolescents with unhealthy lifestyles, such as smoking and alcohol use, have been found to be more likely to have an increased risk for mental health problems (Skrove et al., 2013).

Mental health problems among adolescents have an impact on their lives and may lead to some consequences in both the short and the long term. There is a correlation between mental health problems and complex problems in school (Gustafsson et al., 2010). Adolescents with mental health problems often struggle with school life, which can lead to absence from school. School is an ideal arena to follow up and support adolescents who struggle with school life (Havik, Bru, & Ertesvåg, 2014). Boys with mental health problems are more likely to drop out of school than girls, and the greatest risk for drop-out has been identified as when adolescents have both internalizing and externalizing problems (Hetlevik, Bøe, & Hysing, 2018). Perceived difficulties in school, such as heavy load of schoolwork, were associated with severe symptoms of mental health problems among girls and moderate symptoms among boys (Fröjd et al., 2008). Boys with mental health problems report negative consequences such as poor psychological function and low self-esteem, poor social relationships and school problems (Derdikman-Eiron et al., 2012; Derdikman-Eiron et al., 2011). In addition to this, boys often avoid contact with peers and take part in fewer social activities (Helland & Mathiesen, 2009). In this setting, different adapted school programmes have shown significant improvement in mental health problems (Rivet-Duval, Heriot, & Hunt, 2011), although school satisfaction has been reported in several studies as affecting mental health problems positively (Derdikman-Eiron et al., 2012; Myklestad, Røysamb, & Tambs, 2012).

There is a connection between mental health problems among adolescents with an increased risk of mental health problems and other health problems in adulthood. Dropout from school may lead to a looser connection to work life (Skogen et al., 2018), which again can lead to reduced earning in adulthood (Evensen, Lyngstad, Melkevik, Reneflot, & Mykletun, 2017). In the worst-case

scenario, mental health problems may lead to suicide (Wasserman et al., 2015). Worldwide, suicide is one of the leading causes of death among adolescents (WHO, 2013), which corresponds with Norwegian reports (Ministry of Health and Care Service, 2019). Suicide is more frequent among boys, who are three to four times more likely to complete suicide than girls (Friedrich, Raffaele Mendez, & Mihalas, 2010; Skogen et al., 2018).

Only a minority of the adolescents with mental health problems seek help from their parents, friends or professionals (Moen & Hall-Lord, 2018). A minority of adolescents use the PHN in the school health service for their problems, girls to a greater extent than boys (Fargas-Malet & McSherry, 2017). Barriers to seeking help are reported as feelings of embarrassment, stigma, guilt and fear of opening up (Fargas-Malet & McSherry, 2017).

Based on the above facts, adolescents are a well-adapted generation, but report an increase in mental health problems that need to be taken seriously. Mental health problems have consequences for adolescents at this time of life and may affect their adult life. Gender differences in mental health problems are reported, and it is important to have more understanding of these differences. Therefore, it is important to gain a more comprehensive understanding of the problems to prevent them and help adolescents deal with them.

### **The public health nurse**

Norwegian PHNs are educated as registered nurses with postgraduate education in health promotion and disease prevention (FOR-2005-12-01-1381, 2005). To become a PHN, first there are three years in nursing school to become a registered nurse. In addition, a PHN needs a post-education (60 ECTS) or Master's degree (120 ECTS) (Norwegian Nurses Organization, 2016a). The special competence of PHNs is in health promotion and disease prevention for the target group of children and adolescents aged 0–20 and their families. They have no treatment function, but are responsible for identifying early signs of special needs, for follow-up and for support of those children, adolescents and families. Furthermore, they also refer the adolescents to collaborative partners for treatment or follow-up, when the need of the adolescents is not their responsibility (Norwegian Directorate of Health, 2017). In Norway, public health nursing has been described as combining the theory and practice of nursing and public health. The PHN can work in a health-care centre for children, school health services for children and adolescents, a health centre for

adolescents, a health service for refugees, and with environmental health care and prevention of infection.

The PHN is unique to Norway but there are similarities with other professionals in other countries. Different terms are used in different parts of the world. Terms such as school nurse, district nurse, community nurse and health visitor are used in the international literature.

In Norway, the PHN is the only professional with postgraduate education in health promotion and disease prevention aimed at children and adolescents. The Ottawa Charter has defined health promotion as: ‘the process of enabling people to increase control over and to improve their health’ (WHO, 1986). According to this definition, health promotion aims to strengthen individuals and target groups to strengthen and gain control of health. In this context, salutogenesis is of importance. Salutogenesis is about which factors make people healthy. Health can be described as a continuum between good health and poor health along which factors that promote health are essential. It is about where people are located along the continuum and attention is given to factors that promote health in the right way on the continuum (Antonovsky, 2013).

Health promotion is emphasized in the Norwegian health-care system, in which the goal is to keep the population healthy and build up good health (Ministry of Health and Care Services, 2019). In addition, health promotion and disease prevention in nursing are emphasized on the political platform for public health, noting that nurses should contribute to enhancing health among individuals, groups and the whole population at all life stages (Norwegian Nurses Organization, 2016b). One way to promote mental health among adolescents is the health dialogue (Olander & Koinberg, 2017). This dialogue takes place every time the PHN and the adolescents meet. The PHN’s approach is important for the experience of the dialogue. To promote health, the PHN should also contribute to a good psychosocial environment in school (Norwegian Directorate of Health, 2017).

Similar to other countries, the PHN’s tasks and workload in Norway have changed over the past decades (Clancy & Svensson, 2007; Philibin et al., 2010). The issues about which adolescents visit the PHN have changed from common subjects such as injuries and preventing infection to more mental health problems (Glavin, Helseth, & Kvarme, 2007; Steffenak, 2014). The PHN also has

an important role in collaboration with other professionals in schools (Larsen, Christiansen, & Kvarme, 2016).

The term 'PHN' in Norwegian was called 'helsesøster' until 1 January 2019. Then the term changed to 'helsesykepleier'. The reason for this change was to make it more apparent that the PHN is a nurse ('sykepleier') before becoming a PHN. It was also from a desire to have a gender-neutral title and a wish to get more men into the profession. Today there are over 4000 PHNs in Norway; of these eleven are men, seven of whom work in the school health service (Bergsagel, 2019).

### **The public health nurse's work in the school health service**

PHNs are responsible for the school health services, which aim to promote health and prevent disease; it is a low threshold service that should be easily available for adolescents. The school health service was established in 1920–1930. Back then the focus was the fight against infectious diseases; today the focus has changed to more psychosocial problems. The school health services are in a unique position to identify the adolescents who struggle with mental health problems (Ministry of Health and Care Services, 2019). Every municipality in Norway is obliged to have a school health service that, among other assignments, takes care of adolescents' health as stated in the Act relating to municipality health and care (LOV-2011-06-24-30, 2011). The school health service is responsible for children and adolescents aged from 5 years to 20 years. They are located in school and the adolescent can receive early health care there (FOR-2018-10-19-1584, 2018). The responsibility includes increasing the adolescents' knowledge in how to manage their lives and make independent choices about their own health and living habits. Guidelines from 2017 strongly recommend that the school health service should have an overview of adolescents' health status (FOR-2018-10-19-1584, 2018), which is in line with the Public Health Act (LOV-2011-06-24-29, 2015).

The PHN is a central part of and functions as a leader and coordinator for the school health service (Magalnick & Mazyck, 2008). The school health service should also include a physician and a physical therapist on the staff (LOV-2011-06-24-30, 2011). However, this is not the reality in most of the municipalities in Norway, where the PHN is the professional most available in the school health service and sometimes the only professional connected with the service. A cross-sectional study in Norway showed that several school health services are not staffed according to the recommended norms for PHNs. Only 14% of the school

health services had a PHN present every day (Waldum-Grevbo & Haugland, 2015). This may lead to the fact that adolescents receive different offers from the school health service depending on to which school they belong.

Studies show that PHNs have different roles and tasks in the school health service. They have supportive roles among adolescents, teachers and parents (Bohnenkamp, Stephan, & Bobo, 2015; Reuterswärd & Hylander, 2017). The role also includes guidance, counselling and support in different school situations (FOR-2018-10-19-1584, 2018; Steffenak, Nordström, Hartz, & Wilde-Larsson, 2015). One Norwegian study showed that more than 60% of the PHNs spent more than 50% of their time working with mental health problems in the school health service and that they thus need to have knowledge of mental health. To care for adolescents with mental health problems, the PHNs highlighted the importance of being available in school and having an open door so the adolescents could become familiar with them (Skundberg-Kletthagen & Moen, 2017).

In the school health service the PHN is in a position to promote mental health and prevent mental health problems. This requires collaboration with other professionals, which PHNs are obliged to do in the school health services. Studies about how adolescent boys experience visiting the PHN for their mental health problems are missing. Studies about how the PHN experiences IPC related to adolescents with mental health problems are also scarce. Therefore, it is appropriate to gain more knowledge of how a PHN works in the school health service in relation to adolescents with mental health problems, and how the boys experience visiting the PHN.

### **Interprofessional collaboration**

To serve adolescents with mental health problems, IPC has been identified as important in schools (Bohnenkamp et al., 2015). In this thesis, the term 'IPC' is used to describe the collaboration between different professionals and the school health service. The WHO has defined IPC as something that happens when professionals from different professions work together with patients, family, community and careers to deliver the highest quality of care (WHO, 2010). IPC occurs when different professionals share knowledge and resources to accomplish more than could be achieved from one single professional (Mellin & Weist, 2011). It involves several skills and is a complex, voluntary and dynamic process (D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005).

The goal of IPC is to achieve a comprehensive offer for those who need complex services (Morrison & Glenny, 2012). To achieve this goal and have successful IPC, there is a need for collaborative skills and committed management (Hesjedal, Hetland, & Iversen, 2015).

Government documents highlight the importance of IPC in schools and the school health service. IPC is crucial in work to identify and prevent mental health problems and to cope with complex problems (Ministry of Health and Care Service, 2009). It is emphasized that the PHN in the school health service should collaborate with staff in the school to promote a good psychosocial and physical learning and working environment (FOR-2018-10-19-1584, 2018). When there is no established collaboration, the guidelines emphasize that the school health service should take the initiative for this collaboration (Norwegian Directorate of Health, 2017). Earlier, there was a skewedness with the collaboration in the school health services, which was not clearly articulated in the guidelines for teachers. Teachers in school were previously not obliged to collaborate with the school health service (LOV-1998-07.17-61, 1998). In 2018 an addition to the Education Act was sanctioned and emphasized that schools should have IPC with relevant services in the municipalities related to the adolescents' health problems, which includes IPC with the school health service. This last change in the Act may reduce the skewedness in collaboration between schools and the school health services. Working with mental health problems in schools requires IPC, which may be a way to improve it. The period of data collection for this thesis was before this sanction was instituted.

