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Studies of the Safe Environment for Every Kid model in the Swedish Child Health Services for early identification of psychosocial risk factors in the home environment of young children

MARIA ENGSTROM

ACTA UNIVERSITATIS
UPSALIENSIS
2023

ISSN 1651-6206
ISBN 978-91-513-1866-0
urn:nbn:se:uu:diva-508374

UPPSALA
UNIVERSITET

Dissertation presented at Uppsala University to be publicly examined in Sal IX, Universitetshuset, Biskopsgatan 3, Uppsala, Friday, 29 September 2023 at 09:00 for the degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in Swedish. Faculty examiner: Professor Boel Andersson Gäre (Department for quality improvement and leadership, Jönköping University).

Abstract

Engstrom, M. 2023. BarnSäkert. Studies of the Safe Environment for Every Kid model in the Swedish Child Health Services for early identification of psychosocial risk factors in the home environment of young children. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* 1966. 108 pp. Uppsala: Acta Universitatis Upsaliensis. ISBN 978-91-513-1866-0.

Psychosocial risk factors in the home environment may impair children's health and development and increase the risk of child maltreatment. The Swedish child health services (CHS), provide health-promoting and primary preventive services for all children 0-6 years of age. However, the national CHS lack evidence-based tools to universally screen for the most common psychosocial risk factors. The Safe Environment for Every Kid (SEEK) model provides a method for identifying children who live in families with economic worries, depressive symptoms, parental stress, intimate partner violence (IPV) and alcohol misuse in order to offer relevant support and assistance to the family. The overarching aim of this thesis was to assess validity, clinical utility and outcomes of the Safe Environment for Every Kid model when applied in the Swedish Child Health Services setting. The SEEK model has been tested in a cluster randomized controlled trial within the CHS in the county of Dalarna.

Studies I and II examined CHS nurses' perception of their routine assessment of psychosocial risk factors in the family environment as well as their self-reported competence and the present organizational conditions in this context. Both studies used the same mixed method design, including surveys and focus group interviews. Study II analyzed the experiences of CHS nurses using the SEEK model in contrast to those using current standard practice. CHS nurses had extensive experience in dealing with the targeted risk factors, but using the SEEK model strengthened their sense of competence in identifying and responding to the needs of families with such problems. Using the SEEK model seems to have narrowed the gap between the nurses' perception that it is both important and suitable to address psychosocial risk factors within the CHS and their previously limited ability to do so.

Study III evaluated the psychometric properties of the Swedish version of the Parent Screening Questionnaire (PSQ-S) using data from surveys answered by parents (n=611). The PSQ-S was compared to standardized instruments for the targeted psychosocial risk factors. The PSQ-S showed a sensitivity of 93%, specificity of 52% and a positive and negative predictive values of 67% and 87%, respectively.

Study IV examined the self-reported rates of the targeted risk factors among parents who completed the PSQ-S at age-specific CHS visits during the intervention period. A total of 7483 PSQ-S were analysed. Over half of the PSQ-S had a positive screen for at least one risk factor. The problems were common throughout the child's first five years of life and were about as common among mothers and fathers. The proportion of PSQ-S with a positive screen decreased significantly from the beginning to the end of the intervention.

The results suggest that the SEEK model, as applied in these studies, shows a high degree of validity and clinical utility in the CHS setting. The experience of SEEK nurses showed that the model was helpful in their daily work. There is room for improvement with respect to sensitivity regarding IPV and how the nurses address parents with alcohol misuse. Many parents were willing to disclose the targeted risk factors in the context of the CHS visits and use of the SEEK model likely provided opportunities for assistance that may otherwise have been missed.

Keywords: Public health, Child health, Prevention, Health promotion, Child health services, Child health nursers, Nursing, Psychosocial risk factors, Child maltreatment, Psychometrics, Validation, Evidence-based practice, Women, Men

Maria Engstrom, Department of Women's and Children's Health, Akademiska sjukhuset, Uppsala University, SE-75185 Uppsala, Sweden.

© Maria Engstrom 2023
ISSN 1651-6206
ISBN 978-91-513-1866-0
URN urn:nbn:se:uu:diva-508374 (http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-508374)

For the sake of the children

List of Papers

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

I **Engström, M.**, Hiltunen, J., Wallby, T., & Lucas, S. (2021). Child Health Nurses' experiences of addressing psychosocial risk factors with the families they meet. *Acta paediatrica,* 110(2), 574-583.

II **Engström, M.**, Randell, E., & Lucas, S. (2022). Child health nurses' experiences of using the Safe Environment for Every Kid (SEEK) model or current standard practice in the Swedish child health services to address psychosocial risk factors in families with young children–A mixed-methods study. *Child abuse & neglect*, 132, 105820.

III **Engström M.**, Lindqvist, S., Janson, S., Feldman, I., Dubowitz, H. & Lucas, S. Validation of the Swedish Version of the Safe Environment for Every Kid (SEEK) Parent Screening Questionnaire. *BMC Public Health* (Submitted April 2023).

IV **Engström, M.**, Wallby, T., Janson, S., Feldman, I., Dubowitz, H. & Lucas, S. Psychosocial risk factors in families of young children: A trial of the Safe Environment for Every Kid (SEEK) Model in Sweden (manuscript).

All published articles have been published in open access journals that allow for reproduction in this thesis without the need for further permissions.

Contents

Introduction 11

Background 13
The child as an individual bearer of rights 13
The Child Health Services (CHS) in Sweden 14
Perceptions of child health and evolution of the Swedish CHS from a historic perspective 14
Conceptual framework for the current CHS practice 16
The Child's Context for Health and Development 17
Bronfenbrenner's bioecological systems theory 17
Children's development 17
Nurturing care 18
Social Determinants of Health 19
Child maltreatment – a public health problem 22
Prevention of child maltreatment and negative childhood outcomes 27
Strategies for prevention 27
The Safe Environment for Every Kid (SEEK) model 28
Readiness to Change - The Transtheoretical Model 29
Validity, reliability, clinical utility, and implementation science 30

Ethical considerations 33

Rationale for the thesis 36

Overall aim and specific aims 37
Overall aims 37
Specific aims 37

Methods 38
The BarnSäkert study 38
Study I 42
Study II 44
Study III 46
Study IV 48

Results 52
Study I 52
Study II 56
Study III 61
Study IV 63

Discussion 67
CHS nurses' experiences of working with psychosocial risk factors and the SEEK model 67
Psychometric properties of the PSQ-S 68
Parents' self-reported risk factors in the CHS setting 70
The proportion of PSQ-S with a positive screening decreased during the intervention 72
Theoretical discussion of the findings 73
Implementation perspectives 74

Methodological considerations 77

Conclusions 81

Clinical implications 82

Future research 84

Sammanfattning på Svenska 86

Acknowledgements 90

References 93

Abbreviations

CHC	Child Health Center
CHS	Child Health Services
CM	Child Maltreatment
IPV	Intimate Partner Violence
PSQ	Parent Screening Questionnaire
PSQ-S	Parent Screening Questionnaire, Swedish version
SEEK	Safe Environment for Every Kid

Introduction

Child health, development, wellbeing and safety are closely tied to factors inherent in the child, the parents and the surrounding community (1). This complexity of factors and the interactions between them create the conditions for the child's living conditions and can be both protective or create risks for poorer health and development and increased risk of abuse and neglect.

Most children in Sweden grow up in an environment that promotes their health and development. Their parents have an ability to perceive and understand the child's needs and a capacity to provide what the child requires. However, many children grow up in an environment that is not healthy, where parents have difficulties meeting the child's needs or subject the child to abuse and/or neglect.
This situation does not occur in a vacuum, it arises when the balance between risk and protective factors in the family is disrupted due to circumstances surrounding the child and the parents (2-4). Factors such as economic worries, depressive symptoms, parental stress, intimate partner violence (IPV) and alcohol misuse can negatively affect parenting skills. Children who grow up in such environments are more likely to have poorer physical and mental health and to be subjected to abuse and neglect than children who do not (5).

In Swedish population surveys, approximately 25-30% of adolescents and adults report that they had been subjected to violence or neglect by an adult in the home during their childhood, and many of these had experienced several types of exposure (6-8). The link between exposure during childhood and later physical, mental and social ill health, both during adolescence and in adulthood, is clear (9, 10). In this way, exposure to violence or neglect during childhood represents one of our biggest public health problems and is a contributing factor to enormous societal costs linked to crime, unemployment, sick leave and social exclusion (11, 12).

The Safe Environment for Every Kid (SEEK) model was developed to provide a method for pediatric primary care professionals to identify children who live in an environment where severe psychosocial problems are present and to offer relevant support and assistance to the family. The SEEK model has been evaluated in two large randomized controlled trials (13, 14). The results

showed that health professionals using the SEEK model felt more competent in addressing the psychosocial risk factors included in the model. In addition, medical record review showed that children in the SEEK group were significantly less likely to be maltreated.

In Sweden, the child health services (CHS) provide health-promoting primary preventive services for all children 0 through 5 years of age (15). The national CHS program comprises universal as well as selective and indicated services on a needs-based scale with the goal of providing equitable health services to all children (16). This provides an optimal opportunity to map important risk factors surrounding each child and tailor services to the needs of the individual family. Today, the national CHS program employs universal screening only for post-partum depression on a single occasion. Universal screening for other important psychosocial risk factors in the child's environment is lacking.

Against this background, the present studies were undertaken to explore the CHS nurses' experience of addressing psychosocial risk factors and to evaluate feasibility of the SEEK model and outcomes when tested in the context of CHS in the county of Dalarna, Sweden.

Background

The child as an individual bearer of rights

Sweden has a long history of attending to and protecting child rights. As the first nation in the world, Sweden banned corporal punishment in 1979 (17) and was first to ratify the United Nations Convention on the Rights of the Child (UNCRC) in 1990. But thinkers in Sweden, such as Ellen Key (1849-1926), were active in advocating for the individual integrity of every child over 100 years ago (18).

The UNCRC was adopted by the UN General Assembly on November 20, 1989. The Convention gives a universal definition of the rights that should apply to all children throughout the world, regardless of culture, religion or other characteristics. It states that the child is explicitly recognized as a human rights bearer, a legal subject entitled to all human rights and fundamental freedoms (19). In 2020, the UNCRC was incorporated into Swedish law (20). Many of the articles of the UNCRC are relevant to this thesis, particularly those pertaining to the child's right to life, health, development and protection (figure 1).

Article 2: All children are of equal value, no one should be discriminated.

Article 3: In all decisions affecting children, the best interests of the child shall be a primary consideration.

Article 4: Each state should take responsibility and make full use of its resources to fulfill children's rights.

Article 5: The child's parents or other guardians are responsible for the upbringing and development of the child and for supporting the child in the fulfillment of his or her rights.

Article 6: Children have the right to life, survival and development.

Article12: Children have the right to express their views freely in all matters affecting them, and views of the child being given due weight in accordance with the age and maturity of the child.

Article 18: The child's parents or guardians have joint primary responsibility for the child's upbringing and development, with the support of the state.

Article 19: Children shall be protected from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s) or any other person who has the care of the child.

Article 23: Children with disabilities have the right to a full and decent life and assistance to participate actively in society.

Article 24: Children have the right to the highest attainable standard of health, access to health care and rehabilitation, and the elimination of traditional practices harmful to children's health.

Article 26: Children have the right to social security and to state support if parents or other caregivers lack sufficient resources.

Article 27: Children have the right to a standard of living adequate for the child's physical, mental, spiritual, moral and social development.

Article 33: Children have the right to be protected from drugs

Figure 1. Articles of the UNHCR related to life, health, development and protection

The Child Health Services (CHS) in Sweden

Perceptions of child health and evolution of the Swedish CHS from a historic perspective

Many advances in our current knowledge about children's development and needs have formed the preventive health services offered to families during the child's first years of life. Among them are advances in developmental neuroscience, understanding of the consequences of health inequalities, poverty and child maltreatment and the importance of child rights, empowerment and health promotion. These factors and their significance for the modernisation of the Swedish health care services for children will be discussed below.