Collaboration is one of the core competences in nursing and is highlighted in several leading documents (Ministry of Education, 2008; Norwegian Nurses Organization, 2011). It is also mentioned as an important value and one of the cornerstones of public health nursing (Glavin, Schaffer, Halvorsrud, & Kvarme, 2014; Schoon, Porta, & Schaffer, 2018).

In schools, there is collaboration among teachers, principals, PHNs and other professionals (Bohnenkamp et al., 2015). From school to school, which professional the PHN collaborates with in the school health services may differ. However, the PHN may depend on collaboration with a teacher to put them in touch with adolescents who struggle with some kind of mental health problems. The teacher sees the adolescents daily and can observe changes at an early stage. In addition to teachers, the PHNs depend on the principal's attitude and support

for collaboration, in relation to adolescents' mental health problems (Larsen et al., 2016; Reuterswärd & Lagerström, 2010).

Reported barriers to IPC in schools include not experiencing the advantage of IPC, not knowing with whom to collaborate, finding school personnel inaccessible and not finding enough time during the day (Bradley-Klug, Sundman, Nadeau, Cunningham, & Ogg, 2010). Another barrier could be that the PHN is not employed at school, which can make them feel not always included in IPC (Skundberg-Kletthagen & Moen, 2017).

Research on the advantages of and barriers to collaboration has been reported, but research on how IPC is experienced by the PHN and other professionals connected with the school is scarce. Therefore, it would be of interest to explore more deeply the complexity of IPC when several professionals are involved. This knowledge is important to develop the school health service and the IPC related to adolescents with mental health problems.



## **Rationale**

Earlier literature has described mental health problems among adolescents and which factors affect mental health problems. Yet, there is still more to explain. By including family conflict and economics, lifestyle habits, school satisfaction and health-care services, we may get a more realistic and comprehensive picture of mental health problems among adolescents. Gender differences in both mental health problems and seeking help have been reported in earlier studies, and boys visit the PHN to a less extent than girls. Therefore, it is valuable to find out more about how boys experience visits to the PHN in the school health service, because such knowledge could contribute towards the development of the school health service.

Adolescents with mental health problems often struggle with school life. Services in school are important to prevent problems for, and follow up on, those who have mental health problems. To support and guide adolescents with mental health problems, it is important to collaborate with teachers and others. Studies have focused on how different factors affect IPC but, to our knowledge, there is a lack of studies about how PHNs and other professionals experience IPC in schools and the school health service. Such knowledge is important for the development of the school health service and improvement in IPC related to adolescents with mental health problems.

## **Overall and specific aims**

The overall aim of this thesis was to study adolescents with mental health problems, factors that are associated with mental health problems, visits to the PHNs, and how PHNs and other professionals experience collaboration in school and school health services related to mental health problems.

The specific aims of studies I–IV were:

- I. To describe and compare gender differences in symptoms of depression among adolescents, and the association with family conflict and economics, lifestyle habits, school satisfaction and health-care services.
- II. To describe how adolescent boys with mental health problems experience visiting the public health nurse.
- III. To explore the experiences of interprofessional collaboration in a special school programme for adolescents who struggle with school life from the perspective of the involved professionals.
- IV. To describe public health nurses' perceptions of interprofessional collaboration related to adolescents' mental health problems in secondary school

## Methods

### Design

This thesis consists of four papers (I–IV): one quantitative study (I) and three qualitative studies (II–IV). Study I is a cross-sectional register study. Studies II–IV are descriptive studies. An overview of the studies’ design and methods is shown in Table 1.

*Table 1. Overview of the design, sample, data collection and analysis for the studies in the thesis*

<b>Study</b>	<b>Design</b>	<b>Sample</b>	<b>Data collection</b>	<b>Year of data collection</b>	<b>Data analysis</b>
<b>I</b>	Quantitative cross-sectional	8052 adolescents from secondary school, aged 13–16	Survey data from Ungdata and KoRus East	January to March 2015	Descriptive statistics Hierarchical multiple regression
<b>II</b>	Qualitative descriptive	12 adolescents aged 16–21 from upper secondary school	Individual interviews and one interview in a pair	September 2018 to March 2019	Qualitative content analysis
<b>III</b>	Qualitative descriptive	14 participants: 8 teachers, 1 public health nurse, 1 child welfare worker, 1 social worker, 1 psychologist and 2 specially educated teachers (from the educational psychology service)	Focus group interviews	June 2015 to January 2016	Qualitative content analysis
<b>IV</b>	Qualitative descriptive	18 public health nurses working in the school health service in secondary school	Individual interviews	September to November 2017	Phenomenographic analysis

## Participants and setting

The four studies were conducted in eastern Norway. All participants were connected to secondary and upper secondary schools, either as professionals or as students. Background characteristics of the participants in all four studies are presented in Tables 2 and 3.

Table 2. Overview of adolescents in studies I and II

Study	I	II
<b>Participants</b>	<b>(n=8052)</b>	<b>(n=12)</b>
<b>Gender</b>		
Male	3921	12
Female	4131	
<b>Age (years)</b>		
13–14 (grade 8)	2496	
14–15 (grade 9)	2657	
15–16 (grade 10)	2899	
16		6
17		3
18		2
19		0
20		0
21		1

Table 3. Overview of professionals in studies III and IV

<b>Study</b>	<b>III</b>	<b>IV</b>
<b>Participants</b>	<b>(n=14)</b>	<b>(n=18)</b>
<b>Gender</b>		
Male	3	
Female	11	18
<b>Age (years)</b>		
30–40	1	6
41–50	8	6
51–60	3	5
61–70	1	1
71–80	1	
<b>Profession</b>		
Teacher	8	
Specially educated teachers (from educational psychology service)	2	
Social worker	1	
Child welfare worker	1	
Psychologist	1	
Public health nurse	1	18
<b>Work experience (years)</b>		
1–10	5	11
11–20	4	4
21–30	5	3
<b>Additional education (years)*</b>		
0	4	11
1	7	3
2	3	3
3		1

\*Example of additional education: special pedagogy, social pedagogy, cognitive–behavioural therapy, drug prevention, mental health, management, supervision.

### **Study I**

This study was based on data retrieved from ‘Ungdata’ conducted by the Norwegian Social Research (NOVA) institute in collaboration with the regional centres for drug rehabilitation (KoRus). Ungdata is a cross-sectional study

designed to conduct annual surveys of adolescents at the municipality level in Norway. The study is free of charge for the municipalities and financed by the Norwegian Directorate of Health, the Ministry of Children, Equality and Social Inclusion, and the Ministry of Justice and Public Security.

Since Ungdata started in 2010, more than 510 000 adolescents have participated from 412 municipalities in both urban and rural areas. The questionnaire consisted of one basic part with varying numbers of items and, in addition, each municipality could add certain local topics. The overall aim of the national study was to describe how adolescents in Norway live today and how they perceive being young. Information about the national study was presented in school and at the school's learning portal, and both the adolescents and their parents could opt out of participating. To participate the adolescents needed to be present at school on the actual day and to understand Norwegian. The adolescents completed the questionnaire during one school lesson with a teacher or administrator present to help if needed. They were also informed that they could skip certain items. Those who did not participate in the study had a regular lesson in class.

The data used in study I were collected from January to May 2015, in secondary schools from 41 municipalities in four counties. In study I permission to use the data was given by Ungdata. As the different municipalities had included different additional bits in the questionnaire, only items from the basic part were included in study I, which, in 2015, consisted of 172 items. The reason for this was to ensure a satisfactory response rate. To ensure that all the adolescents had answered all the included items, questionnaires were excluded if one or more items were missing. The adolescents were students in secondary school, grades 8–10, aged 13–16 years. The participation rate was 84%. After excluding any missing data, the total data from 8052 adolescents were included in this study, which gave a participation rate of 63%, of which 49% were boys and 51% girls.

### ***Study II***

The inclusion criteria in study II were boys aged over 16 who had visited the PHN for some kind of mental health problem. The problem could vary from struggling with something in life to having a diagnosis. The participants were recruited by the PHN in the school health services. The first author contacted PHNs in different school health services in four counties, first by phone, and

then by mail to ask for help in recruiting boys aged over 16 years. PHNs from two counties and four municipalities responded to the enquiry. Then the PHNs informed the boys about the study, verbally and by written information for those who were interested. When a boy wanted to participate, the PHN sent an email to the first author with the boy's phone number. The first author contacted the boy and made an appointment for the interview. In total twelve boys accepted participation in the study. The boys' ages varied from 16 years to 21 years, with a mean age of 17 years (median 16.5 years). All the boys were students on different study programmes in five different upper secondary schools. All of them had visited the PHN more than once. Only a few had visited the PHN on their own initiative. Mainly, it was teachers who referred the boys to the PHN, and the police recommended that two of the boys visit the PHN.

### ***Study III***

Study III was performed on assignment from a secondary school in the middle eastern area of Norway. This school offers a special school programme to adolescents, from the eighth grade to the tenth grade, who are struggling with school life and where ordinary or special adaptations have not succeeded. The adolescents entered the programme because of absence from school. Teachers from ordinary classes and the special school programme decided, together with the adolescents and their parents, whether the adolescents should attend this programme. The purpose of the programme was to get the adolescents back to ordinary classes and complete secondary school with minimal absences. The programme is based in an ordinary school and is administered by the school staff. Different professionals such as teachers, specially educated teachers, psychologists, child welfare workers, PHNs, social worker and others work together to support the adolescents in the special school programme.

The inclusion criteria for this study were that the participants collaborated with colleagues from own and another profession within the special school programme. The leader of the school programme recruited the teachers. The first author received information from the leader about which professionals were connected with the school programme. Then, the first author contacted the professionals by telephone, giving verbal information about the study. Those who wanted to participate also received written information. Then, an appointment for the interview was made. In total 14 participants from different professions participated in four focus group interviews, as shown in Table 4. Of

these, three were men and eleven women aged from 37 years to 76 years with work experience from one year to 27 years.

Table 4. Overview of the professionals in the focus groups

Focus group 1	Focus group 2	Focus group 3	Focus group 4
5 teachers (2 men, 3 women)	1 social worker 1 child welfare worker (2 women)	1 psychologist 1 public health nurse 2 specially educated teachers (1 man, 3 women)	3 teachers (3 women)

### **Study IV**

The inclusion criteria in study IV were that the participants had worked as PHNs in the school health service of a secondary school and had experience of collaboration in regard of adolescents with mental health problems. Recruitment was accomplished by contacting leaders in the different municipalities of four counties in Norway. The leaders were asked to identify PHNs who worked in the school health service in a secondary school and to give them verbal and written information about the study. Then, the PHNs who wanted to participate contacted the first author and an appointment was made for the interview. Eighteen PHNs working in the school health services in 16 municipalities were included in the study. Both urban and rural areas were included to ensure variation. The participants varied in age from 30 years to 61 years. Their work experiences as PHNs varied from one year to 31 years. The proportion of their position in the school health service varied from 20% to 90%.