Until the beginning of the 20th century, poverty was widespread in Sweden. Families lived in cramped conditions, which resulted in difficult living conditions for many children. At the end of the 19th century, infant mortality was around 10 percent in the Nordic countries, and only about 85 percent of all children were expected to live until their 15th birthday.
Health programs to prevent the spread of infectious diseases were introduced in the beginning of the 20th century. The declining infant mortality rate is clearly linked to these programs. "Mjölkdroppen" ("The milk drop"), following a French model, was establishment in several places in the Nordic countries, including Stockholm. Initially, new mothers were offered advice on hygiene and how to feed their infants (21, 22). While the 1930s were a time of crisis, depression, war and rearmament, there was an understanding that children were a core group in building a strong welfare state. In 1934, the book "Kris i befolkningsfrågan" ("Crisis in the Population Question") (23) was crucial to the direction of the major social policy changes that took place in the following decades. Several reforms and laws promoting the welfare of children were introduced, such as expanded maternity care and free preventive maternal and child health care. Another example of social policy measures that directly affected children was the payment of subsidies to support economically vulnerable families (22, 23). After the Second World War, political reforms led to a modernization of the Swedish housing stock with central heating, bathrooms, and freezers etc., which was extremely important for hygiene and food preparation (22).

In 1938, the Swedish government, inspired by the early success of "Mjölkdroppen", decided to introduce general counseling centers for mothers with young children. The practice was based on the fundamental principles *public, voluntary, and free of charge for the individual,* principles that still guide the Swedish CHS. After the end of the Second World War and together with the positive medical developments and improved economic conditions in society, the mission of the CHS changed. Without sacrificing medical

responsibilities, it incorporated prevention of health problems in a broad sense, including strengthening of parents in their role as parents (21, 24, 25).

In 1968, the National Board of Health and Welfare proposed a general health check-up for 4-year-old children The aim was to improve children's health in the long term through early detection of health problems, diseases and disabilities The screening program implied a sharpening of the objectives and methods of the CHS (26). With this, the interest in children's health and development increased in the society. Special consultant physician positions were introduced in each county to work with methodology and quality improvement. New professions were also included as partners in the CHS settings (including speech therapists, orthoptists and psychologists). Research concerning children's health and development was introduced, and some of the first scientific analyses of children's health came from data collected at the four-year visit. The results showed inequalities in children's health in relation to socio-economic factors. This was a well-known, but unexpected finding in a welfare state like Sweden, where such conditions were thought to have been eradicated (24). In 1979, the Swedish Parliament decided to introduce general parental education within antenatal and child health care. The aim was to support and activate parents in their parenting and thereby create favorable conditions for the development of children (25).

A landmark in a broader perspective was the ban on corporal punishment enacted in 1979, which has had a major impact on children's lives, but also on work within the CHS. The law states that "Children are entitled to care, security and a good upbringing. Children are to be treated with respect for their person and individuality and may not be subjected to corporal punishment or any other humiliating treatment." (27).

Between the 1960s and the 1990s, the focus of the CHS has shifted from seeing professionals as the experts who identify illness and implement the appropriate actions, to seeing children and parents as competent and equal partners in the CHS. Thus, the focus has moved away from a pathogenic approach, where disease and its causes were of central importance, to a salutogenic perspective, where the promotion of health and the prevention of ill health are key concepts (24, 25).

In 1999, a state-of-the-art conference was organized by The Medical Research Council of Sweden to assess the evidence base for the procedures and practices applied in the CHS. The final report pointed out that: 1) families with children should be actively involved in preventive work to thereby strengthen their self-confidence and competence; 2) the first two years of life should be in particular focus since other community actors had no comprehensive contact during this period. Particular emphasis was placed on methods that promote the attachment process and provide early support in parenting, and; 3)

that non-evidence-based interventions should be seen as provisional (28). Further developments in the beginning of the 21st century include introduction of structured methods to identify language and communication problems, promote healthy lifestyle practices and identify depressive symptoms among parents.

Conceptual framework for the current CHS practice

In 2014, the National Board of Health and Welfare published a new guidance for the CHS with the aim of contributing to evidence-based practice and homogeneity of the services offered. (29). The aim of the CHS is to promote child health, prevent ill health among children and detect problems in the child's health or risks in the child's environment and facilitate the provision of appropriate interventions. The CHS offers infants and preschool children (0 through 5 years) regular health visits including promotion of a healthy lifestyle, monitoring of the child's physical and mental health and vaccinations according to the national child vaccination program. The CHS-program offers advice and support at clinic visits and via home visits based on a national program (15, 29).

The national child health program consists of three integrated tiers of universal, selected and indicated services to address the needs of each child and family. The first tier consists of universal interventions that are offered to all children and are intended to promote health and development and prevent diseases, injuries, and physical, psychological, and social problems. The second and the third tiers are targeted interventions. The second tier includes additional assessments to increase knowledge and understanding of the child's situation and offer individualized interventions mainly through the CHS. This may include an in-depth assessment of protective and risk factors in the child's environment, an in-depth assessment of the child's health and development, parenting support, interdisciplinary consultation/collaboration with allied professionals, and additional home visits made by one or several professions (CHS nurse, physician, psychologist, social service worker). The third tier includes additional needs-based interventions from or in collaboration with other parts of health care or other public service agencies, for example the social services, pediatric specialists, psychiatry or habilitation services. The CHS professionals maintain contact with children and parents even when other services are involved. (15).

All CHS services are free of charge (29) and nearly all children and their parents participate (30). The program is staffed by primary health care nurses or paediatric nurses and general practitioners, with a high degree of continuity and frequent visits throughout the child's first years of life. Through universal and targeted interventions, the CHS plays an important role by balancing the

differences in social health and promoting good and sustainable health and development (29).

Each county/region has a central CHS unit, made up of a chief medical officer and one or several CHS nurse coordinators, many units also employ a psychologist. A few units also have a speech therapist or a dietician as part of the team. By mandate from the county council, the central CHS units are responsible for quality assurance for the local CHS through education and support, data collection to monitor children's health, follow-up of interventions, and evaluation of CHS results and service provision.

The Child's Context for Health and Development

Bronfenbrenner's bioecological systems theory

An ecological perspective offers a way to emphasize both individual and contextual systems and the interdependent relationships between them. Developmental psychologist Urie Bronfenbrenner (1917- 2005) was one of the most influential contributors to ecological thinking in health research. At the core of Bronfenbrenner's bioecological theory (31) are the so-called proximal processes, which are seen as the drivers of human development, and explain how human development occurs through processes of increasingly complex mutual interaction between the individual and the persons, objects and symbols in his or her immediate environment. The content and direction of the proximal processes are influenced by the characteristics of the developing person, by the environment in which the processes take place, and by the social continuities and changes that occur over time as well as the historical period in which the person has lived (31, 32). In a broader context, ecological systems theory has also been used as a model to describe the development of health (4) as well as the risk of child maltreatment (3), which will be described in more detail later in the text.

Children's development

According to Bronfenbrenner's bio-ecological theory, child development, especially in its early stages, is influenced by the child's biological characteristics in concert with a complex system of relationships within multiple levels of the surrounding environment, from the immediate and the extended family to preschool/school, neighborhood, community and broader society, including cultural values, laws and customs (31).

Developmental neuroscience has demonstrated how early biological and psychosocial experiences influence brain development. Human development is an interaction between biological and socio-environmental factors, where experiences in the environment affects the child's physical and cognitive development during the prenatal period (33-35) and in a life-time perspective (35). The period of early development, from fetal life through the first years, is characterised by a high degree of plasticity in brain architecture (36), and external influences on brain development are particularly important during this sensitive period. Advances in developmental science have provided an understanding that there are multiple as well as overlapping critical periods when the development of specific abilities and skills is most powerfully reinforced (37). Such periods begin before birth and peak during first three years of a child's life (35, 38, 39). Child development is an interactive process of maturation resulting in an ordered development of cognitive, perceptual, language, motor, socio-emotional and self-regulatory skills (40).

Deprivation of stimulus or exposure to adversities such as abuse are examples of stressors that are capable of inducing a toxic stress response. (41). Toxic stress is defined as a strong, frequent or prolonged activation of the body's stress response system in a child in the absence of the buffering protection of a supportive relationship with adults (42, 43). The essential feature of this phenomenon is the postulated disruption of brain circuits and other organ and metabolic systems during sensitive periods of development. Such disturbances may result in anatomical changes and/or physiological disturbances that are precursors to later impairments in learning and behavior and the roots of chronic, stress-related physical and mental illness (44). Research indicates that there is variation in how susceptible or resistant individuals can be to adversity (38, 45). Yet, a surprising number of children facing serious adversity in their families and communities avoid such negative outcomes and show positive patterns of development. This phenomenon is called "resilience" (46) and is defined as the ability to resist or recover from significant challenges that threaten the individual's stability, vitality or development (47, 48).

Nurturing care

Studies have shown that safe, responsive, and nurturing parent-child relationships early in children's lives promote healthy brain and child development and protect against lifelong disease by reducing toxic stress and promoting foundational social-emotional health (49). According to Britto et al. (2016), nurturing care involves a stable environment that is sensitive to children's health and developmental needs, provides protection from threats, is responsive to needs, is emotionally supportive and promotes good early learning opportunities and interactions (33).

Nurturing care is provided by parent and family interactions, supported by a surrounding environment that enables these interactions. (14-16). Nurturing care consists of a core set of inter-related components, including attitudes, behaviors, and knowledge regarding caregiving as well as stimulation and responsiveness in which secure attachment between the child and his or her caregiver(s) is central (33).

Parents or guardians are the closest people to the young child and therefore the natural providers of nurturing care, and a parent who experiences economic, emotional and social security is the best positioned to provide nurturing care for their child. Other important aspects are that caregivers must be able to participate in social networks, have the authority to make their own choices and make decisions in the best interest of the child and be acknowledged for the important role they play in the lives of the children they care for (40, 50). Adversity affecting families and the wider socio-economic context can undermine families' ability to provide nurturing care (40).

Social Determinants of Health

According to the World Health Organization (2021), the determinants of health are defined as *"The range of personal, social, economic and environmental factors that determine the healthy life expectancy of individuals and populations*"(51). Some determinants of health are not modifiable, such as place of birth, age, and the genetic makeup. Others are related to the actions of individuals and factors that are largely outside of the control of individuals and groups. These include, for example, income, education, employment conditions and access to appropriate health services, and are often referred to as the social determinants of health (51, 52). Dahlgren and Whitehead's model (4) (figure 2) is widely used, and captures in a comprehensive way the different social levels and contexts that influence health at the individual level and some of the risks and protective factors that these factors give rise to. The model clearly demonstrates that an individual's health must be seen and understood in a broader social context, as factors that seem very distant from the person may exert an influence through factors that are closer to the individual level.

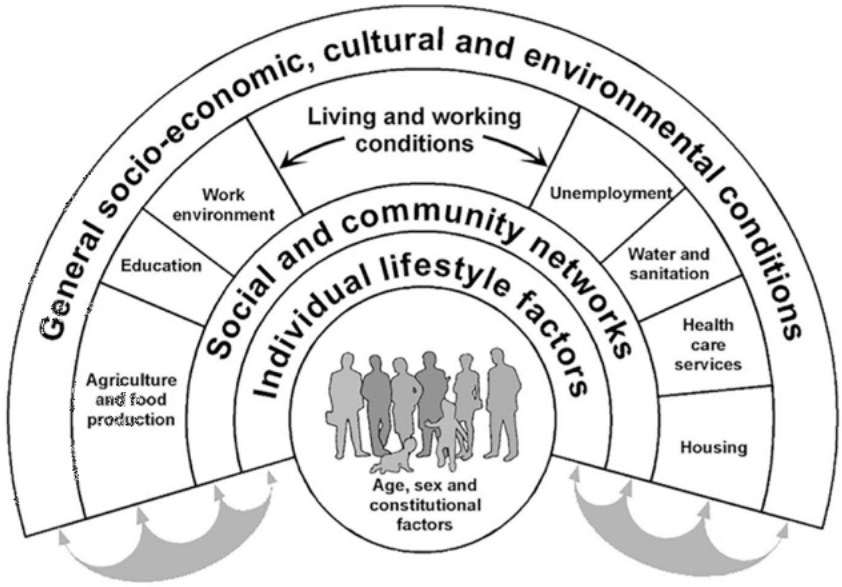

Figure 2. The main determinants of health. Adapted from Dahlgren G, Whitehead M. (1991) Policies and Strategies to Promote Social Equity in Health. Stockholm, Sweden: Institute for Futures Studies (4).