### **Data collection**

#### **Study I**

The background data used in study I were gender, school grade, education of the fathers and mothers, and number of computers in the family.

Symptoms of depression were measured using six items, which were self-reported and included no clinical diagnosis. The adolescents were asked if, during the past week, they had been affected by any of the issues described in Table 5. These six items are derived from the Depressive Mood Inventory, which in turn is derived from the Hopkins Symptom Checklist (HSCL), and shows



satisfactory validity and reliability (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Kleppang, Hartz, Thurston, & Hagquist; Strand, Dalgard, Tambs, & Rognerud, 2003).

In study I 30 items were used to study gender differences and the association between symptoms of depression ( $n=6$ ) and family conflict and economics ( $n=3$ ), lifestyle habits ( $n=12$ ), school satisfaction ( $n=7$ ) and use of health-care services ( $n=2$ ) among adolescents (Table 5). The decision to use these 30 items in study I was based on previous research on what is associated with symptoms of depression and on the literature about what adolescents are primarily concerned with (Bru, Idsøe, & Øverland, 2016).

Table 5. Items included from questionnaire (Ungdata) and alternative answers

<b>Self-administered questionnaire</b>	<b>Alternative answers</b>
<p><b>Symptoms of depression</b>            During the past week, have you been affected by any of the following issues:            Felt that everything is a struggle. Had sleep problems. Felt unhappy, sad or depressed. Felt hopelessness about the future. Felt stiff or tense. Worried too much about things</p>	<p>Not been affected at all            Not been affected much            Been affected quite a lot            Been affected a great deal</p>
<p><b>Family conflicts and economics (block 1)</b>            I often argue with my parents            The adults in my family often argue with each other              Financially, has your family been well or badly off over the past 2 years?</p>	<p>Very true            Quite true            Not very true            Not true at all              We have been well off the whole time            We have generally been well off            We have been neither well nor badly off            We have generally been badly off            We have been badly off the whole time</p>

<p><b>Lifestyle habit (block 2)</b></p> <p>How often do you do physical activity that gets you out of breath or makes you sweaty?</p> <p>How often do you participate in the following activities? Train or compete with a sports club, go to the gym, other kinds of organized physical activity (dance, martial arts, etc.), train or keep fit independently (running, swimming, cycling, walking)</p> <p>Think about what you do on a normal day. How much time do you spend on the following things: Watching TV. Reading books (not school related). Watching films/TV series. Playing computer games/video games. Playing games on your mobile/tablet. Using a computer outside school. Social media (Facebook, Instagram, etc.)</p>	<p>Never Rarely 1–2 times a month 1–2 times a week 3–4 times a week At least 5 times a week</p> <p>Never Seldom 1–2 times a week 3–4 times a week At least 5 times a week</p> <p>No time Less than 30 minutes 30 minutes to 1 hour 1–2 hours 2–3 hours More than 3 hours</p>
<p><b>School satisfaction (block 3)</b></p> <p>Do you agree or disagree with the following statements about your situation at school? I enjoy school. My teacher cares about me. I feel that I fit in with the students at my school. I'm bored at school. Many people expect me to do well at my school. I often don't want to go to school. I often spend my weekends doing schoolwork</p>	<p>Totally agree Somewhat agree Somewhat disagree Totally disagree</p>
<p><b>Health-care services (block 4)</b></p> <p>How many times have you used the following health-care services over the past 12 months? School nurse or doctor, psychologist or psychiatrist</p>	<p>Never 1–2 times 2–5 times 6 or more times</p>

### ***Study II***

In total eleven qualitative interviews were conducted from September 2018 to March 2019. Qualitative interviews aim to understand the world from the experience of the participants to find out the meaning of those experiences (Kvale & Brinkmann, 2009). Ten of the interviews were of individuals and one of a pair. The pair interview was conducted with two boys together in accordance with their own wishes. They had visited the PHN together and got information about the study together. After the interview, they were given the opportunity to talk to the first author alone. Both declined. One participant forgot the appointment for the interview and then wanted to carry it out by telephone. The interviews were carried out in accordance with the participants' wishes: at their school, in a café or at the first author's work place.

A semi-structured guide was used for the following questions: How was your experience of visiting the PHN? Could you please tell me how you found out that you could visit the PHN? In addition, follow-up questions were asked to obtain more detailed information. Almost all the boys needed several follow-up questions, and examples are: Can you please tell me about the first time you visited the PHN? Can you please explain what you do when you visit the PHN? The boys experienced difficulty talking about the topic without follow-up questions. The first author of the paper conducted the interviews. The interviews lasted from 17 minutes to 56 minutes with a mean of 26.6 minutes, and they were audiotaped and transcribed verbatim.

### ***Study III***

Data were collected from June 2015 to January 2016 by four focus group interviews. Focus group interviews are a suitable method for achieving better knowledge and in-depth understanding of the topic through discussions and participants' interaction (Then, Rankin, & Ali, 2014), and in this aspect they are regarded as superior to individual interviews. Focus group interviews may thus result in synergistic effects that are more than the sum of the individual statements (Krueger, 2014). The focus group interviews included two to five participants. The first author of the paper conducted all the interviews and an associate professor participated as an observer in two of them. The interviews were carried out at the secondary school where the special school programme was offered, in an office of the municipality and at the first author's work place.

An interview guide was used with the main question: How do you experience IPC in the special school programme? Follow-up questions were asked to obtain more information about the topics, such as: Can you please tell me more ...? Can you please explain ...? The focus group interviews lasted from 59 minutes to 80 minutes with a mean of 67 minutes. The interviews were audiotaped and transcribed verbatim.

### ***Study IV***

A pilot interview was conducted in March 2017 to check out the interview guide, and some small adjustments were made. The pilot interview is not included in the study. Individual interviews for the study were carried out from September 2017 to November 2017, with 18 PHNs working in the school health service in secondary schools. Interviews are described as appropriate in research aiming to study people's experiences (Kvale & Brinkmann, 2009). The interviews took place, in accordance with the participants' wishes, at the PHN's workplace or at the first author's workplace.

The interview guide included two questions. The first was: What does interprofessional collaboration in school related to adolescents' mental health problems mean to you? The main question was: How do you perceive interprofessional collaboration with teachers and others, related to adolescents' mental health problems? Follow-up questions that were asked include like; Can you tell me more about that? Can you explain that a little more? were asked. The interviews lasted from 31 minutes to 69 minutes, with a mean of 49 minutes. The interviews were audiotaped and transcribed verbatim.

## **Data analysis**

### ***Study I***

In line with the literature about the method (Polit & Beck, 2017), descriptive statistics were used to present background data such as gender, school grade, father's and mother's education, and number of computers. The background data were presented as frequencies and percentages and presented as mean  $\pm$  standard deviation. Pearson's  $\chi^2$  was used to analyse differences between boys and girls.

Hierarchical, multiple linear regression was used to describe the association between symptoms of depression and family conflicts and economics, lifestyle habits, school satisfaction and use of health-care services among adolescents. Hierarchical multiple regression is a method of multiple regression using the order in which predictors are entered into the model. Variables already known to be predictors are entered first (Field, 2013). The blocks are then entered in a specific order based on previous research, discussion in the research group and existing literature. The adolescents were placed at the centre and the first block was family conflict and economics, which is known from previous research to predict symptoms of depression. In addition, family is important for the adolescents. The next block was entered based on the adolescents' concerns. Lifestyle habits consist of physical activities and media use, and are an important part of the adolescents' lives. The third block was school satisfaction, which is also important and mandatory for all adolescents in Norway. They spend much of their day at school. The use of a health service is not so well known in connection with symptoms of depression, and it would thus be of interest to investigate this. It was the last block entered into the analysis.

The data from the boys and girls were analysed separately. The analyses were performed in four steps using the above-mentioned blocks to examine the independent variables in the variance in symptoms of depression (dependent variable).  $R^2$  indicates the percentage of explained variance in the dependent variable. The level of statistical significance was set at  $P < 0.005$ . Cronbach's  $\alpha$  was calculated to establish the internal consistency (Polit & Beck, 2017).

### ***Studies II and III***

Qualitative content analysis was used to describe the experiences of adolescent boys related to visiting the PHN for mental health problems (II) and to explore the experience of IPC in a special school programme offered to adolescents who struggle with school life (III). Qualitative content analysis is an analysis of the content in the data with the aim of identifying prominent themes and patterns. A central feature is the way in which a voluminous number of words are condensed into smaller content categories, and the data are broken down into smaller units (Polit & Beck, 2017). Content analysis was used in the studies to identify both manifest and latent content. The manifest content is, according to Graneheim and Lundman (2004), what the text says and describes as the visible, obvious component. The latent content is what the text talks about and involves interpretation of the underlying meaning.

In both studies, the interviews were transcribed verbatim and the transcriptions were read through several times for the authors to familiarize themselves with the content and get an overall understanding. In study III, the first author made notes from the interviews and discussed them with the co-authors. Meaningful units, which correspond with the aim of the studies, were condensed, with the focus on preserving the core. Then the condensed meaningful units were abstracted into codes, and the labelling of these units into a code allows data to be thought about in a new and different way (Graneheim & Lundman, 2004). Then the various codes were coloured differently based on differences and similarities, and compared and sorted into four categories (II) and five categories (III), respectively. Finally, a theme emerged from the categories in both studies. The theme is an interpretation of the categories, similar to threads of meaning running through the condensed text (Graneheim & Lundman, 2004). All four authors discussed the tentative categories and themes until a consensus was reached. Quotations from the focus group and individual interviews illustrate the content of the categories. An example from the analysis is presented in Table 6.

Table 6. Example from analysis, study III

Meaningful unit	Condensed meaningful unit	Code	Category
I think there is some challenge with the obligation to document. We do not have the same obligation to document, but those of us who work with health have a different obligation from those who work in schools. A social worker can have conversations with the adolescent and not have to document anything	There are some challenges with the obligation to document  We do not have the same obligations to document	Different professionals have dissimilar document obligations	Different obligations

### **Study IV**

A phenomenographic approach was chosen to describe the PHNs' perceptions of IPC in the school health service related to adolescents' mental health problems. Phenomenography is a qualitative descriptive approach, which focuses on people's perceptions of phenomena in the lived world

(Alexandersson, 1994). The aim is to identify variations in how various phenomena in the world or aspects of the world around us are experienced, understood, perceived and held (Marton & Booth, 1997). The phenomenon in this study was IPC related to adolescents' mental health problems. Phenomenography is based on the assumption that different people perceive and experience a phenomenon in different ways, compared with the phenomenological method in which the focus lies in finding the essence of people's experiences of a phenomenon (Marton, 1981; Stenfors-Hayes, Hult, & Dahlgren, 2013).

The data were analysed by the first author in close collaboration with the three other authors according to the approach described by Alexandersson (1994). In each phase of the analysis, the authors discussed the differences until a consensus was reached. The data were analysed with all the transcripts together and the four steps of Alexandersson, as described below, were followed.

*Step 1. Get familiar with the data and gain an overall impression.* The recorded interviews were listened to, to ensure that they were transcribed correctly. Then the transcribed interviews were read several times to identify statements regarding the questions mentioned earlier and to get an overall impression.

*Step 2. Note similarities and differences in the statement.* Systematic comparisons of the identified statements were performed to observe similarities and differences in the ways the participants described their perceptions. Meaningful statements were drawn from the interviews and marked with different colours, together with an indication of which interview the statement came from.

*Step 3. Determine descriptive categories of perceptions.* Based on the interpreted similarity of meaning, the identified perceptions were grouped together to obtain an overall picture of what links there might be between them. This resulted in preliminary descriptive categories.

*Step 4. Examine the underlying structure of the system of categorization.* In this step, attention was given to the relationship between the descriptive categories and the whole of each transcript. The transcripts were scrutinized to ascertain whether they agreed with the identified perceptions and to confirm the attributes of each descriptive category.

The outcome space in a phenomenographic study is the main result; it is formed by the categories and constitutes the result of the study (Stenfors-Hayes et al., 2013).

### **Ethical approval and considerations (I–IV)**

The Norwegian Centre for Research Data (NSD) approved all four studies (NSD no. 42367). The studies have been conducted in accordance with ethical principles stated in the ethical guidelines for nursing research in the Nordic countries. This includes the following four ethical principles: autonomy, beneficence (doing good), non-maleficence (not causing harm) and justice (Northern Nurses Federation, 2003).

Central to the principle of autonomy is that participation in research should be voluntary and based on informed consent (Northern Nurses Federation, 2003). In all the studies (I–IV) it was voluntary to participate. In study I the adolescents were informed that it was voluntary to participate and that they could skip certain items. Parents were informed about the voluntary nature in advance, through the school's learning portal. The parents and the adolescents were given the opportunity to withdraw from participation before the study. All the surveys were conducted anonymously and therefore ethical approval was not required. Information that the data could be used in research and development projects was given on Ungdata's homepage.

In study II, the boys were aged over 16 years, which in Norway means that they are competent to consent without parental approval (LOV-2008-06-20-44, 2008). The boys were given verbal and written information about the study, and were informed that they could withdraw at any time with no need to explain and with no further consequences for their relationship with the PHN. The boys were informed that the PHN would not be able to access the information. The boys were also informed that we would not talk about their mental health problems, and if we did it would not be presented in the paper. All the professionals in study III and the PHNs in study IV were competent to consent and ensure their own autonomy. The participants in both studies were given verbal and written information about the study, the voluntary nature of participation and the right to withdraw with no need to explain. Written informed consent was obtained from all participants in studies II–IV. The phone number and address of the first author were given to all the participants in the event of any questions or concerns after participation (II–IV), although none of them did. The



participants in the focus group interviews (III) were requested that any information coming out in the discussions should remain in the group.

The principle of beneficence implies that the research must be of potential benefit to the person or target group addressed (Northern Nurses Federation, 2003). So far, there has been a lack of knowledge about how PHNs collaborate in the school health services and how boys experience visiting the PHN. The outcome of these four studies may contribute to a greater understanding and new knowledge for the PHNs and others who work, in schools and school health services, with adolescents who have mental health problems.

The principle of non-maleficence implies that the research must have no harmful effects on the participants (Northern Nurses Federation, 2003). The risk of harm in these studies was perceived as minimal. However, it is necessary to reflect on the complexity of asking questions of boys with mental health problems (II), even though they were not asked any questions about these problems. The boys were given the opportunity to phone the first author if they had any further questions. No one made contact. The boys were also informed that the information was confidential and it would not affect their relationships with the PHN. The PHN would not be able to access the information.

The last principle is justice, which entails the duty to protect weak groups and ensure that these are not exploited in research (Northern Nurses Federation, 2003). Justice also means that all participants should be treated equally and given the same opportunity to participate in the study. All the boys in study II who wanted to participate were included in the study. However, there is a risk that some boys who were not asked by the PHN to participate would have liked to participate. In studies III and IV all the collaborative professionals and PHNs who were asked had the opportunity to participate in the study.

## **Main results**

An overview of the results of the studies (I–IV) are presented below.

### **Study I**

*Gender differences in symptoms of depression among adolescents in eastern Norway: Results from a cross-sectional study*

Comparison between boys and girls showed that there were significant differences in all items apart from two, which were one item in lifestyle habits – ‘How much time do you spend watching TV?’ – and one on school satisfaction – ‘Many people expect me to do well at my school’. Girls reported significantly more symptoms of depression on all six items than the boys. The main differences were on the items ‘Felt that everything is a struggle’ and ‘Worried too much about things’. Furthermore, comparison between boys and girls showed significant differences in family conflicts and economics, lifestyle habits, school satisfaction and health-care services, except for two items, as shown in Table 7. Boys reported spending more hours a day playing computer games on mobiles and using computers outside school than girls, whereas girls spent more hours on social media and watching TV series. Girls also reported that they had used the school nurse/school doctor significantly more than boys had.

Table 7. Comparison of symptoms of depression, family conflict and economics, lifestyle habits, school satisfaction and health-care services between boys and girls

	<b>Boys</b>	<b>Girls</b>	<b>P</b>
	<i>n</i> = 3921	<i>n</i> = 4131	
	Mean (SD)	Mean (SD)	
<b>Symptoms of depression during last week</b>			
Felt that everything is a struggle (1–4)	1.82 (0.90)	2.37 (1.03)	<0.001
Had sleep problem (1–4)	1.72 (0.84)	2.05 (0.98)	<0.001
Felt unhappy, sad or depressed (1–4)	1.51 (0.77)	2.08 (1.04)	<0.001
Felt hopeless about the future (1–4)	1.48 (0.80)	1.91 (1.04)	<0.001
Felt stiff or tense (1–4)	1.54 (0.75)	1.92 (0.97)	<0.001
Worried too much about things (1–4)	1.73 (0.90)	2.44 (1.06)	<0.001
<b>Family conflicts and economics</b>			
I often argue with my parents (1–4)	3.20 (0.81)	3.02 (0.88)	<0.001
The adults in my family often argue with each other (1–4)	3.47 (0.77)	3.34 (0.86)	<0.001
Financially, has your family been well or badly off over the past 2 years? (1–5)	1.84 (0.88)	2.03 (0.95)	<0.001
<b>Lifestyle habits</b>			
How often do you do physical activity that gets you out of breath or makes you sweaty? (1–6)	4.74 (1.23)	4.54 (1.16)	<0.001
How often do you participate in the following activities?			
Train or compete with a sports club (1– 6)	3.26 (2.02)	2.96 (1.93)	<0.001
Go to the gym (1–6)	2.08 (1.49)	1.99 (1.39)	<0.001
Train or keep fit independently (1–6)	1.61 (1.30)	2.01 (1.55)	<0.001
Other kind of organized physical activity (1– 6)	3.18 (1.61)	3.32 (1.41)	<0.001
How much time do you spend on the following things (h/day)?			
Watching TV (1–6)	3.15 (1.38)	3.14 (1.37)	0.059
Reading books (not school related) (1– 6)	1.58 (0.90)	1.99 (1.23)	<0.001
Watching films/TV series (1–6)	3.17 (1.43)	3.43 (1.51)	<0.001
Playing computer/TV games (1–6)	3.92 (1.72)	1.60 (1.22)	<0.001
Playing games on your mobile/tablet (1–6)	2.99 (1.48)	2.93 (1.67)	<0.001
Using a computer outside school (1–6)	3.56 (1.79)	3.02 (1.66)	<0.001
Social media (Facebook, Instagram, etc.) (1– 6)	3.34 (1.50)	4.31 (1.49)	<0.001
<b>School satisfaction</b>			
I enjoy school (1–4)	1.38 (0.63)	1.45 (0.64)	<0.001
My teacher cares about me (1–4)	1.64 (0.74)	1.67 (0.73)	<0.001
I feel that I fit in with the students at my school (1–4)	1.50 (0.71)	1.70 (0.83)	<0.001
I'm bored at school (1–4)	2.21 (0.89)	2.29 (0.86)	<0.001
Many people expect me to do well at my school (1–4)	1.59 (0.71)	1.60 (0.72)	0.418
I often don't want to go to the school (1–4)	3.39 (0.87)	3.27 (0.91)	<0.001
I often spend my weekend doing school work (1– 4)	2.83 (1.07)	2.36 (1.06)	<0.001
<b>Health-care services</b>			
How many times have you used the following health-care services over the past 12 months?			
Public health nurse or school doctor (1–4)	1.32 (0.58)	1.56 (0.81)	<0.001
Psychologist or psychiatrist (1–4)	1.11 (0.48)	1.22 (0.69)	<0.001

The hierarchical, multiple linear regression analyses investigated the association between symptoms of depression, and family conflicts and economics, lifestyle habits, school satisfaction and health-care services. For boys the school satisfaction was the strongest contributor to the model, with 15.4% of the variance in symptoms of depression. Family conflict and economics was the second strongest contributor with 12.5%. Health-care services were a minimum contributor to the mode. After inclusion of all four blocks, the total variance explained by the model as a whole was 32.5% (Table 8).

Table 8. Hierarchical, multiple linear regression for predicting symptoms of depression in boys (n=3921)

<b>Model summary</b>	<b>Block 1 Family conflicts and economics</b>	<b>Block 2 Lifestyle habits</b>	<b>Block 3 School satisfaction</b>	<b>Block 4 Health-care services</b>
Constant	13.639	11.588	12.781	11.357
$R^2$	0.125	0.156	0.310	0.325
Change in $R^2$	0.125	0.031	0.154	0.015

The analysis showed the same pattern among girls but with a stronger contribution than in the boys. School satisfaction was the strongest contributor with 21.5% of the variance in symptoms of depression. The second strongest was family conflict and economics with 19.2%. Health-care services was a small contributor, and was stronger in girls than boys. The whole model, after including all four blocks, explained 49% of the variance in symptoms of depression (Table 9).

Table 9. Hierarchical, multiple linear regression for predicting symptoms of depression in girls (n = 4131)

<b>Model summary</b>	<b>Block 1 Family conflicts and economics</b>	<b>Block 2 Lifestyle habits</b>	<b>Block 3 School satisfaction</b>	<b>Block 4 Health-care services</b>
Constant	18.905	14.753	17.107	14.987
$R^2$	0.192	0.250	0.465	0.490
Change in $R^2$	0.192	0.058	0.215	0.025

## Study II

### *Overcoming barriers to reach for a helping hand: Adolescent boys' experience of visiting the PHN for mental health problems*

The main theme, illustrating the latent content of the interview data, was: *Overcoming barriers to reach for a helping hand*. The theme emerged from the four categories presented in Table 10.