Thus, as in Bronfenbrenner's model, the determinants of health are found in the spheres surrounding the child, from the personal characteristics of the child to the conditions of the parents and family, other relatives and the family network, pre-school, school and other parts of the local community, the wider society in which the child lives and the global community (2).

Health inequity

There is a graded relationship between social circumstances and health. The social gradient in health means that health is better among groups with higher social position and economic status. Children do not have their own socioeconomic position but experience a multitude of socioeconomic circumstances that come from their parents or caregivers, e.g., occupational status, household income and the neighborhood in which they live (53).

The Marmot Commission's report Closing the Gap in a generation (2008) states that it is not enough to target only the most vulnerable individuals in the population to reduce health inequalities. For many health problems, there is no clear dividing line between individuals at risk and individuals who are not at risk; the risk is continuously distributed throughout the population. Therefore, actions must be universal but with a scale and intensity that is proportionate to the level of disadvantage. This concept has been termed "proportionate universalism". The prenatal and early childhood years are considered crucial, both for creating inequalities in health and for creating the conditions to reduce them (54, 55).

The concepts of health, risk factors, protective factors and health promotion

According to World Health Organization (WHO) health is regarded as a fundamental human right (56). Many definitions of health exist, and the concept of health is considered both complex and elusive. The WHOs definition from 1946 states that health is *"A state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity"* (56). The definition has been criticized as being too utopian, implying that all those who are not healthy according to the definition may be considered sick.
In the Ottawa Charter for Health Promotion (1986) the definition was further developed and described as a "*resource for everyday life, not the object of living"* (57). Health was seen as a process enabling people to develop health through their assets and thus having the opportunity to lead a good life (58). Factors leading to a healthy society were emphasized, including, among other things, peace, adequate economic resources, social justice, and education. This extends the concept to the whole context of life, not just individuals and groups. Recognition of these conditions demonstrates the inextricable relationships between economic and social conditions, the physical and social environment, individual health behaviors and skills, and health (51).

The determinants of health have a significant impact on the child's health and development through factors that protect against or increase the risk of poorer health and development (59). A risk factor is described as a characteristic, behavior, relationship, circumstance, or situation that increases susceptibility to a specific disease, ill health, or injury. Examples of important risk factors for children's health and development and the risk of child maltreatment will be described in detail later in this thesis. A protective factor is a characteristic, behavior, relationship, circumstance, or situation that decreases the probability for a certain outcome, in the presence of one or several risk factor(s), for example good physical and mental health of the child and parents, stable family finances and a strong family support network (2, 60). Risk- and protective factors are not static entities, they change in relation to context (61), and may also have cumulative effects; the more risk factors that are present, the greater the risk of a negative outcome. Conversely, the more protective factors that exist in the child's environment, the stronger the protective effects will be (62). The presence of one or more protective factors can make a child more resilient to risk factors and thus enable them to develop well, despite being exposed to risk, thereby avoiding the negative outcomes that otherwise may have arising (60).

According to the literature, there are some key factors that mitigate the effects of exposure to risk factors. *Parental resilience* connotes dealing with both life and parenting stress and functioning well in the context of stressors, challenges, or adversity. *Social connections* include having healthy, sustainable

relationships with people, institutions, society, or a religious belief. *Knowledge of child development and parenting* involves having skills to apply developmentally and contextually appropriate practices for best parenting. *Providing social and emotional competence* for children means providing an environment and experiences that enable the child to develop close and trusting relationships with adults and peers, and to experience, regulate and express emotions. *Concrete support in times of need* include identifying, seeking, accessing, advocating for and receiving needed services for children, adults, and families; obtaining a quality of services designed to preserve parental integrity and promote healthy development (63).

The concept of health promotion is defined by the World Health Organization (WHO) (2021) as " *the process of enabling people to increase control over, and to improve their health.*"(51). Health promotion is the process of empowering people, individually and collectively, to increase their control over the determinants of health and thereby improve their health. Empowerment can be seen as a key concept in health promotion, and in this context refers to a process by which people gain greater control over decisions and actions that affect their health (51, 64).

Child maltreatment – a public health problem

In that CM through abuse or neglect is widespread and affects the health of a significant part of the populations, it represents a global public health problem that affects the lives of millions of children (65, 66). In high-income countries about 4–16% of children are physically abused and one in ten is neglected or psychologically abused (65).

The WHO defines CM as "All forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power" (67). Further, the WHO states that CM occurs within a relationship of dependency, such as a relationship with a parent or temporary caregiver (67).

According to the Swedish Committee against Child Abuse, child abuse is when an adult person subjects a child to physical or psychological/emotional violence, sexual abuse, humiliating treatment, or neglects to provide for a child's basic needs. Under this definition, experiencing violence between adults in the family (IPV) is considered to be a form of psychological/emotional violence (68).

A number of studies of the prevalence of CM have recently been carried out in Sweden. Surveys about self-reported experiences of maltreatment among

youth and adults indicate that approximately 20 percent of males and females had experienced physical violence and 10-20 percent had experienced emotional violence at the hands of a parent before the age of 18 (6, 7, 9, 69, 70). Repeated studies on behalf of the Ministry of Health and Social Affairs among 15-year-old youth have shown a decrease in experiences of physical violence perpetrated by a parent, from 35% in 1995 to 12% in 2016 (9). Approximately 20 percent of youth and young adults had experiences of sexual abuse (9, 71)., and four percent of the girls and 0.4 percent of the boys stated that they had been sexually abuse by a parent or step-parent (9).

The youngest and most vulnerable children are often those most exposed. The risk of maltreatment among children 0-4 years is double that of children 5-14 years (72). In addition, disabled children are at increased risk of maltreatment (73). Children who are exposed to one type of maltreatment are often exposed to other types of abuse as well as repeated or continuous abuse (74-77). All types of maltreatment are strongly associated with each other, but certain types are particularly closely linked. Emotional and physical abuse often co-occur (77), as do neglect and witnessing IPV (78). A Nordic study found that physical abuse and IPV also coexisted to a great degree (79).

Adverse childhood experiences (ACEs) are a subset of social determinants defined as traumatic experiences (psychological abuse, physical abuse, sexual abuse and exposure to household dysfunction, including parental substance abuse, mental illness, intimate partner violence and criminal behavior) occurring before the age of 18 (80). There is a clear dose–response relationship whereby those with more ACEs have a higher likelihood of negative health outcomes in childhood and adulthood (80-83).

Exposure to multiple adversities, including stress, child maltreatment and food insecurity, is often more harmful to child development than single adversities. The reason is thought to be that accumulated adversity undermines children's physiological stress response systems and decreases their capacity for self-regulation and management of stress (84, 85).

Consequences of CM

The health consequences of CM can be devastating in both the short and the long term and can be lifelong. Injuries and physical health problems, such as fractures, burns, internal injuries and head injuries can be severe (5). CM seems to have a larger impact if exposure occurs early in life or is chronic (86), or cumulative (75). Children and adults who were exposed to abuse or neglect in childhood are at risk of a range of psychological and behavior health problems, including internalizing and externalizing psychopathology, post-traumatic stress disorder, psychotic symptoms and personality disorders (65, 87-89). CM has also been linked to substance abuse, STD-related sexual risk behaviors (90-92), and higher risk of being a victim of and exposure to IPV

both in adolescence and later in life (93, 94). In addition, evidence has demonstrated the effects of child abuse on vulnerability in adulthood. People who have been subjected to violence and neglect during childhood are much more likely to have adulthood problems such as depression, suicidal behavior, criminal behavior, interpersonal problems, and academic and vocational difficulties (95-103). Multiple physical health problems and premature mortality have also been clearly linked to childhood experiences of abuse and neglect (80, 104-106).

The ecological model of child maltreatment

Child abuse needs to be explained and understood within a broad context of child wellbeing. In parallel with ecological systems theory and the model of social determinants of health, the risk of CM is affected by factors and processes within the context of the family, community, and society. The ecological systems model of development (107) has been adapted and used to understand the full context of the child and how risk and protective factors at different levels in society affect the occurrence of CM (3).

The individual level deals with biological variables such as age and sex, together with past factors that can influence an individual's susceptibility to CM, for example increased needs in infancy due to prematurity, constant crying, mental or physical disability or a chronic illness (8, 73, 108). For example, a Swedish study showed that children with chronic health conditions were at increased risk of physical abuse (109). Other factors deal with the parent or caregiver, such as education, disability, a parent's own experiences of maltreatment as a child, history of violent behavior, alcohol/substance abuse and psychological/ personality disorder (110, 111).

The relationship level deals with an individual's close social relationships within the family or with others that influence the individual's risk of both perpetrating and suffering maltreatment, for example lack of a support network to assist with stressful or difficult situations in a relationship or support in child rearing from the extended family.

Factors at *the community level* relate to the settings in which social relationships take place – such as neighborhoods, workplaces and preschools – and the particular characteristics of those settings that can contribute to CM. Examples of characteristics that are associated with an increased risk of CM are poverty and lack of services to support families and institutions to meet special needs.

Societal factors involve the underlying conditions of society that influence maltreatment such as social norms that encourage the harsh physical punishment of children, economic inequalities, level of education and the absence of social welfare safety nets (3, 5, 72, 112).

Factors that protect against child maltreatment

Protective factors at the individual, familial and societal levels play a significant role in promoting psychological wellbeing and reduce the risk of negative

consequences of CM (113). Protective characteristics of the child to become less likely to suffer negative sequelae from maltreatment include high intelligence, self-esteem, and/or self-efficacy. Being involved with extracurricular activities or religious institutions or having a supportive adult involved in their lives are other protecting factors (114). Families with higher levels of social support have lower rates of physical abuse and greater use of discipline strategies other than corporal punishment (115). The parents' self-efficacy is another characteristic; a sense of competence in child rearing may enable the parent to cope better with the challenges of raising children. Protective factors among parents of children with developmental disabilities include being skilled at identifying and securing helpful resources and services for the child (116). As mentioned earlier, children growing up in conditions of adversity face many challenges as they move into adolescence and adulthood, Healthcare professionals can play a critical role in promoting healthy relationships and thereby preventing CM (117).

Risk factors amenable to parental treatment and support

A number of prevalent psychosocial problems including poverty, depressive symptoms, extreme parental stress, alcohol misuse and IPV are closely linked to poorer health and development, increase the risk of CM (1, 13, 118, 119). These are issues that may be amenable to treatment or assistance and studies have shown that when they are addressed, particularly in combination with parenting support programs, the risk of poor child outcomes decreases (72, 120). Below is a summary of current research regarding these risk factors.

Poverty: Child poverty is common even in high-income countries. For example, 16 percent of children in the USA live in poverty (121). Although abject poverty is rare in Sweden, prevalence studies have reported that 23% of children 0-4 years of age live in families with low economic standard (122), and 9 percent of children in Sweden live in relative poverty (123). Single-parent households have significantly lower financial status than two-parent households (123, 124). Children living in poverty are more likely to have physical, mental health, and developmental problems compared to children not living in poverty, including higher rates of asthma, dental caries, language delays, poor growth, depression, and conduct disorders (119). Children living in poverty are five times more likely than their higher income peers to experience child maltreatment (125). In general, families living in poverty have a reduced ability to provide for the basic needs of their children, including food, shelter and health care. Economic and other stressors may increase parental conflict as well as harsh verbal and physical punishment and may decrease nurturing care (119, 126). Studies have also shown reductions in CM when economic circumstances improve (127, 128). High housing costs in relation to income, poor housing quality, unstable neighborhoods, overcrowding, homelessness, multiple moves in the past year and difficulty paying rent can strain parents

mentally and emotionally, making it difficult to cope with children's needs. These factors are indirectly associated with neglect via maternal stress (129).