Table 10. Overview of the theme and categories

<b>Theme</b>	Overcoming barriers to reach for a helping hand
<b>Categories</b>	<ul style="list-style-type: none"><li>• The PHN must be accessible</li><li>• Breaking the norm is a prerequisite for the boys to talk about mental health problems</li><li>• Ensure that confidentiality is respected</li><li>• The PHN is a trustworthy person who can open up new perspectives</li></ul>

The latent content was that the boys experienced some barriers to visiting the PHN. The boys described it as difficulty talking about mental health problems and the visit to the PHN. The inaccessibility of the PHNs was another barrier for the boys making contact with them. Likewise, confidentiality was considered to be important, because the boys needed to be sure that they could trust the PHN. When these barriers were crossed, all twelve boys experienced the visit as helpful and the PHN as a positive and trusting person. The categories are described below.

To be able to visit PHNs, they must be accessible. The accessibility of the boys to the PHN was experienced as variable. Some boys were satisfied with the accessibility and described that they could easily get an appointment. Others experienced the PHN not being visible in the school environment or in the class. The boys wanted the PHN to be present every day. Some boys described the PHN being present at school only two or three days a week. The location of the PHN's office was another aspect of accessibility. Some offices were too secluded or too public. When the office was too public, some boys experienced a higher threshold for visiting the PHN because others could see that they were visiting.

The boys experienced difficulty talking with their friends and classmates about mental health problems and their visits to the PHN. To talk about their mental health problems was described among boys as breaking a norm. Some boys described having only one close friend to whom they felt they could talk about such issues. The boys were afraid of being seen as 'weak' or 'mad' when talking about mental health problems. Some were also afraid of being seen as feminine because they visited the PHN. It was not regarded as masculine to talk about mental health problems or visit the PHN. In addition, the boys found that the school health service was more suited to girls than boys.

Another barrier to visiting the PHN was that the boys had to be sure that confidentiality was respected. More than one boy had experienced the PHN saying more than they should to other professionals or people. Some boys checked whether they could trust the PHN before they talked about their mental health problems. One way of doing this was to visit the PHN for physical injuries first. The boys described that confidentiality was especially challenging in small municipalities, where the PHN both worked and lived. It was difficult to talk about mental health problems when they knew the PHN.

When the visit was experienced as successful, the boys described the PHN as a trustworthy, confident and supportive person, experiencing the PHN as a person to whom they could express their thoughts and feelings, and with whom nothing was too embarrassing to talk about. The boys described it as easier to open up with their problems to the PHN than to their parents or friends. They experienced benefits from the visit and felt like a burden had been lifted off their shoulders. It was important for the PHN to be attentive to their mental health problems and an active listener. The boys got advice about how they could deal with their problems and experienced a new view of their problems that was beneficial. They got good advice that could improve their self-image. Some boys experienced needing more help for their mental health problems than the PHN could give; in such cases the PHN had referred them to other professionals for further treatment.

### **Study III**

*Experiences of interprofessional collaboration in a special school programme for adolescents who struggle with school life: An explorative study*

From the analysis of the focus group interviews, five categories emerged that represent the manifest content of the text. Based on these five categories, a

theme emerged, illustrating the latent content. The theme and five categories are shown in Table 11.

*Table 11. Overview of the theme and categories*

<b>Theme</b>	Interprofessional collaboration in the special school programme is unpredictable
<b>Categories</b>	Variations in initiative Significance of individual characteristics Informal and formal contact Lack of criteria and goals Different obligations

There were several reasons for the interpretation of IPC as unpredictable in the special school programme. Routines for IPC were missing and varied from case to case, as well as who took the initiative for IPC. The participants described the contact as being sometimes formal and sometimes informal, with no clear routines to regulate this. Criteria and goals for entering the special school programme were not formalized or were missing. Different professionals were found to have different obligations that could make IPC unpredictable and challenging. Below, each category is described in more detail.

The participants experienced variations in the initiative to collaborate. Who took the initiative to start IPC varied, and some participants described some adolescents having been in the programme for a long time before any IPC was initiated. The participants described that, when the adolescents were in the special school programme, it was often the teachers who initiated IPC. In addition, teachers often took the responsibility for further IPC. The participants found this natural because the special school programme was located within the school.

The significance of individual characteristics was related to individual traits and professional competence and described by the participants as important for IPC. Some teachers in the programme were found to be especially dedicated to their job. Some were easy to get in touch with for collaboration, whereas others were not, and some took no responsibility for IPC at all.

The informal and formal contact differed among the participants. The teachers who worked in the place where the special school programme was located experienced more informal contact than those who worked outside the school.

The participants who worked outside the school experienced not having the same opportunity to make informal contacts and, thus, they were found to depend more on formal contact. Nevertheless, the participants outside school experienced it being easy to make a phone call to discuss different cases.

The participants described it as important for all professionals to be working in the same direction towards common goals, which was not always the case. Several of the participants described a lack of criteria and goals. However, some experienced the main goal being to get the adolescent back to ordinary classes with a minimum of absence, but this was not formalized or shared knowledge. Similarly, clear criteria for adolescents entering the special school programme were, according to some of the participants, missing. The teachers experienced the criteria clearly, but the participants outside school experienced them as diffuse and wanted clearer criteria. Some participants experienced disagreement in meetings. Disagreement among professionals could give the perception that they worked in different directions with different goals. It was particularly important to be united when parents were present.

The different professionals were described as having different obligations, which could complicate IPC. Different professions have partially different sets of rules and regulations. Participants from the health service are committed to a confidentiality that differs from that of the other professionals in the school programme. Some experienced that collaboration was hampered because the health professionals could not share any information. Another hurdle for IPC was that the different professionals had different documentation requirements. Health professionals have to document all contact with an adolescent in the school health service journal, whereas social workers could do home visits and talk to adolescents without any documentation. Therefore it could be unclear what had been done in relation to the adolescents when contact was not documented.

#### **Study IV**

*Public health nurses' perceptions of interprofessional collaboration related to adolescents' mental health problems in secondary schools: A phenomenographic study*

The phenomenographic analysis resulted in three descriptive categories based on eight perceptions (Table 12).



Table 12. The result presented in the outcome space

Descriptive categories	Perceptions
The formal structure has an impact on IPC	<ul style="list-style-type: none"> <li>• The PHN is ruled by regulations</li> <li>• The school principal has the authority to decide on collaboration</li> </ul>
The PHN is an important but not always self-evident partner in IPC	<ul style="list-style-type: none"> <li>• The premises for PHN are conditional</li> <li>• Struggling to be seen</li> <li>• Feeling left behind</li> </ul>
The primary players are the teachers in collaboration	<ul style="list-style-type: none"> <li>• The teachers are the ones who own the initiative to collaborate</li> <li>• Teachers have complementary skills and knowledge to PHNs</li> </ul>

The categories represent the outcome space and are equal in relation to each other, at the same level, and are distinct without overlapping. The categories do, however, have an impact on each other (Figure 1). Figure 1 presents the outcome space and shows that the category, ‘*The formal structure has an impact on IPC*’ has an impact on both ‘*The PHN is an important but not always a self-evident partner in IPC*’ and ‘*The primary players are the teachers in collaboration*’. This impact goes only one way, which means that the latter two categories have no impact on the formal structure. The category ‘*The PHN is an important but not always a self-evident partner in IPC*’ has a limited impact on the teachers. However, both the other two stakeholders have a strong impact on the PHNs and their ability to participate in collaboration concerning adolescents’ mental health problems.

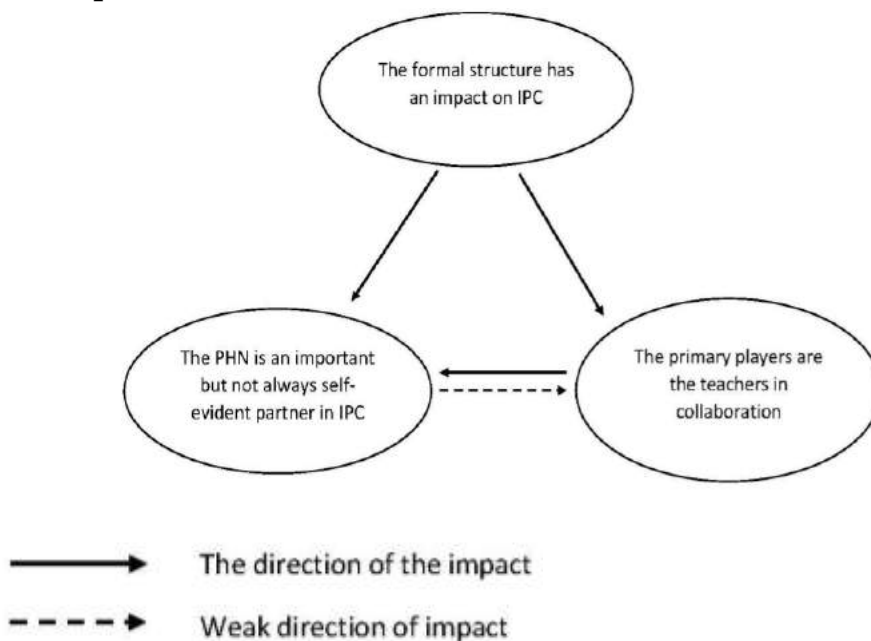


Figure 1. PHNs’ perceptions of IPC related to adolescents’ mental health problems

The PHNs perceived that they have a different set of rules and regulations to other professionals in schools, which could affect IPC. In particular the differences regarding confidentiality and mandatory IPC were emphasized. The PHNs described IPC as being strictly recommended in the guidelines for the school health service, with school personnel not having this legislation. They also perceived differences in how the school organized the school health service, which could affect IPC. Confidentiality was perceived as a challenge in IPC, but was not a problem when the PHN collaborated with other health professionals ruled by similar regulations. Nevertheless, some PHNs perceived that, when they obtained consent from the adolescents, confidentiality was no longer a problem for IPC. They described often getting consensus, and the parents and the adolescents wanting the professionals to collaborate. Most schools had interprofessional teams and the principal had the authority to decide which professionals were connected to the team and how often they had meetings. The PHNs perceived variation in how much the principal involved them in IPC.

The PHNs perceived themselves as important but not always self-evident and included in IPC, and that IPC varied from school to school. None of the PHNs worked full time in the school health service, which they described as possibly making them less available for IPC. Those who spent less time at school perceived that they were often fully booked with appointments, which made them inaccessible for spontaneous visits from adolescents and teachers. Some experienced that, the more visible they were, the more they were used. The PHNs perceived being lonely because they were not employed at school. Those who spent a small part of their role in school described often feeling excluded and unavailable for IPC. Some PHNs perceived that different professionals were working separately with the same cases with little IPC.

The PHNs perceived teachers as an important collaborative partner on whom they were dependent for good collaboration when working with adolescents with mental health problems. The collaboration with the teacher varied, and was perceived as person dependent. The teachers were regarded as being in a position to choose whether they wanted to involve the PHNs in collaboration or wanted to handle adolescents with mental health problems themselves. This was especially true for the more experienced teachers. The PHNs perceived it as important that the teachers were aware of changes among adolescents, because they had contact on a daily basis. As teachers are more concerned with

educational issues, the PHNs perceived it as difficult to get access to the classroom to talk about mental health.

### **Summary of findings in studies I–IV**

Girls score higher on self-reported symptoms of depression than boys. In general, adolescents, to a small degree, seek school health services for their mental health problems, and boys to a lesser degree than girls (I). There can be several reasons for this. Boys describe facing many barriers before seeking a PHN in the school health service. They described difficulty speaking about mental health problems with both the PHN and classmates. The boys often had only one close friend to whom they talked. In addition, boys described the school health services as more adapted to girls than boys (II).

A PHN's lack of accessibility was highlighted by both the boys and the PHNs themselves (II, IV). The boys experienced the lack of both visibility of and accessibility to the PHNs, and therefore found it hard to get in contact with them for their mental health problems (II). The PHNs highlighted that it was important to be accessible and that they actively had to make themselves visible in the school health system. They also had to work actively to be included in IPC in schools (IV). The PHNs experienced having limited impact on collaboration, but that other professionals had an impact on their inclusion. When several professions were involved in collaboration, IPC could be affected by coincidences and experienced as challenging. The level of collaboration would depend on who was involved (III, IV).

An important limiting factor for collaboration was confidentiality. This was highlighted by the boys (II), the professionals in the school programme (III) and the PHNs (IV). Confidentiality could be experienced as a barrier for IPC (III, IV), but is of crucial importance for boys visiting the PHN (II).

The results show that the school and the school health service are an important arena for adolescents struggling with mental health problems. School satisfaction may have an impact on adolescents' mental health problems, more on girls than boys (I). It is important, using good collaboration between the different professionals in school, to take care of the adolescents in the best way possible (III, IV).

## **Discussion**

The overall aim of this thesis was to study adolescents with mental health problems, factors that are associated with mental health problems, visits to the PHNs, and how PHNs and other professionals experience collaboration in school and school health services related to mental health problems.

Below, the results are discussed and possible interpretations made based on previous research and literature about mental health among adolescents, the PHN in the school health service and IPC.

### **Adolescents with mental health problems and their help-seeking behaviour**

The results concerning the boys' narratives of crossing barriers and gender differences in health identified in this thesis can possibly be understood in the light of the cultural norms, which lie in the culture of how boys and girls should handle life situations. Central to our cultural patterns is the notion of femininity and masculinity. As girls and boys are different biologically, the difference is often explained by natural causes (Frønes, 2018). Adolescence is a period of life when adolescents try to adapt to different sets of rules and regulations formed by previous generations and society (Aagre, 2014). The transition from child to adult can be seen as a social process in which the transition and development requirement is greater than in other phases of life (Strandbu & Øia, 2007). The culture of adolescents is about language expression, attitudes and awareness when it comes to clothing, music taste and style. This culture has its own form of expression and is often influenced by social media. It is processed and differentiated locally and forms the common distinct subcultures within the adolescents' community (Aagre, 2014). This is in line with the nurse theorist Madeleine Leininger's definition of culture, which states that culture refers to learned, shared and transmitted values, norms, beliefs and practice of a particular group, which guides thinking, decisions and actions in particular ways (Leininger, 1985).

An annual study of young people aged 13–19 years, reported that the number of adolescents with mental health problems is increasing. The adolescents in Norway report good general health and are optimistic about their future. Most adolescents thrive and are pleased with their parents, friends, school life and the community that they live in, and they have active leisure time. Despite this,

several of the adolescents struggle with mental health problems (Bakken, 2018). This increase in mental health problems has also been described in other countries between 2005 and 2015 (Patalay & Gage, 2019). In Sweden a three times increase in mental health problems has been reported over the last 30 years (Hagquist, 2015).

In study I, a gender difference in mental health problems was observed, where more girls than boys reported symptoms of depression. Gender differences in mental health problems have been described previously (Bor, Dean, Najman, & Hayatbakhsh, 2014; Dardas et al., 2017; Moen & Hall-Lord, 2018; Patalay & Gage, 2019; Potrebny et al., 2019; Sadler et al., 2018; von Soest & Wichstrøm, 2014). Differences between genders may have several explanations. One could be how mental health problems are measured. In study I depression was self-reported and measured with six items developed from two validated scales. What the scale measure is intended to measure is important. One study found that the item 'worried too much about things' was more suitable for girls than boys and the item 'had sleep problems' showed a misfit for both genders (Kleppang et al., 2018), so it is important to bear this in mind when interpreting the results. It could be that these six items used in study I may identify symptoms of mental health problems that are more prevalent among girls than boys. Another explanation could be gender differences regarding internalized and externalized ways of expressing mental health problems (Aebi et al., 2014; Sagatun, Wentzel-Larsen, Heyerdahl, & Lien, 2016). However, it could also be discussed to what extent self-reported symptoms can be trusted. Although acknowledging the variation in existing studies in terms of methods and measured outcomes, the overall evidence is considered to be too consistent to be perceived as anything other than real (Bor et al., 2014; Collishaw, 2015). According to the above-mentioned findings, it can also be speculated whether boys underreport mental health problems because they do not talk about or seek help for them, something that was revealed in study II.

Another possible explanation for the difference between boys and girls in study I may be physical differences, such as puberty. Differences in mental health problems often start after puberty. As mentioned earlier, the timing of puberty differs between boys and girls, and girls seem to start approximately a year before boys (Edwards, Rose, Kaprio, & Dick, 2011). The age at onset has fallen globally with profound and detrimental consequences for health (Wang, Lin, Leung, & Schooling, 2016). The participants in study I were aged 13–16 years

and, over these years, the adolescents have started or entered puberty. One study reported that mental health is more closely tied to female hormonal changes than to chronological age. This suggests that mental health problems are linked to pubertal changes in the hormone–brain relationship (Thapar, Collishaw, Pine, & Thapar, 2012). Early puberty among girls is described as a risk factor for developing mental health problems in early to middle adolescence (Wang et al., 2016).

Stress may be a third explanation for gender differences in mental health problems. Stress often arises when there is an imbalance between the challenges the adolescents face and the resources they have to deal with them (Bakken, 2018). A review found that adolescent girls are more sensitive to stress and stressful life events than boys and that stress may lead to an increased risk of developing mental health problems (Oldehinkel & Bouma, 2011). This may be explained by differences in brain development and the ability for abstract thinking and problem solving, where boys are one to one and a half years later in their development (Jensen & Nutt, 2016; Sawyer et al., 2012).

In study I, school satisfaction explained most of the variance in symptoms of depression among boys and girls, although more obvious in girls. School may be an arena for stress among adolescents, and those who experience stress and mental health problems often report that school is the source of this problem (Lillejord et al., 2017). Previous research has indicated that girls report stress related to school performance more often than boys (Goldstein, Boxer, & Rudolph, 2015). One study described that a low level of school satisfaction did not have any significant association with the use of health-care services in schools. Such association was however significant for adolescents with moderate school satisfaction (Gammelsrud, Kvarme, & Misvær, 2017). This may be the result of low school satisfaction related to school absenteeism. The girls in study I reported that they did schoolwork at the weekend more often than boys. This could indicate a feeling of a heavy load of schoolwork, which again could lead to stress, to which girls are more sensitive. In addition to this, girls could experience higher expectations when it comes to school performance and it seems to be more accepted that girls perform and work more than boys (Lillejord et al., 2017).

In addition, the importance of mental health literacy could be an explanation for gender differences. Mental health literacy is about being able to make good

choices to improve one's own and others' mental health (Kutcher et al., 2016). A previous study has shown that there is an association between low mental health literacy and the express of mental health problems. Girls tend to have higher levels of health literacy than boys, especially when it comes to mental health. They are more likely to recognize symptoms of mental health problems (Coles et al., 2016), and are perhaps thus more prone to make use of the school health services. Mental health literacy may also be part of the explanation of the gender difference in help-seeking behaviour among adolescents. Part of mental health literacy is to enhance help-seeking efficacy (Kutcher et al., 2016) and girls are more likely than boys to recommend seeking help for their mental health problems (Coles et al., 2016).

Despite the fact that adolescents report mental health problems, in study I it was found that they visit the PHN in the school health service for their problems to a small extent and boys less than girls. The latter could be explained by the cultural differences between boys and girls, where there is more acceptance by girls of being more emotional and talking about their feelings (MacLean, Sweeting, & Hunt, 2010). However, it is important that the PHN be aware in their approach of this cultural difference between boys and girls. This is in line with Leininger's theory, which states that the nurse must be sensitive to the patients [in this case: the adolescent] way of living, and work with them to provide the best care. Differences in age, gender and language expressions are acknowledged (Leininger, 1991).

Another reason why girls visit the PHN more than boys could be explained by the appearance of the school health service. The boys in study II highlighted that the school health service was more suited to girls than boys. The reason for this could be that the school health service may appear to have a feminine profile (Langaard, 2006). In Norway it is mostly women who work in the school health service. On the other hand, several boys in study II described visiting female PHNs as a positive experience and described benefits from the visit. None of the boys in this study had ever visited a male PHN, so it is difficult to draw conclusions of how they experience visiting a male PHN.

The boys described having to overcome several barriers before they visited the PHN in the school health service (II). One of the barriers was difficulty talking about their mental health problems and the visit to the PHN itself. Some mentioned that being open about their mental health problems was seen as

weakness and not regarded as masculine, which may be part of the culture among adolescent boys. One study found that boys are conscious of the rules for appropriate masculine behaviour regardless of the context (MacLean et al., 2010) Previous research has pointed out stigma and embarrassment as prominent barriers for the adolescents to seek help (Clement et al., 2015; Gulliver, Griffiths, & Christensen, 2010; Hart et al., 2018). The boys articulated views that associated stigma with social norms of masculinity. Seeking help for mental health problems was conceptualized as 'not macho' or 'weak' and made the adolescents more vulnerable to stigma (Clark, Hudson, Dunstan, & Clark, 2018). Some of the boys in study II were afraid of being regarded as feminine if they were open about their mental health problems and seeking help. This could be seen as part of the adolescents' culture and socialization (Berger & Luckmann, 2011). Some boys mentioned that real men deal with their problems themselves, and by visiting the PHN they felt that others may think that they are not real men. Previous research found that seeking help for their mental health problems was seen as a sign of weakness (Goodwin, Savage, & Horgan, 2016). This seemed to be influenced by the boys' culture, which may affect how the adolescent boys express their mental health problems and how their help-seeking behaviour appears.