Parental depression is a frequent problem. For example, in a Swedish study, symptoms of depression three months postpartum were found among 12 percent of the mothers and six percent of the fathers (130). Another Swedish study showed that 23 percent of infants have at least one parent with depressive symptoms (131). In the United Kingdom, 10 percent of mothers and four percent of fathers scored more than 12 points (132) on the Edinburgh postnatal depression scale (EPDS), indicating probable depression (133). A study in the United Kingdom found that, when the child had reached 12 years of age, 39 percent of mothers and 21 percent of fathers had experienced depression, especially in the first year postpartum. Particularly vulnerable were parents with a history of depression, younger parents, and those from socioeconomically deprived areas (134). Postnatal paternal depression is associated with an increased risk of behavioral and emotional problems in children 3 to 5 years of age (132). In addition, there is a strong link between maternal depression and CM. Studies have shown that maternal depression is associated with severe physical abuse (135), and mothers with probable comorbid PTSD and depression reported more psychological aggression toward and physical assaults of their children (136).

Parenting stress All parents experience stress related to the parenting role when demands placed on the parent exceed the resources available to the parent (137). Although not all those with high levels of parenting stress maltreat their children, when parenting stress is high, the likelihood of punitive parenting (138, 139) and CM (140-143) increases. Parenting stress has been linked to aspects of problematic parenting, such as lack of nurturing behavior, less pleasure in parent-child interactions, more parent-infant conflict, and outright abuse (144-146). Causes of significant parenting stress include common daily life events that demand considerable time, emotional and physical energy and effort. While these tasks considered alone may not elicit high levels of stress, cumulative exposure to the demands of parenting coupled to loss of energy, time and control over one's self and life may lead to substantial parenting stress, particularly when children or parents have special needs due to physical or cognitive disabilities, chronic health conditions or other difficult life circumstances (147, 148). In fact, stress can be seen as a central hub in processes leading to CM, such that many factors may lead to stress, and stress itself may cause or exacerbate other difficulties. For example, economic disadvantage can lead to parental distress, which in turn can negatively influence parenting practices (149, 150). Other risk factors that can interfere with parenting and create parenting stress include parent mental health problems (151), substance abuse (152) and IPV (153).

Parental substance misuse/abuse A review of international research showed that 19 to 32 percent of children had lived with a parent or guardian who has

alcohol problems, and in the same overview, the corresponding number in Sweden was 20 percent. In self-reported data from youth and results from a register study, it is estimated that 15 percent had been negatively affected to some extent and 10 percent had been affected very negatively (154). Findings in another review show that substance-abusing parents had less knowledge of appropriate childcare practices and child development, they experienced less enjoyment of their parental role and spent less time interacting with their children. Furthermore, parents with substance abuse experience many life stressors, compromised employability and limited social support as well as deficits in emotional regulation (155). Parental substance abuse has been associated with CM, particularly neglect (156, 157). A large study showed that children who grew up with one or more alcoholic parents were twice as likely to experience emotional, physical, or sexual abuse or neglect during childhood compared to those whose parents were not alcoholics (158).

Intimate partner violence (IPV) is defined as any physical, psychological or sexual harm committed by a current or former partner or spouse (159), and exists in households regardless of socioeconomic background (1). In a Swedish national populations survey, 14 percent of women and 5 percent of men had, as adults, been subjected to violence or threats of violence by a current or former partner (103). In the United States, it is estimated that more than a third of women (36%) and more than a quarter of men (29%) experience rape, physical violence and/or persecution from an intimate partner during their lifetime (160). In a Swedish self-report survey, 14 percent of youth reported having experienced violence between adults in the family (9), and similar a prevalence rate was found in a U.S. study (16 percent) (161). There is strong evidence linking children's exposure to IPV and many serious short and long term consequences, including emotional, behavioral, physical, social and academic problems (162, 163). Children can also become involved in physical disputes, leading directly to harm and developing violent ways of resolving conflicts (164).

Prevention of child maltreatment and negative childhood outcomes

Strategies for prevention

Despite its high prevalence, CM is often hidden, unseen and under-reported (165). Studies have shown that identification of problems among parents and provision of services to alleviate them, especially in combination with parenting support programs, can reduce the risk of CM. In addition, the influence of risk factors can be buffered by protective factors that may be internal characteristics (e.g. parental sense of competence) or external (e.g. social support) (72, 166). When risk factors have been identified, preventive efforts that focus

on the parents seem to be most promising (167). When even the most advanced support efforts do not prevent a child from being maltreated, child protective services are vital to ensure the well-being of the child. In Sweden, it is mandatory for all health care professionals to report suspicion or knowledge of CM to the social services (168). The CHS play an important role in identifying and addressing situations in which children are suspected of being at risk of maltreatment, and to this end are mandated to have procedures for reporting to the social services (29).

The role of health care related to CM has largely focused on identification, reporting to child protective services and facilitating referrals for assessment and treatment. Few primary prevention strategies have been evaluated (13, 169), most of which comprise home visitation programs (170), and several studies testify that health care providers usually ask about risk factors on indication (171, 172). In many countries, regular child health visits reach most infants and preschool children and their parents, and thereby provide multiple opportunities to screen for psychosocial risk factors during child health visits (13, 117). However, surveys suggest there are gaps in professionals' knowledge and skills, discomfort in addressing these issues and a lack of time (171-176). Using universal screening (i.e., screening all families in a primary care practice) eliminates the stigma of screening selected families, and reduces the likelihood of missing at-risk families (1, 55, 177-179).

Brief psychosocial tools have improved the efficiency of screening in primary care (13, 14, 130), facilitating the early identification of patient needs, and thereby improving the quality of patient care (111). Providers who use a structured model to deal with psychosocial risk factors in a primary care context felt that the model provided a framework that was helpful in dealing with psychosocial problems by routinely asking questions (13, 14, 177, 180). Furthermore, they felt that it had increased their competence and confidence to meet the needs of the family and to provide care because they had a better understanding of the family's social situation (181, 182).

The Safe Environment for Every Kid (SEEK) model

The SEEK model has its origins in the USA, where it was developed for pediatric primary care (167). The SEEK model provide a method for identifying children who live with severe psychosocial problems (child safety, economic worries, depressive symptoms, parental stress, IPV and alcohol misuse) and offers relevant support and assistance to the family.

The SEEK model, consists of four elements (figure 3):
1. Basic training of the CHS nurses using the SEEK-model, including the risk factors assessed in the SEEK Parent Screening Questionnaire (PSQ) and their connection to health and development and CM.

2. Use of the SEEK-PSQ in conjunction with predetermined routine visits to the CHS.
3. Discussion of the parent's responses and possible outcomes in connection with the CHS visit
4. Suggestions for advice or referral to relevant support or healthcare agencies.

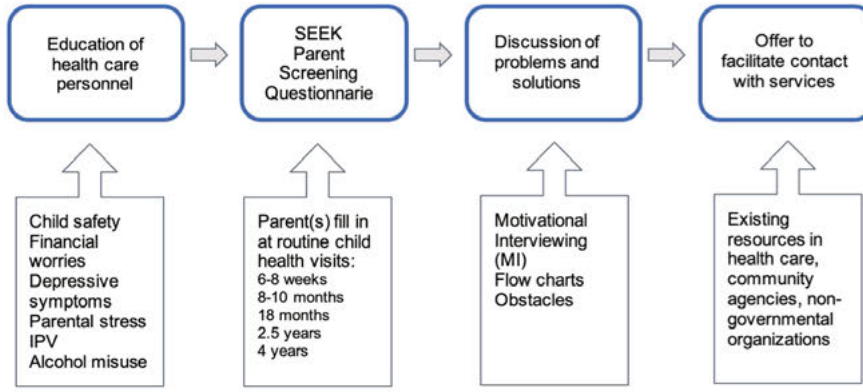

Figure 3. The SEEK model used in the intervention.

Readiness to Change - The Transtheoretical Model

Individuals' readiness to accept services may differ greatly when psychosocial problems have been identified. Interventions such as SEEK are based on so-called stage theories, grounded on the assumption that behavior change occurs through different stages and that the barriers people face when trying to change their behavior will vary at different stages of the change process. The intervention must consider the individual's level of readiness for change. This is an important prerequisite for offering support to change a behavior (e.g. to stop smoking or reduce alcohol consumption) or to receive help or treatment (e.g. parental support programs, psychological counseling).

The Transtheoretical model is a frequently cited theory in the behavior change context (183), and divides the individual's readiness to change into five stages:
1) *precontemplation,* where there is little insight of the existence of a problem and no intent to change, 2) *contemplation* where insight has increased and change is seen as a possibility sometime in the future, 3) *preparation* where change is intended in the immediate future, 4) *action* where the target behavior has been modified for less than 6 months and 5) *maintenance* characterized by temporally robust behavior change extending for more than 6 months. In addition to the five stages of change, the Transtheoretical model also suggests different types of activities that people can engage in to overcome the barriers

they encounter at certain stages and thus progress towards their final goal. This could, for example, include finding out more about the effects of the behavior (consciousness raising), or seeking support and help from others (helping relationships) or rewarding oneself for making changes (reinforcement management)(183, 184). The transtheoretical model can be seen as an explanatory model to guide professionals in their understanding of how the stage of readiness for change a parent is in will affect their willingness to engage in discussing and acting on their need for assistance (185, 186). The different stages of the dynamic model are helpful in guiding professionals in their approach to offering appropriate and effective support. Motivational interviewing is a valuable tool in this setting to probe the parent's position and understanding of the problem and its impact on the family (187). A person's readiness to change does not follow a straight line but should be seen as a process that moves back and forth as it is influenced by a variety of factors. Monitoring the parent's situation is therefore crucial to either confirming progress or providing an alternative form of support if necessary (188)

Validity, reliability, clinical utility, and implementation science

The implementation of new, evidence-based methodologies in health care involves evaluation of the method's internal and external validity, reliability and clinical utility prior to implementation (189).

Internal validity refers to how the method truly assesses or addresses the phenomena or characteristics that it is intended to (190). Several aspects of internal validity need to be addressed, including construct, content, face and criterion validity. *Construct validity* describes the extent to which an assessment tool accurately measures what it is supposed to with respect to the theoretical base on which it is founded and is the overarching aspect of validity. *Content validity* evaluates to what extent the assessment method measures all aspects of a given construct (189). This may be done by having experts in the field assess to what extent the method is all-encompassing for the concept of interest. *Face validity* is a qualitative assessment of whether individuals consider the assessment tool to cover the concept that it is supposed to measure. *Criterion validity* refers to the degree to which an assessment instrument correlates with a previously validated instrument considered to be a "gold standard" measure of the matter of interest (191).

External validity refers to generalizability of the model to different contexts in which it may be applied. If the study sample is representative of the population in which the model will be used, the findings should be generalizable to that population and external validity would be expected to be high. However,

in order to establish external validity in a broader context, the method needs to be tested and evaluated in different settings (189).

Reliability is an aspect separate from validity and refers to the consistency of measurements or assessments when a testing procedure is repeated on a population of individuals or groups. Reliability can be evaluated in a number of ways through experiments or in real-life clinical situations. There are four main types of reliability: *inter-rater reliability* measures the degree of agreement when two or more raters perform the same appraisal, *test-retest reliability* assesses the agreement between two administrations of the same test to the same individual, *inter-method reliability* relates to how different methods or instruments produce the same results and *internal consistency* is a measure of consistency of results across items in a test (189).

Closely related to validity is the concept of clinical utility, which describes the usefulness and feasibility of the model when applied in clinical practice (189). *Usefulness* is based on the validity of the model to inform and facilitate clinical decisions, as well as the acceptability of the model to practitioners and patients. *Feasibility* is a complex concept that includes aspects such as cost versus benefits of the method, and prerequisites such as competence and skills necessary to apply the method, time constraints and staffing requirements (192). The components of clinical utility include the degree to which an assessment model: (1) facilitates communication between users and implementation of the model in real-world situations; (2) is acceptable to clinicians and clients; (3) helps clinicians to choose intervention strategies; and (4) promotes positive treatment outcomes (189).

In qualitative research, the concept of trustworthiness has evolved to explain "the degree of confidence qualitative researchers have in their data and analyses, assessed using the criteria of credibility, dependability, conformability, transferability, and authenticity"(193).
Transferability refers to the extent to which the findings can be transferred to other settings or groups.
Confirmability refers to the objectivity of data and interpretations i.e., the data accurately represent the information the participants provided and the interpretations of those are not invented by the inquirer.
Credibility refers to confidence in how well data and processes of analysis address the intended focus, for example context, participants, and approach to gathering data.
Dependability refers to the stability of data over time, for example if any changes in the design or analysis process were made over time.
Authenticity, refers to the extent to which researchers, fairly and faithfully, show a range of realities (193, 194)

Implementation science (IS) focuses on how evidence-based practices, interventions, and policies best can be adopted and integrated into routine health care and public health settings (195). The aim of implementation science is both to identify barriers and facilitators to uptake of methods across different levels of context (patients, providers, organization, and other stakeholder groups), and to conceive implementation strategies that overcome the barriers and enhance the facilitators (196).