### **The public health nurse's work in the school health service and IPC**

Lack of accessibility was an important issue in studies II and IV. To help adolescents with their mental health problems, the PHN in the school health service must be accessible. This was mentioned by the boys (II) and the PHNs (IV). For the boys, this accessibility varied from school to school, for example, how often the PHN was present at school and how easy it was to get an appointment. The PHN (IV) wanted to have more presence at school and have an open door, which the boys also requested. Then, the PHN could offer drop-ins for spontaneous visits and the boys could get an appointment easily. When the PHN was accessible, the adolescents and other professionals could become more familiar with the PHN in the school health service (Skundberg-Kletthagen & Moen, 2017).

The school health service should be an easily available, low-threshold offer where adolescents can get early health care at the lowest possible level (LOV-2011-06-24-30, 2011). The lack of accessibility described in study (II,IV) could be caused by the fact that none of the PHNs in the school health service had a full-time position in the school health service (II, III, IV). In Norway, the PHN is



present full time in 1.4% of the schools. This indicates that the school health service is not adequate to meet the recommended standard for the health services. In Norway, the norm for one full position as a PHN is 550 students in secondary schools and 800 students in upper secondary schools (Waldum-Grevbo & Haugland, 2015). It can be questioned whether the PHN's attendance in the school is adequate to provide sufficient services and care. Varying degrees of accessibility lead to the fact that the adolescents get different offers depending on which school they attend and the availability of the PHN in the school health service.

Accessibility seems also to be important for IPC (III, IV). In study III, the participants who worked in the municipalities described other professionals who worked in the school programme not always being accessible for IPC. Working in different places could inhibit IPC and result in less contact. Those who worked at the same place experienced more contact and described better IPC. For successful IPC, physical proximity is important (Clancy, Gressnes, & Svensson, 2013) and is described as a base for collaboration, and IPC increases if the professionals are seated close to each other (Reuterswård & Hylander, 2017). The PHN (IV) described the importance of accessibility in school as important for the degree of IPC and contact with others, both adolescents and other professionals. Those who had a bigger role in the school health service experienced more IPC. To strengthen IPC, the PHN should therefore have a larger role in the school health service.

The different professionals in studies III and IV are regulated by different sets of rules and regulations related to their professions. One important issue that was highlighted was confidentiality (II, III, IV). The boys described confidentiality as the importance of trusting the PHN and opening up for their mental health problems. Several studies report confidentiality as a barrier for adolescents visiting the PHN (Clark et al., 2018; Gronholm, Nye, & Michelson, 2018). Some boys in study II had experienced a breach in confidentiality by the PHN. If the boys are to take advantage of visiting the PHN, they need to feel safe and that they can trust the PHN (Gronholm et al., 2018). Confidentiality was also highlighted by some of the professionals (III, IV), who experienced it as a hurdle to information sharing. This is in line with other studies, which report that confidentiality can lead to lack of important information, and again may lead to poorer IPC (Weist et al., 2012). One study found that teachers and school principals saw concerns about confidentiality as an explanation for limited flow

information. The teachers wanted to be more involved and get more information about adolescents' mental health problems to provide support for them in the classroom (Mælan, Tjomsland, Baklien, & Thurston, 2019). In study IV, whether the PHNs perceived that confidentiality affected IPC varied. Most of the PHNs agreed that this could be solved with consent from the parents and adolescents, or they could discuss cases anonymously with other professionals. The PHN's confidentiality must be respected, because it is a matter of security for the adolescents (Reuterswärd & Hylander, 2017). Some of the PHNs in study IV had experienced saying more than they should in meetings with other professionals. There could be several reasons for this, one being that they felt pressure from other professionals. This pressure could be a challenge, especially if the PHN is young and recently qualified. Another reason could be that the PHN was afraid of being a barrier to IPC, which has been documented in earlier studies (Ekornes, 2015; Weist et al., 2012). Both the adolescents and the PHN see the importance of other professionals wanting to be a part of the information. This may lead to a dilemma for the PHNs, which can usually be solved by the adolescents and parents allowing the PHN to share some information with other professionals.

As part of health promotion work, PHNs in the school health service should focus on discovering mental health problems among adolescents (Norwegian Directorate of Health, 2017). One way in which mental health can be promoted is the use of the health dialogue. In this thesis, the dialogue between the adolescents and the PHN can be seen as a health dialogue, the use of which has been described in several studies (Golsäter, Lingfors, Sidenvall, & Enskär, 2012; Hilli & Wasshede, 2017; Laholt, Guillemin, McLeod, Olsen, & Lorem, 2017; Steffenak et al., 2015). The health dialogue was developed as a method to stimulate pupils' learning processes about their health. The aim of the health dialogue is to support adolescents in making healthy choices and is mainly focused on health promotion (Borup, 2002). In Norway, it is strongly recommended that the PHNs should have a health dialogue with each adolescent when they start grade eight. This dialogue is voluntary, should include talking about mental health, and provides the opportunity to discover and promote mental health problems at an early stage (Norwegian Directorate of Health, 2017).

The boys in study II experienced the PHN as a nice, trustworthy, confident and supportive person. They also experienced the PHN as an active listener,

attentive to their problems. Similar qualities are described in studies related to formalized health dialogue (Borup, 2002; Ellefsen, 2002), which stated that the health dialogue should be based on an open atmosphere, trustworthiness, knowledge and a supportive attitude from the PHN (Borup, 2002; Golsäter et al., 2012). It is interesting to find similar results from other studies despite the differences between the dialogue in study II and the formalized dialogues in other studies. Furthermore, the boys in study II felt that they benefit from visiting the PHN by getting new perspectives on handling their mental health problems. This is in line with the salutogenic perspective in which the attention is directed to coping strategies (Antonovsky, 2013). Previous research found that adolescents experienced the health dialogue as an opportunity to gain knowledge and insight into their health and lifestyle (Golsäter, Sidenvall, Lingfors, & Enskar, 2010). Even though adolescents report a positive outcome for health, it is necessary to be aware that the health dialogue favours the most capable and verbal adolescents who can articulate their need (Laholt et al., 2017).

Studies I and III found that individual adolescents may need a person-centred approach for their mental health problems. The WHO (2015) defines person-centred care as an approach and practice in which the person is seen as a whole with different levels of needs and goals. These needs come from their own personal, social determinants of health (WHO, 2015). The ICN highlights the person-centred approach to health as the basis for nursing (International Council of Nurses (ICN), 2012). Person-centred care is one of the core competencies in nursing, in addition to teamwork and collaboration, evidence-based practice, quality improvement, safety and use of informatics (Cronenwett et al., 2007). The different professionals in study III described how difficult it could be to have overall goals for the adolescents where the adolescents needed different approaches. The approach to adolescents may be seen from a cultural perspective where culturally adapted nursing is needed. This is in line with Leininger, who claimed that individuals should be seen as a part of a larger system; the theory incorporates a humanistic dimension about people in their cultural life context (Leininger, 2007). The PHN needs to meet the adolescents where they are and to have an open mind to get the adolescents to open up with their problems.

When the boys in study II had crossed the barriers and visited the PHN, they experienced it being easy to open up with their problems. To promote health, it

is important for the PHN to be a facilitator rather than an expert, and to help the adolescents to identify their health needs and work to increase their confidence and skills (Börjesson, Keeping, Gjestrud, Aspelund, & Tretvoll, 2017; Naidoo & Wills, 2016). This is a salutogenic approach in which attention is drawn to strengthen the adolescents' resources to promote their health (Antonovsky, 2013). To meet the adolescents' needs, it is important that the PHN is accessible and can create good relationships with them.

There has to be collaboration in school to promote a good learning and working environment for adolescents (Norwegian Directorate of Health, 2017). The participants in studies III and IV experienced IPC as essential to meet the adolescents' needs. The Norwegian government highlights working in interprofessional teams, and focuses attention on IPC, which may contribute to a more holistic approach, continuity and a better use of available resources (Ministry of Health and Care Service, 2009). IPC in schools is highlighted in several political documents (Ministry of Health and Care Services, 2019; NOU 2015:2, 2015; NOU 2019:3, 2019). As mentioned above, teamwork and collaboration are mentioned as one of six competencies in nursing that are necessary for the continuous improvement of quality and safety of the health-care system (Cronenwett et al., 2007). The reason for the increased focus on IPC is besides getting better utilization and coordination of resources in general, to support the facilitation of teaching the adolescents to free teachers' time, so that they can concentrate on their core tasks (NOU 2015:2, 2015).

A common factor for the participants in studies III and IV was that they were dependent on others for involvement in IPC. The PHNs described teachers as being the ones who decide on collaboration (IV) and see changes in adolescents' mental health. The PHNs in study IV asked for more collaboration with teachers related to adolescents' mental health problems. One reason for this could be the differences in the law, where IPC was not clearly defined in the guidelines for teachers. The PHN guidelines state that the PHN should be the one to initiate IPC (Norwegian Directorate of Health, 2017). It may not always be easy to prioritize IPC when the PHN does not work full time and has a heavy workload. A recent study reports that teachers wanted more IPC, but were afraid to involve themselves in IPC because they were unsure about their own roles and contribution to collaboration (Mælan et al., 2019). When teachers are not obliged to undertake IPC with the PHN, with their heavy workload they may not prioritize IPC in the school day.

The principal had the authority to decide and organize IPC. How much the PHN was included in IPC varied from school to school (IV). When the principal was supportive, the participants perceived better conditions for IPC. This is in line with other studies, which state that leadership is important for IPC (Willumsen, 2006; Willumsen, Ahgren, & Ødegård, 2012). The principal was the one who decided whether PHNs should be included in an interprofessional team and how often they should have meetings. One study found that, even if interprofessional meetings were initiated by the principal and carried out regularly, differences in culture and values, and uncertainty about the roles and responsibility affected IPC (Mælan et al., 2019). The PHN's work was experienced as more meaningful and important when the principal was supportive and demonstrated an understanding of their work (IV). This could be seen as part of the working culture. Each profession has its own unique culture (Hall, 2005). According to Leininger, culture in nursing refers to learned, shared and transmitted knowledge of values. It is important to acquire knowledge and understanding of other cultures (Leininger, 1985), and, with knowledge, openness and understanding of the different professionals' culture, to achieve good IPC.

The relationship between collaborative professionals was highlighted for the outcome of collaboration (III, IV). A positive relationship is a success for good collaboration. In study III, the participants experienced positive relationships with the teachers in the school programme and the PHNs in study IV experienced positive relationships with several of the teachers and principals. Trust, respect and collaborative competence are mentioned as important in collaborative activity (Clancy et al., 2013). Communication skills between professionals are also mentioned as important for IPC (Aquino, Olander, Needle, & Bryar, 2016). Collaboration depends more on personal relationships than on professional specialization (Pullon, Morgan, Macdonald, McKinlay, & Gray, 2016).

There were variations in how IPC was experienced, but the more participants involved the more complicated was the collaboration (III, IV). This complexity could lead to an IPC that is unsure and unpredictable. Uncertainty about with whom to collaborate and where to find them, the struggle to be involved in IPC and an IPC that differs from case to case with no clear routines (III, IV) may affect IPC negatively. Uncertainty in IPC may be associated with lack of knowledge of other professionals' activities and ways of working. It may also

play a role in the trust between the involved professionals (Widmark, Sandahl, Piuva, & Bergman, 2011).

## **Methodological considerations**

### **Design**

This thesis combines both quantitative (I) and qualitative (II–IV) methods. Different methodologies were used to respond to the different aims of the thesis. The quantitative study design served well in describing gender differences in symptoms of depression and the association between demographic data and the adolescents' visits to the health-care service. The results from this study provided new questions, which led to the qualitative studies that provided a deeper insight via individual and focus group interviews.

Using methods from different paradigms in nursing research could gain a comprehensive knowledge of complex phenomena (Polit & Beck, 2017). It could strengthen the thesis by using multiple methods. The findings from one paper inform the development of the next, which may enhance the validity of the results (Polit & Beck, 2017).

### **Validity of the quantitative study (I)**

In quantitative research *validity* is a term used ensure that measurement errors are kept to a minimum. Validity is defined as the degree to which the concept is accurately measured in a quantitative study (Heale & Twycross, 2015; Polit & Beck, 2017).

The participation rates in the cross-sectional study were 84%, and 63%, after exclusion of missing items. In this study, we included adolescents who had answered all the 30 items; this resulted in no need for imputation, which can be regarded as a strength. Examination of the findings from quantitative studies in a larger sample provides the possibility for generalizing the findings to a larger population and transferring the results to other situations and people (Polit & Beck, 2017). Study I included data from 41 municipalities in Norway, from both urban and rural areas, which cover a large area. It is reasonable to believe that there is small difference in relation to the rest of the population in Norway. This may increase the representative nature of the sample and its external validity.

The age of the adolescents in this study varied from 13 years to 16 years. In this period, there are some developmental changes between boys and girls, girls often being more mature than boys (Jensen & Nutt, 2016). This may affect the answers, which is important to bear in mind when comparing the results from

boys and girls. By analysing each year separately, it may give a more detailed and exact picture.

The items used to measure symptoms of depression are self-reported. Six items, developed from the Depressive Mood Inventory and the HSCL, which provided satisfactory validity and reliability, measured symptoms of depression (Derogatis et al., 1974; Strand et al., 2003). A recent study used Rasch Measurement Theory to examine the properties of the six items. The items worked relatively well except two items: 'had sleep problems' showed a clear misfit, and 'worried too much about things' worked differently for boys and girls. However, as a whole the six items worked well (Kleppang et al., 2018). The scale shows good reliability and, thus, is not considered to be a threat to the validity in this study. Internal consistency of these six items was measured by Cronbach's  $\alpha$  to be 0.88. Values  $>0.7$  are regarded as desirable (Field, 2013).

The other 24 items used in the study are not validated, which could be regarded as a limitation. It could also be questioned whether there are other items that would explain more of the variance in symptoms of depression than those included in the present study. It could also be discussed whether other items could measure, for example, lifestyle habits.

The questionnaire had a different response period, ranging from one day to one year, which may raise the problem of recall bias. It is more difficult to remember one year back than one day. The questionnaire consisted of 172 questions to be completed within one hour, which could lead to it being more likely that items in the first part would be answered and a risk of missing or rushing over the questions in the last part. The items about the school health-care service could lead to misunderstanding. They contain items about both the PHN and the school doctor, so it is difficult to gain an overview of the actual use of a PHN. However, the PHNs are much more accessible in the health-care service than the school doctor. In most school health services the PHN is the only professional. All the items are self-reported data, so error could be due to misinterpretation of the question or inaccurate recollection.



### **Trustworthiness of the qualitative studies (II, III, IV)**

To ensure trustworthiness in qualitative studies, the concepts *credibility*, *dependability* and *transferability* are used (Graneheim, Lindgren, & Lundman, 2017; Graneheim & Lundman, 2004; Lincoln & Guba, 1986).

*Credibility* deals with how the design and analysis have been outlined. In study II a qualitative descriptive design was found to be suitable for the aim of the study. Twelve adolescent boys who had visited the PHN because of mental health problems were interviewed (II). These boys represented six different school health services, where nine different PHNs worked. The school health services represented both rural and urban areas in Norway. The boys' ages varied from 16 years to 21 years and they were students on different programmes, which could increase the credibility. The first author of the paper had no influence on which of the boys were asked by the PHN to participate in the study. It could be a risk that the PHNs asked only boys they knew were satisfied with their visits to them.

The participants in the focus group interviews (III) varied in background characteristics and had various experiences with IPC in the special school programme. The intention was to carry out focus group interviews with at least four participants to achieve a broader dimension for the topic (Polit & Beck, 2017). Due to illness, two focus groups had two and three participants, which could have affected the results and the credibility of the study. However, the focus group with two and three participants contributed a valuable discussion and a rich source of data.

All the participants in study IV varied in background characteristics and work experience from both rural and urban areas to ensure variation, which is in line with the phenomenographic approach (Marton & Booth, 1997). The leader of the health-care services recruited the participants. The researcher contacted the leader, asked them to identify actual PHNs and had no impact on the recruitment. It could be a risk that the leader recruited the most positive PHNs. On the other hand, there are not so many PHNs working in secondary schools in each municipality.

For analysis, in studies II and III, content analysis was chosen as an appropriate method to gain a deeper understanding of boys' experiences of visiting the PHN (II) and the involved professionals' experience of IPC in the special school

programme (III). For analysis of study IV, a phenomenographic approach was regarded as appropriate to describe the variation in PHNs' perceptions of IPC.

During the analysis in studies I–IV all the authors of each paper were involved in the entire process. The authors are from different backgrounds, and all were registered nurses but with different work experience. One had experience of and been educated as a PHN. This could be regarded as a strength, because they probably have different pre-understanding. In all interview studies (II–IV), quotations were used in the papers to highlight the participants' voices, thus increasing the credibility and confirmability of the study results.

*Dependability* refers to the stability of data over time and conditions (Lincoln & Guba, 1986; Polit & Beck, 2017). The first author conducted the interviews in all the studies (II–IV) and strived to make the interview situation as similar as possible for each study. However, the interviewer developed and got more experience during the process, which may have affected the interviews. Thus, the question is not whether the researcher affected the process, but rather how (Malterud, 2011). The interviewer's job is to get the participants to talk freely about the topic in the guide and to tell stories using their own words (Polit & Beck, 2017).

The data collection in study II took place over seven months. One interview was conducted with a pair. These two boys had the same questions and the opportunity to answer separately. They only wanted to participate if they could be interviewed together. There is a risk that one may have influenced the other's answers. The same open-ended question was asked of all boys initially. The boys did not talk so freely and needed several follow-up questions. This could have led to the data collection not being so stable. On the other hand, asking individual follow-up questions is one way to take advantage of the boys' knowledge and develop further questions based on what they talked about. Adolescent boys may be at an age where they have difficulties expressing their experiences (Jensen & Nutt, 2016), and this was a way of helping them. This led to a rich source of data. Follow-up questions are one way to obtain missing information, explore themes, examine new material and achieve the aim of the study (Rubin & Rubin, 2012).

In study III, the data were collected over eight months and in study IV over three months. All participants in study III were asked the same introductory question

and all in study IV were asked the same questions to ensure that the same area was covered. Both the focus group interviews and the individual interviews were a rich source of data. In both studies some follow-up questions were adapted.

*Transferability* refers to the probability that the results have meaning to others in similar situations (Lincoln & Guba, 1986; Polit & Beck, 2017). To ensure transferability, the participants, the data collection and the data analysis have been described in detail in this thesis and in the different studies. Studies II–IV are from a Norwegian context so transferability must be assessed in the light of awareness that the context may differ in other countries.

## Conclusion and implications

- Gender differences are seen among boys and girls when reporting mental health problems and more girls than boys visit the PHNs in the school health service.
- The boys experienced difficulty talking about their mental health problems and with visits to the PHNs. Knowledge from study II may benefit PHNs in how they meet and support adolescent boys.
- The boys wanted the PHN to be more accessible and present every day. The PHNs and the other professionals need to be accessible to be involved in IPC. This knowledge is important to strengthen the PHNs' position in the school health service.
- The boys needed to trust the PHN's duty of confidentiality before visiting the PHN. Confidentiality may affect IPC, but could easily be solved by consent from the adolescents and their parents.
- The PHN has an important role in promoting mental health among adolescents. The boys benefited from visiting the PHN and few visited the PHN on their own initiative. This indicates that IPC in schools is essential to identify boys with mental health problems.
- IPC varied from case to case and was experienced as unpredictable. This underlines the complexity of IPC.
- There were variations in how the PHNs perceived IPC and they depended on others, especially teachers and the principal, in how involved they became in IPC. This knowledge may be valuable for how to organize and plan the school health service and for those who take the decision about IPC in schools.
- Knowledge from this research may contribute to development of the school health service and IPC between PHN and other professionals in school, which could benefit adolescents with mental health problems.

## Future research

- The instrument that measures symptoms of depression in Ungdata showed differences among boys and girls. Further research is needed to explore gender differences how adolescent boys and girls express mental health problems.
- The hierarchical multiple regression explained 32.5% of the variance in symptoms of depression. However, there is still more to explain. Investigation is needed of other factors that could explain more about the symptoms of depression among boys.
- There are gender differences for visits to the PHN in the school health service, and this study described boys' experiences. It would be of interest to explore how girls experience their visits. By getting the girls' perspective, it could strengthen how PHNs work in the school health service.
- More knowledge is needed about how other professionals experience IPC with the PHN, especially teachers. This would be of interest following the introduction of the new sanction by which teachers are obliged to collaborate with the school health service.

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## Mental health problems among adolescents

Mental health problems among adolescents are increasing and are a major public health issue worldwide. The aim of this thesis was to study adolescents with mental health problems, factors that are associated with mental health problems, the visit to the public health nurse (PHN), and how PHNs and other professionals experience interprofessional collaboration (IPC) in school and school health services related to mental health problems. Gender differences in mental health problems, as well as in help-seeking behavior, were identified. Boys visited the PHN to a smaller extent than girls and they experienced barriers such as finding the PHN inaccessible, difficulty talking about their problems with the PHN and uncertainty about confidentiality. When the boys experienced the PHN as trustworthy, confident and supportive, the visit was described as positive.

The PHN in the school health service is in a position to identify mental health problems among adolescents. In this setting IPC is essential. Factors such as lack of criteria and goals, different obligations, accessibility and being dependent on others were affecting collaboration. When the professionals and the PHN were included in the IPC, it was experienced as positive.

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