Complex interventions - The UK Research Council's framework

The British Medical Research Councils´ framework of complex interventions has been highly influential in health service research (197). An intervention can be described as complex if it contains either multiple components or mechanisms of change and/or generates outcomes that are dependent on external factors such as complex behaviors of the deliverers or the recipients, the organization or in the context in which the intervention is delivered. As such, the SEEK model is an example of a complex intervention.

The UK framework includes four interacting phases, aiming to strengthen the intervention as well as the design: The *development* phase includes identifying existing evidence as well as identifying and developing theory. Modelling of process and outcomes before a full-scale intervention can provide important information about the design of both the intervention and the evaluation. If an intervention already exists, it needs to be adapted to the new context, such as a new population or to a new setting. A pilot study helps to assess the *feasibility* by examining key uncertainties that have been identified during the development phase, for example acceptability, compliance, and the delivery of the intervention. In the *evaluation* phase, the intervention is evaluated using the most appropriate methodology, regarding assessing effectiveness, measuring outcomes and understanding processes. The final phase, the *implementation* refers to spreading and evaluation of the intervention, monitoring and control of contextual factors that support or hinder the achievement of impacts, and long-term follow-up.

Each phase has a common set of core elements: considering context, developing and refining the program theory, engaging stakeholders, identifying key uncertainties, refining the intervention and considering economic implications. These core elements should be considered continuously throughout the research process, especially before transitioning between two phases (197, 198).

Ethical considerations

Children <6 years old, who are at risk of health problems, poorer development, and maltreated due to psychosocial risk factors in the home environment are not often recognized until after the health problem(s) are suspected or identified, or after an indication that the child has been maltreated. The risk of health inequalities is significant due to exposure to an unhealthy environment, as these children are significantly more likely to have poorer physical, emotional and social health than their peers who do not grow up with the above-mentioned risk factors. Using an effective program that is universal and evidence-based to identify these children and provide help and support to the families can reduce the risk of ill health in these children.

Asking parents about psychosocial risk factors in the child's home environment may be perceived as sensitive or intrusive. There is no tradition of asking such questions in the CHS, except in connection with screening for depression in mothers in connection with the newborn period, which is carried out routinely throughout Sweden. However, a pilot study before initiation of the BarnSäkert study gave no indication that parents responded negatively to the questions or to the SEEK model. The study employed a coordinator to continuously obtain the CHS nurses' perception of how the parents reacted to the SEEK model to and feed this information back to the project management. The project management was available during office hours throughout the study period to respond to any questions and comments from parents.

When a parent discloses problems, there must be resources available to offer that meet the parent's needs (199). The CHS nurse must have knowledge of the problems themselves and know how to act when problems are discovered. The BarnSäkert study was designed to accommodate this through training efforts for all nurses at SEEK centers as well as clinical supervision carried out by existing maternal and child health psychologists. Social services, addiction clinics and women's shelters, etc. were informed about the study and that the SEEK procedure may entail an increase in referrals for their services.

Since the study asked about factors that could indicate that children are harmed, there was a risk that the CHS staff would have to file a report to the social services in individual cases. The staff at CHS are used to dealing with suspicions that children are in harm's way, and within the project such

situations were to be dealt with according to existing protocols in accordance with the Social Services Act. The information for parents participating in the study contained a description of the reporting obligation and that this may need to be enacted within the scope of the study if suspicions arise that a child was at risk of maltreatment.

Asking about domestic violence can be particularly sensitive. Previous research on asking women questions about their exposure to intimate partner violence shows that the women believe that the questions should be asked to everyone to avoid stigmatization (178). This supports offering all parents to respond to the SEEK parent questionnaire. Furthermore, research shows that sensitivity and building a trusting relationship in connection with asking the question is important, which also emerged in our focus group interviews with parents of young children prior to the study. The WHO emphasizes that the safety of those participating in research on exposure to violence is of the utmost importance (200). Most studies on women's exposure to intimate partner violence are therefore based on the woman being asked in private. However, whether participation in studies about violence would increase the woman's risk of being exposed to further violence when a partner learns of her participation has not been studied. However, there are anecdotal descriptions of such situations from Cambodia and Mexico. The study plan for BarnSäkert included offering both parents to fill in the SEEK parent questionnaire in conjunction with CHC visits. There are several reasons for this, including meeting the needs of both parents for support and help, which may also affect the child. There are few studies on men's vulnerability to domestic violence. During the pilot study, many parents were asked to fill out the form at the same time during the visit. There were no signals from the pilot nurses that this had entailed any risk situation. During the BarnSäkert Study, the nurses were trained about IPV and how to act in case of disclosure by a parent. Preparedness was ensured within health care, the municipalities and non-profit organizations to respond to parents who were exposed to IPV in accordance with the National Board of Health and Welfare's regulations and general advice (201).

The project management, together with the security department at the County Council in Dalarna, ensured that previously established routines regarding threats and violence in the workplace were updated at each SEEK CHC. All participating personnel were also offered training on dealing with threats and violence at work. This interactive training helped staff to organize the workplace to ensure, for example, that escape routes existed and that routines for calling security guards were operational. The training also provided the opportunity to practice dealing with verbally or physically threatening people alone and together with other staff. At healthcare centers where SEEK was used, all staff was informed that the study is ongoing. During the pilot study, no threatening situations had arisen.

Not asking about risk factors in the child's home environment also poses an ethical problem, as important cause of injuries, and poorer health and development outcomes may go unnoticed.

The BarnSäkert-project was approved by the Regional Ethical Review Board in Uppsala (Dnr 2017/009).

Rationale for the thesis

As stated by the National Board of Health and Welfare, the goal of the CHS is to promote child health, prevent ill health among children and detect problems in the child's health or risks in the child's environment and facilitate the provision of appropriate actions. Despite this clear mandate, the CHS currently lacks a systematic approach to identifying common psychosocial risk factors in the child's home environment that increase the risk of poorer health outcomes for the child, including the likelihood of CM.

The Swedish CHS is well positioned to play a valuable role in strengthening protective factors and identifying potential risk factors in the family environment and tailoring services to the needs of the individual child and parents. Based on the national CHS program, CHS nurses meet families often by visits during the child's preschool period. Promotion and prevention are prioritized tasks and there is an expressed commitment to children's health, development and safety. Furthermore, families have a high degree of trust in CHS professionals.

The SEEK-model, developed for pediatric primary care in U.S., provides a method for identifying children who live with severe psychosocial problems (child safety, economic worries, depressive symptoms, parental stress, IPV and alcohol misuse) and to provide relevant support and assistance to the family. Two previous randomized controlled trials in the U.S. showed that health care professionals discussed psychosocial issues more frequently and felt more competent in dealing with such issues compared to control practices. Importantly, parents at SEEK centers reported less use of harsh punishment and physically abusive parenting behaviors, and fewer reports were made to the child protective services (13, 14, 202).

Although the SEEK model has shown promise in the U.S., there have not been any trials of the method in other countries. The present investigation was therefore initiated to evaluate the SEEK model in the Swedish CHS context.

Overall aim and specific aims

Overall aims

The overarching aim of the thesis is to assess the validity, clinical utility and outcomes of the Safe Environment for Every Kid model when applied in the Swedish Child Health Services setting.

Specific aims

Study I
To examine how child health nurses perceive their routine assessment of psychosocial risk factors in the family environment as well as their self-reported competence and the present organizational conditions in this context.

Study II
To examine the experiences of nurses using the SEEK model in contrast to nurses using current standard practice in the Swedish CHS to address psychosocial risk factors in the family environment.

Study III
To evaluate the psychometric properties of the Swedish version of the Parent Screening Questionnaire (PSQ-S) compared to standardized lengthier instruments. Particular focus was placed on evaluation potential differences between mothers and fathers in this regard.

Study IV
To analyze the self-reported presence of child safety issues, economic worries, depressive symptoms, parental stress, IPV and alcohol misuse among parents with children <6 years of age as expressed in the PSQ-S completed at regular child health visits.
Particular focus was placed on evaluation of differences in prevalence of different self-reported problems among parents with respect to gender and age of the child as well as changes over the course of the intervention.

Methods

An overview of the design, participants and analysis methods in the four studies included in this thesis provides in table 1.

Table 1. Overview of study design, participants and analysis methods.

	Design	**Participants**	**Analysis**
Study I: Child Health Nurses' experiences of ad dressing psychosocial risk factors with the families they meet.	A mixed methods design including both focus group interviews and a web-based survey.	CHS nurses working within the CHS in the county of Dalarna participated just before the start of the intervention, 12 participated in focus group interviews and 59 answered the survey.	Systematic text condensation with an inductive approach. Frequencies and exploratory factor analysis.
Study II: Child health nurses' experiences of using the Safe Environment for Every Kid (SEEK) model or current standard practice in the Swedish child health services to address psychosocial risk factors in families with young children–A mixed-methods study	A convergent mixed-methods design including both focus group interviews and a web-based survey.	CHS nurses working within a SEEK-or control center in the county of Dalarna participated. A total of 18 participated in focus group interviews and 50 answered the survey.	Qualitative Content Analysis with an exploratory inductive approach. Descriptive statistics, Mann Whitney U-Test and Pearson's Chi square.
Study III: Validation of the Swedish Version of the Safe Environment for Every Kid (SEEK) Parent Screening Questionnaire	A cross-sectional design with a stratified, self-selected sampling procedure.	Parents (n=611) with children 0-18 months of age enrolled in the CHS in the county of Dalarna.	Descriptive statistics, sensitivity, specificity, positive predictive value, negative predictive value, Pearson's Chi square and t-test.
Study IV: Psychosocial risk factors in families of young children: A trial of the Safe Environment for Every Kid (SEEK) Model in Sweden	A longitudinal design with consecutive, clinical-encounter based sampling.	PSQ-S (n=7483) answered by parents at a SEEK center during the intervention period.	Frequencies, Pearson's Chi-square, Mantel-Haenszel-test for trend.

The BarnSäkert study

The BarnSäkert study is a cluster-randomized controlled trial of the SEEK model in the CHS in the county of Dalarna and is the overarching context in which the studies of this theses have been conducted. The BarnSäkert study uses a longitudinal design, including different dimensions. In order to get an overall insight into the different dimensions, a description of these is given in

this section. Before the intervention started, some adaptations of the SEEK model in the Swedish CHS context were made. The description of these, as well as a presentation of the intervention, will also be presented below.

The BarnSäkert study involves four dimensions (figure 4). 1) *Validation of the SEEK model and analysis of the effect of the intervention* (April 2018 - March 2020). Parents participating in the validation study respond to a set of well-established questionnaires to assess the presence of the same risk factors asked about in the PSQ. Questions about the parent's quality of life, the child's behavior, and the parent's attitudes towards different aspects of child rearing and conflict management are also included in the questionnaires. The questionnaires were answered before the start of the intervention (baseline measurement) and after 12 and 24 months. The study population consisted of children enrolled in the CHS in the county of Dalarna who were 0-18 months old at the time of the baseline survey and their parents. 2) *Assessment of parents' self-reported presence of psychosocial risk factors in young children's environment*. The study population consisted of parents/guardians of children enrolled at a SEEK-CHC in the county of Dalarna who answered the PSQ during the intervention period. 3) *Evaluation of the intervention regarding CHS nurses'* 1) perception of professional competence and confidence, 2) actions taken when risk factors were identified and 3) tendency to continue working with the topics in the longer term. The study population consisted of all CHS nurses working in the CHS in Dalarna just prior to the intervention, during and just after the intervention period. 4) *Health economic analyses of the cost-effectiveness of the SEEK model*. The SEEK model will be compared with common practice regarding effects and costs against outcome measures for children and parents.

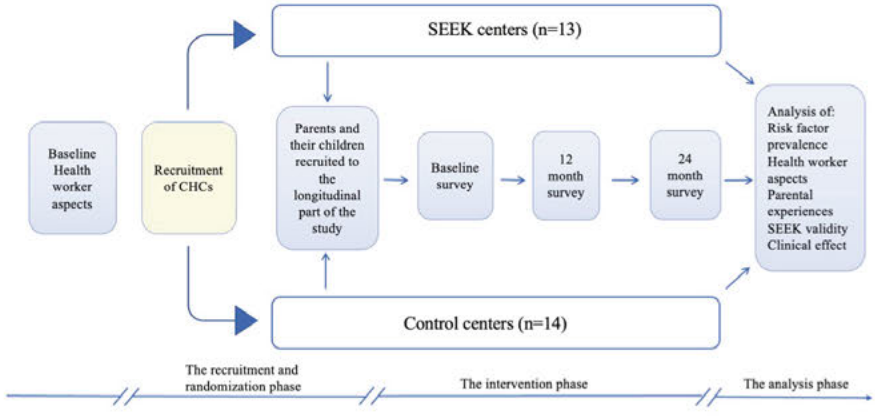

Figure 4. Design of the BarnSäkert-study

Adaption of the SEEK-model for the Swedish child health services

All materials included in the SEEK model was translated from English to Swedish by the project group and by language translation agencies. During the period of 2015-2017, the original SEEK model was adapted to the Swedish CHS context through three consecutive pilot studies. A total of six child health nurses at five different CHC in the county of Dalarna participated, and about 700 PSQ were answered by parents during the pilot studies. Sequential adjustments of the PSQ questions were made as well as adjustments of the practical approaches, based on the experiences of participating child health nurses who piloted the model with families in their CHS practice. The final version of the Swedish version of the PSQ (PSQ-S) contained 17 questions (figure 5) regarding child safety (3 items), financial worries (2 items), depressive symptoms (2 items), parental stress (4 items), IPV (3 items) and misuse/abuse of alcohol (3 items). In addition to Swedish, the PSQ-S was translated into Arabic, Dari, English, Kurmanji, Somali, Tigrinya and Turkish.

To match the SEEK-model to the Swedish national CHS program, the model was offered at regular child health visits when the child was 6-8 weeks, 8-10 months, 18 months, 2.5 years, and 4 years of age. In addition, to aid the CHS nurses in providing assistance to families, a comprehensive database was created to provide contact details and sources of information regarding national, regional and local resources within healthcare, social services and other municipal services and non-governmental organizations, for example women's shelters, parenting support and family counselling. A manual was created to guide the CHS nurses in their daily work with the SEEK model, as well as a guide with flowcharts for each risk factor, including suggestions for phrases to stimulate conversation and address barriers and obstacles and a template for actions in the event of a positive screen on the PSQ-S.

Two reference groups were established early in the process and met regularly before and throughout the intervention. A local reference group in Dalarna County consisted of representatives from relevant services involved in the CHS including two parents of children < 2 years of age and a national reference group consisted of representatives from non-profit organizations working with issues related to vulnerable children. A management team consisted of operations managers from both the primary care in Dalarna as well as the social services to which the intervention progress was continuously reported.

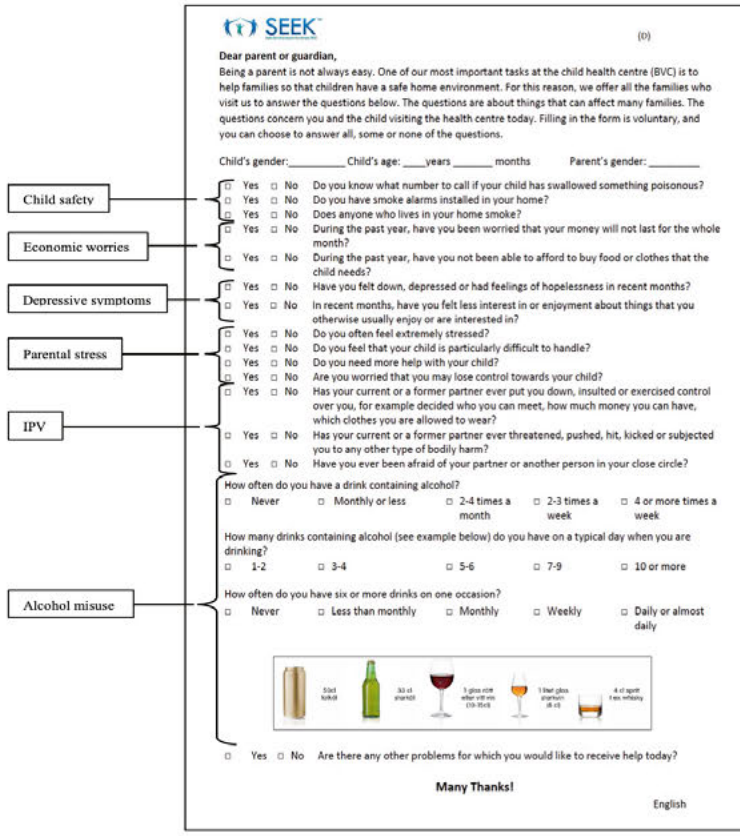

Figure 5. SEEK-PSQ-S Grouped by risk factors.

The intervention and study population for the cluster-randomized trial

All 28 CHCs in the county of Dalarna agreed to participate in the two-year intervention, which took place between 9th of April 2018 and 31th of March 2020. The participating CHCs were matched pairwise with regard to the number of children enrolled and the Care Need Index (203) of each center and randomized to the SEEK or control group by coin toss. In two cases, two small CHCs were matched to one larger CHC before randomization. The five CHCs that had participated in the pilot study were allotted to the SEEK group and matched according to the above-mentioned criteria to CHCs that were allotted to the control group. After randomization, but before the start of the intervention, one CHC discontinued its participation due to staffing difficulties. In total, the SEEK group consisted of 13 CHCs and the control group consisted of 14 CHCs.

Two project coordinators were employed to support the SEEK nurses in their daily work with the SEEK model and to act as a link between the CHS nurses

and the project management during the intervention. The CHS nurses at SEEK-centers were offered regular support, including increasing their knowledge of the targeted risk factors and the opportunity to reflect on practices and experiences together with other CHS nurses using the SEEK model. This was offered regularly, about once per semester throughout the intervention.

The intervention was initiated by providing all CHS nurses working at SEEK centers with a one-day course covering the psychosocial risk factors addressed in the SEEK model as well as hands-on application of the model in CHC practice. During the intervention, the child health nurses at SEEK centers offered all parents/guardians, who brought their child to the CHS to fill in the PSQ-S on an iPad at the five pre-determined regular visits. Information from the PSQ-S was automatically uploaded to a database at Uppsala University using the Research Electronic Data Capture (REDCap) survey system (204, 205). At the visit when the child was 6-8 weeks, the birthing mother was offered the PSQ-S in private. Time was given for parents/guardians to fill in the form at the beginning of the visit in the child health nurse's room to ensure privacy. If more than one parent was present at the visit, each was offered to fill in the form individually (except the visit at 6-8 weeks). During the visit, the CHS nurses discussed the parents' responses to the PSQ-S using key components of Motivational Interviewing (206). The discussion was centered on the parents' thoughts and feelings about their own situation and how they viewed their need for assistance and support, and how the situation affected the child. When necessary, the child health nurses offered advice and referral to existing health care, social services or other resources based on the wishes of the parent(s). Flow charts for each risk factor were provided to all child health nurses, including phrases to respond to possible obstacles for the parent to seek or receive help.

At control CHCs, the child health nurses continued to work according to current practice, providing advice, support and referral to relevant community institutions when needs were identified (15).

Study I

Design

This study used a convergent mixed-methods design (207), whereby quantitative and qualitative approaches were used concurrently in the same phase of the research process to gain simultaneous insights into statistical associations and individual perspectives. Focus group interviews and a web-based survey were empoyed. The qualitative part aimed to examine the child health nurses' experiences. The purpose of the quantitative part was to supplement the qualitative data with information on the scope and distribution of specific results. The qualitative and quantitative parts of the study were conducted in parallel.

Participants

All CHS nurses currently working within the CHS in the county of Dalarna at the time of the data collection period (n=79) were invited to participate. Twelve CHS nurses participated in a total of three focus group interviews. The survey was answered by 64 CHS nurses, giving a response rate of 81%. The survey responses of five CHS nurses were excluded as they had participated in the pilot study and were therefore not considered to be representative of the CHS nurses in general. Thus, responses from 59 CHS nurses were included in this study.

Data collection

An interview guide and a web-based survey were developed specifically to answer the research questions. The interview guide contained three main questions with follow-up questions that could be used to gain further depth and detail if necessary:

1) What is your opinion of asking about psychosocial risk factors in your work at the CHC? Follow-up questions: Positive and negative experiences? Ethical aspects? Thoughts on integrity? Expectations? What effects will it have?
2) How do you perceive your competence in working with psychosocial risk factors within the CHS? Follow-up questions: How do you rate your knowledge? How comfortable do you feel addressing such issues?
3) What conditions would increase the ability to identify and work with psychosocial risk factors in the CHS?

The survey consisted of 44 questions. Question areas included the respondents' background characteristics, the socio-demographic profile of the families they meet and their experiences of working with families who have financial worries, depressive symptoms, parental stress, alcohol misuse or IPV. Questions regarding whether the respondents had sufficient knowledge, competence and confidence to address these problems were asked using a six-point Likert scale from "strongly disagree" to "strongly agree". Questions were also posed about how often the nurses meet these families, how much formal education they had within each risk factor, whether or not they used a standardized method to assess each risk factor and the number of cases of suspected child maltreatment that they had reported to the social services. Finally, a question was asked about whether it is appropriate within the CHS to ask all parents about psychosocial risk factors, with response options ranging from "not at all appropriate" to "very appropriate" on a six-point Likert scale.

Procedure

The CHS nurses received personal invitations by e-mail to participate in focus group interviews and the survey, respectively. The focus group interviews, with four participants in each group, were held in April of 2017. A brief presentation of the study was given at the start of each interview, and the participants provided their demographic information anonymously. Primary data

were collected as audio files from recordings during the interviews. The audio files were transcribed verbatim and no identifying data from the participants were processed.

Qualitative analysis

Data were analyzed using Systematic text condensation according to Malterud (208, 209) with an inductive approach and was a collaborative process between all authors. The transcriptions were read through several times to obtain familiarity with the material. After creating preliminary themes, meaning units were identified and coded into different groups. The code groups were divided into relevant subgroups, with respect to the content and the research questions. Each subgroup was then summarized into a condensate, which reflected the meaning units of that subgroup. Quotes from the interviews were selected to illustrate important aspects of the findings. An analytical text for each code group was created based on its condensates, and a heading was chosen to represent the main results. Finally, the analytical texts and corresponding headings were validated by comparing them to the original transcript and assuring their agreement as well as their relevance to the study questions.

Quantitative analysis

The Statistical Package for Social Sciences, SPSS version 26 (IBM Corp., Armonk, NY, USA, 2019) was used to analyze the quantitative data. Frequencies were calculated for each variable. Exploratory factor analysis indicated that the questions concerning knowledge, competence and confidence were closely related (data not shown). For simplicity of presentation, we therefore created an index using the average of the Likert scores on these three items for each participant.

Final data synthesis

When all qualitative and quantitative data had been analyzed separately, the findings of the two methodologies were compared and synthesized by authors Maria Engström and Steven Lucas.

Study II

Design

This study used a convergent mixed methods design similar to that in study I (figure 6). Focus group interviews and a web-based survey were combined to obtain both breadth and depth regarding the CHS nurses' experiences of working with psychosocial risk factors. This was judged to be an efficient way to obtain different but complimentary data on the subject in focus within a limited time frame. With respect to the qualitative and quantitative data collection, the methodology in this study was the same as for study I.

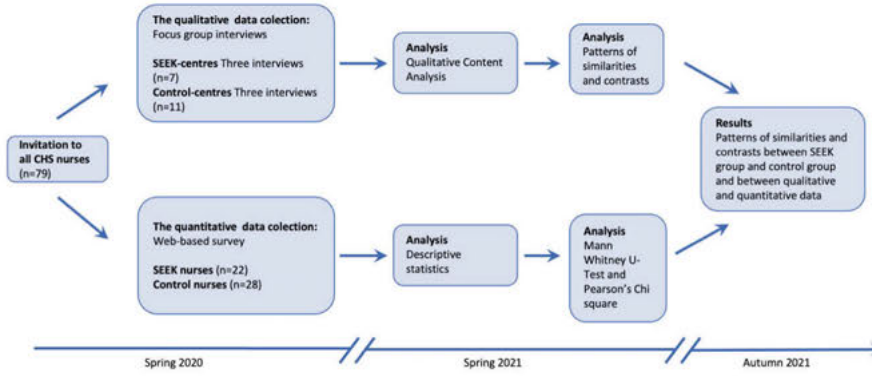

Figure 6. An illustration of the steps involved in the convergent mixed methods design of this study. Adapted from Creswell and Creswell (207).

Participants

A stratified purposeful sampling strategy was used (210). All CHS nurses (n=79) currently working at a CHC included in the trial in the county of Dalarna were offered to participate both in focus group interviews and in a web-based survey. A total of 18 CHS nurses, seven from the SEEK group and eleven from the control group, participated in the focus-group interviews, and survey responses of 50 CHS nurses (22 SEEK, 28 control) were used in the quantitative analyses. No statistically significant differences were found between the groups regarding nursing specialty, years of experience or hours per week within the CHS for either the qualitative or the quantitative parts of the study.

Data collection

The qualitative data were collected through focus-group interviews with the CHS nurses at the SEEK centers and control centers separately, using the same interview guide as in study I. In interviews with the SEEK group one question about the nurses' general impression of working with the SEEK model was added. Comments regarding this question were not included in the present analyses.

A total of six interviews were conducted, three interviews with the SEEK group included one to four participants and the three interviews with the control group included two to five participants. Data for the quantitative analysis were collected via the same web-based survey used in study I.

Data analyses

Qualitative Content Analysis with an exploratory inductive approach according to Graneheim and Lundman (211) was used. The Statistical Package for Social Sciences, SPSS version 27 (IBM Corp., 2020) was used to for all quantitative analyses. Descriptive statistics, Mann Whitney U-Test and Pearson's Chi square were used to investigate differences in responses

between the SEEK and the control group. When all qualitative and quantitative data had been analyzed separately, the findings of the two methodologies were compared and synthesized.

Study III

Design

The study used a cross-sectional design with a stratified, self-selected sampling procedure (212).

Structure of the validation questionnaire

In this study, data were used from the longitudinal part of the BarnSäkert study. Data were collected using a questionnaire comprising 300 questions including the PSQ-S and 13 standardized instruments: five instruments for the psychometric comparisons and eight regarding child and parent wellbeing concerning other parts of the study. The same questionnaire was used at baseline and at 12 and 24 months after implementation of the SEEK model (see figure 4). Demographic information included the respondent's age, educational level, occupation, marital status, country of birth of the respondent and his/her parents, and the number of children living in the household. Questions related to child safety were not included in the present study.

Standardized Instruments

Economic worries: The Swedish National Public Health Survey, a recurring survey of living conditions by the Public Health Agency of Sweden, contains two items measuring the individual's financial vulnerability. The questions have shown a clear association to respondents' socioeconomic status and general state of health (213).

Depressive symptoms: The Hospital Anxiety and Depression Scale (HADS) is not a diagnostic test but is well-documented for assessing the presence and severity of symptoms regarding anxiety disorders and depression and has been applied in health care settings as well as in the general population (214-216). The HADS-consists of seven items each for anxiety and depression measured on a four point (0-3) Likert scale (215). Scores for each item are summed to create total scores for depression and anxiety, respectively. Only the depression score was used in the present analyses.

Parental stress: The Swedish Parenthood Stress Questionnaire (SPSQ) is a 34-item measure of parental stress among parents with young children and was adapted from the Parenting Stress Index (217). Response options range from *strongly disagree* to *strongly agree* on a 5-point Likert scale (1-5) with higher scores indicating higher levels of stress (218). Scores from the five subscales (*Incompetence Role Restriction*, *Social Isolation*, *Spouse Relationship Problems* and *Health Problems*) are combined to create a total *General Parenting Stress* score which was used in the present analyses.

Intimate-partner violence: The Composite Abuse Scale (CAS) is a widely used questionnaire that covers physical, emotional, and sexual abuse in a relationship with a romantic partner and the frequency of such experiences during the last 12 months. The frequency is quantified into never, only once, several times, once per month, once per week and daily. The wording of the 30 items is gender neutral but derives from women´s descriptions of abuse, reports from professionals and court and police reports of IPV. The CAS has not been validated for men (219, 220). Any positive response regarding physical or emotional violence or fear of a current or previous partner was considered as a positive screen.
Alcohol misuse: The Alcohol Use Disorders Identification Test (AUDIT) is commonly used in clinical practice to identify harmful patterns of alcohol consumption and dependence. Its 10 questions cover 3 domains: *hazardous alcohol use* (typical quantity and frequency of drinking and heavy drinking), *dependence symptoms* (impaired control over drinking, increased salience of drinking and morning drinking), and *harmful alcohol use* (guilt after drinking, blackouts, alcohol-related injuries, and others concerned about drinking) (221). The total score from all three domains was used in the present analyses.

Sample

Parents of children 0-18 months of age enrolled in the CHS in Dalarna County were invited to participate. A total of 852 parents of 704 children from both SEEK and control CHCs consented to participate. For 148 families, two parents were enrolled.

Data collection and participants

This study included the data from the baseline survey from parents at both SEEK and control CHCs before initiation of the intervention. The parents were invited to respond to the web-based survey through a link e-mailed to them or by a hard copy of the survey that was sent to them by regular mail. The response rate for the survey was 72% (n=611). The background characteristics of the respondents are presented in table 2.

Table 2. Background characteristics of the respondents

	Mothers	**Fathers**	**Total***
Respondents n (%)	500 (82)	111 (18)	611 (100)
Age in years mean (SD)	32 (5)	35 (6)	32 (5)
Education n (%)	494 (82)	111 (18)	605 (100)
Primary education, 9–10 years	9 (2)	4 (4)	13 (2)
Secondary/high school education, 2–3 years	159 (32)	45 (40)	204 (34)
College level education	326 (66)	62 (56)	388 (64)
Respondents' country of birth n (%)	494 (82)	111 (18)	605 (100)
Sweden	461 (93)	108 (97)	569 (94)
Outside Sweden	33 (7)	3(3)	36 (6)

*n varied slightly between characteristics due to missing data.

Chi-square analyses showed no significant differences between genders with respect to educational level (p=0.10) or country of birth (p=0.12).

Data analysis

Responses from all parents were analysed as a single group regardless of randomization status, given use of baseline data. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were calculated for each targeted problem in the PSQ-S in comparison with the corresponding standard instruments as the reference test. The data in both the PSQ-S and the validated instruments were dichotomized before analysis. The analyses were carried out using SPSS Statistics 28.0 (IBM SPSS Statistics for Macintosh, Version 28.0).

Study IV

Design

This quantitative study used a longitudinal design with consecutive, clinical encounter-based sampling.

Participants and data collection

The study participants were mothers (72%) and fathers (28%) who brought their child to one or more of the five pre-determined, age-related health visits at a SEEK-CHC during the intervention period. The data analyzed were collected from parents' responses to the web-based PSQ-S used during regular child health visits as well as the CHS nurses' information regarding referrals to services that were offered to parents when risk factors were identified.

The parents' responses were available for the nurse to see, but all data transferred to the database were collected anonymously. The CHS nurses provided information regarding the child's age and gender, parent's gender, who was present in the room during the visit and whether an interpreter was used were submitted together with the PSQ-S, even when the PSQ-S for some reason was not completed.

A total of 10,283 PSQ-S were uploaded to the database during the intervention (figure 7). Of these, 2006 PSQ-S (19%) were blank because parents opted out or were not offered to participate. The item nonresponse rate was very low, with responses to all 17 items in 98% of the completed PSQ-S. The 160 PSQ-S with missing item responses were removed from the analyses. The number of fully completed PSQ-S decreased gradually throughout the two-year intervention, from 1326 during the first quarter to 565 during the eighth quarter.

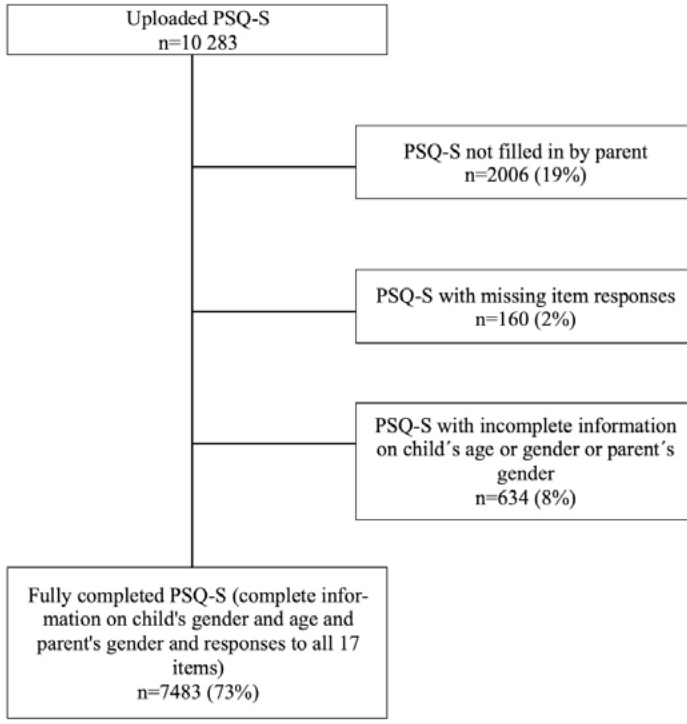

Figure 7. Overview of the PSQ-S uploaded to the database.

PSQ-S lacking information on child gender, child age or parent gender (n=634) were excluded from the analyses. The fully completed PSQ-S included in the analyses thus comprise the 7483 (73%) PSQ-S that had responses to all items and complete information about the child's gender and age and the parent's gender.

A non-response analysis using Chi-square showed no statistically significant differences between fully completed PSQ-S and PSQ-S not filled in regarding the child's age and gender, the parent's gender or if a partner was present in the room during the visit (table 3).

Table 3. Overview and non-response analysis (chi square) regarding child's gender and age (child health visit), parent's gender and whether a partner was present for fully completed and non-completed PQS-S, respectively.

	Fully completed PSQ-S (n=7483)		PSQ-S not filled in by parent (n=2006)		P- value
	n	%	n	%	
Child gender					0.89
Girl	3693	49	962	48	
Boy	3790	51	1043	52	
Missing			1	0	
Child age					0.63
6-8 weeks	1420	19	246	12	
8-10 months	1671	23	390	19	
18 months	1590	21	482	24	
2.5 years	1423	19	443	22	
4 years	1379	18	442	22	
Missing			3	0	
Parent gender					0.91
Women	5361	72	1452	72	
Men	2122	28	538	27	
Missing			16	1	
Partner present at visit	2659	36	708	35	0.84

About 36% of the PSQ-S were uploaded when two parents were present in the room (18% of the visits).

Data analyses

Item responses for each domain were grouped to form a single dichotomous variable for each risk factor. Results are presented as frequencies of each respective risk factor in relation to parent gender, age of the child at visits and time-point during the intervention. Potential differences with regard to parent gender were analyzed for each risk factor using Pearson's Chi-square. Differences between the proportions of positive screens in the different child age categories were analyzed for each risk factor using the z-test when a single age category appeared to be over-represented or with the Mantel-Haenszel test for trend (MH) in all other instances. Risk factor frequencies were calculated for each month of the intervention and transformed into time series, which were then subjected to T4253H smoothing (IBM Corp., Armonk, NY) for graphical presentation. Trends over time for each risk factor were analyzed using the MH. The visit at 6-8 weeks represents an occasion at which most parents have not been exposed to the SEEK model, the exception being parents with older children within the SEEK age range who may have visited the

CHC earlier during the intervention. Therefore, we analyzed the time series data for the 6-8 week visit separately from the other four visits combined.
Data were analyzed using IBM SPSS Statistics for Macintosh v28 (IBM Corp., Armonk, NY). A significance level of $p<0.05$ and two-tailed analyses were applied throughout.

Results

Study I

The qualitative analysis gave rise to five themes with three to five code groups each (table 4). Where relevant, quantitative results are reported at the end of each theme.

Table 4. Overview of themes and code groups

Themes				
The information parents offer depends on how we ask	Building rapport is especially important for discussing sensitive issues	All parts of the organisation must be in place for this to work	It's part of our job but it's not always easy	My work can make a difference for the child
Code group headings				
General questions or specific ones? Following up on unclear situations Screening tools available to us	Establishing contact Open conversation climate Handling sensitive issues with care Identifying strengths	What to do when parents disclose Team expertise is not always available Collaboration with maternal health and the social services	The child health nurse's role has changed Learning by doing Feeling secure is important Priorities when time is short	The child's best interest Early identification On the child's side Going on for generations Guilt about missed cases

The information parents offer depends on how we ask

Many CHS nurses declared that they identify psychosocial risk factors by asking general questions about the family's situation. They experienced that they often could sense if a risk factor was present, and if so they felt obliged to ask about it and they found it important to speak with both parents. Screening tools for depression and alcohol use disorders were mentioned as useful, because they were generally well received by parents and provided an opening to bring up the subject and discuss the answers, and they had the impression that parents answer truthfully if they know that help is available when potential problems emerge. It was viewed as a shortcoming that only screening tools for

depression and sometimes alcohol use disorders were available within the CHS, which could imply that other risk factors were missed.

Survey results showed that 76% of the CHS nurses stated that they use a structured method to assess depression among parents, 2% for financial problems, 22% for extreme parenting stress, 19% for alcohol misuse/abuse and 14% for IPV.

Building rapport is especially important for discussing sensitive issues
Many participants described that they endeavored to promote an open conversational climate and a positive attitude toward the CHS early in their contact with families. They delayed addressing difficult matters until they felt that they had an alliance with the parents, and then felt it was reasonable to ask questions if they did it with respect and explained the purpose. They experienced that parents often, but not always, spontaneously told them about risk factors. When meeting parents with social vulnerability who were insecure in their parenting role, the nurses described how they made an extra effort to point out these parents' strengths in relation to the child, to strengthen their confidence in their parenthood.

All parts of the organisation must be in place for this to work
All participants expressed the importance of knowing what to do if a parent discloses a psychosocial risk factor, and that it was unethical to inquire otherwise. They requested clear guidelines regarding area of responsibility, where the limit for referral is drawn, and where to refer depending on the risk factor identified. The participants' experiences of the availability of team competence was highly variable, and they reasoned that this was related to the size and location of the workplace. Information from the midwife concerning new mothers, including identified psychosocial risk factors, could lead to structured meetings with the CHS. There was a desire for improved cooperation with the social services. This would be facilitated if the social services were a natural part of the team.

It's part of our job, but it's not always easy
The professional assignment had changed over time, from having focused on physical problems in the child, the CHS nurses expressed that their job had become more extensive and involved closer cooperation with the parents. Most participants expressed that psychosocial risk factors had been addressed briefly or not at all in their basic education, but that through working in the CHS they had received education on the screening tools used. They experienced that education contributed to ease in formulating questions and confidence in addressing sensitive subjects. Many sought information on their own, and a large part of their knowledge was derived from personal experience. There was great variation in how comfortable the participants felt in working with psychosocial risk factors. Having a clear action plan for how to respond to a particular risk factor they had identified contributed to the feeling of confidence. An uncertainty regarding documentation and a fear of conflicts and

misunderstandings were expressed, they described an impression that they themselves and their colleagues consequently do not document everything they have knowledge of. Some of the participants recounted that they avoided asking about psychosocial risk factors if they were short of time. It was not the conversation with the parents that was considered time consuming, but the administrative tasks afterwards of making phone calls to find the right agency to provide the help the parents need.

Survey results: showed that most (88%) of the CHS nurses reported that they had more than 10 hours of formal education regarding depression. This was true for 9% regarding financial problems, 46% for extreme parenting stress, 42% for alcohol misuse/abuse, and 29% for IPV.

Marked differences were also found regarding how the CHS nurses perceived their knowledge, competence and confidence regarding the different risk factors. The nurses' self-assessment about the extent to which they had sufficient knowledge, competence and confidence to address psychosocial risk factors was moderately high to deal with depression and extreme parenting stress and low to address financial problems, alcohol misuse/abuse and IPV (table 5).

Table 5. Index of how strongly the nurses agreed that they had sufficient knowledge, competence and confidence regarding psychosocial risk factors (n = 59).

Score*	1	2	3	4	5	6
	%	%	%	%	%	%
Financial problems	15	27	25	22	9	2
Depression	3	7	25	27	25	12
Extreme parenting stress	3	14	24	34	20	5
Alcohol misuse/abuse	17	32	20	19	12	0
IPV	19	31	27	15	8	0

*Averages of scores for responses regarding knowledge, competence and confidence combined. Ratings were given on a six-point Likert scale, where 1 = strongly disagree, 6 = strongly agree.

My work can make a difference for the child

The participants experienced that awareness of children's rights had increased, and the wellbeing of the child should always take priority. They thought it was important to be knowledgeable about how children are affected by growing up under difficult circumstances, and to maintain the child's perspective in complex family situations or when parents had greater needs due to social vulnerability. In all interviews, the importance of early identification of psychosocial risk factors was brought up as being very important as a way to prevent or correct problems before they had grown in severity, to minimise any negative consequences for the child. They see themselves as representatives of the child and considered it to be their task to identify parents with psychosocial risk factors and to some extent provide counselling, but not to

provide treatment of the parents' issues, and the necessity of filing a report to the social services for more serious psychosocial risk factors. Some participants with many years of experience shared the impression that psychosocial problems are passed down through generations and many had experiences of hearing afterwards that a serious psychosocial risk factor had been present in a family, but that they had not discovered it at the time. They described how they questioned themselves in such cases.

***Survey results**:* Most CHS nurses reported that it is very suitable to ask about all the psychosocial risk factors inquired about except financial problems. However, a small percentage responded that it was not suitable to address these issues within the CHS. On a six-point Likert scale, where one = not at all suitable, six = very suitable, 66 percent scored four or higher for financial problems, 95 percent for depression, 90 percent for extreme parenting stress, 96 percent for alcohol misuse/abuse and 89 percent for IPV.

A majority of the CHS nurses estimated that they seldom meet families with hazardous alcohol use or IPV, while they more often encountered the other psychosocial risk factors (table 6).

Table 6. Child health nurses' responses in percent to the question "How often do you encounter families with the following risk factors in your practice?" (n=59).

	Daily	Weekly	Monthly	Quarterly	More rarely
	%	%	%	%	%
Financial problems	3	24	32	14	27
Depression symptoms	3	22	46	22	7
Extreme parenting stress	12	37	34	10	7
Alcohol misuse/abuse	0	3	7	34	56
IPV	0	2	3	19	76

Study II

Qualitative results

An overview of the overarching theme, categories and sub-categories is presented in table 7. The analytical texts are presented under separate headings for content identified in both the SEEK and control groups, only in the SEEK group or only in the control group.

Table 7. Overview of theme, categories and sub-categories.

Overall theme: Universal application of a structured method adds value to experience-based knowledge when addressing psychosocial risk factors			
Categories			
Framing the prerequisites for successful practice	Managing the mission of the Child Health Services	Meeting the family as a professional	Working with psychosocial risk factors can be emotional
Sub-categories			
Adequate time and the right priorities	The CHS nurse's task is a complex one	Addressing risk factors connected to parenting	Feeling different emotions when asking
Creating a trusting relationship facilitates talking about sensitive issues	Identifying risks in the best interest of the child	What parents tell us depends on how we ask	Dealing with difficult emotions when children might be at risk
Sharing and guidance are essential		Acting to help the family	Having the knowledge to ask
Cooperating with other professionals promotes effective care			

Framing the prerequisites for successful practice

Both the SEEK and the control group expressed the importance of having enough time to work with psychosocial risk factors, partly to fulfill the aims of the CHS program, but also to convey to the parent that there was time to listen and provide help when parents talked about their situation.-Both groups emphasized the importance of creating a trusting relationship with the family and that trust made it easier to talk about sensitive topics. Another important aspect was to focus on each parent individually especially when they talked about wellbeing, health, stress and violence.

A well-functioning cooperation with other professionals, such as the social services or maternal health services, was an important aspect. Although many parents were in need of referral to a psychologist, access to such services was very uneven. When the queue was too long or no psychologist was available, the nurse tried to find alternative solutions, which took a lot of time.

The SEEK group stressed that efficient cooperation with other professionals, both within and outside their organization increased their ability to identify psychosocial risk factors, and these professionals were also important

partners to refer to and provide support for the families once risk factors were identified.

The control group commented that the CHS assignment demanded more time than was available and they expressed concern that they would have to prioritize and possibly sacrifice other important tasks if they were to begin identifying psychosocial risk factors. Gut feelings and continuity were also expressed as important prerequisites. There was a concern that questions about sensitive issues might deter parents from coming to the CHS.

Managing the mission of the Child Health Service

Both the SEEK and the control group stated that the CHS nurse's task is complex, multifaceted and had changed over time, from focusing on the individual child's physical health and development to a more family-oriented perspective that included conversations about various living conditions. In all interviews, the CHS nurses emphasized that paying attention to and identifying psychosocial risk factors in the best interest of the child was an obvious part of their work.

The SEEK group commented that a large part of their work in the CHS was dedicated to asking questions about psychosocial risk factors.

The control group was uncertain about what responsibility the CHS nurse had with regard to psychosocial risk factors, and this was perceived as a source of stress. They described a lack of training about risk factors such as economic vulnerability and abuse of alcohol, while education about stress and depression was included in both specialist training and continuing education in the CHS system. If abuse was suspected, it was important to act, even if it affected the nurse's relationship with the parent.

Meeting the family as a professional

CHS nurses in both *the SEEK and the control group* felt that, in general, parents were positive about discussing their health, living conditions and difficulties. They understood that questions related to psychosocial risk factors were asked for the sake of the child. But it was sometimes difficult to discuss questions about parents' own health and life situation with parents from other cultural backgrounds, especially through an interpreter.

It was important to act when risk factors are identified, and that a responsive and affirmative approach reassured the parent. Identified risk factors were usually followed up during ongoing visits or at follow-up visits. Routines including conversational support and suggestions for referral in the event of depression were used regularly.

The SEEK group expressed that asking targeted questions allowed risk factors to be identified. All CHS nurses in the SEEK group had experience of parents told them about their financial vulnerability, depression, extreme stress, risk /

abuse of alcohol and IPV, and the problems were common, especially financial vulnerability, depression and extreme stress. They considered that direct questions about psychosocial risk factors gave better answers compared to when parents spoke spontaneously. Even if no risk factors were disclosed, asking questions and showing openness opened doors for the parent to return later. They suggested that questions may have started a process within the parent.

Problems were identified at an earlier stage and support and help could be offered quickly. Most often the CHS nurses commented that the problems were not acute or of a serious degree, but severe and complex situations were sometimes identified. They often had conversations about family finances that were negatively affected during parental leave, and the distribution of joint expenses caused stress and irritation between the parents. When discussing exposure to violence, the parents most often talked about experiences in a previous relationship, but also occasionally about ongoing abuse. When a parent who needed help was identified, there were routines that clarified where the parent could be referred for each type of risk factor. The CHS nurse acted as a link between the parent and the various resources available. In addition, families were referred to the municipality's budget and debt counseling, outpatient psychiatry and family therapists in the social services.

The control group The CHS nurses explained that they suspected psychosocial risk factors based on the family's context, for example single parents with a weak personal network or families with a low material standard of living. By asking questions about everyday life and employment they create an understanding of the parent's situation. They experienced that it was easier to identify a problem when they knew the family and could explore over time. Conversations about psychosocial risk factors usually took place when indicated, and nurses commented that they did not always ask follow-up questions when risk factors were noted. The CHS nurses mentioned that they talked with parents about their mood in general and rarely about specific risk factors, other than what is included in the national CHS program. They lacked written routines for what measures to take when financial worries or alcohol abuse arose. Instead, it was the CHS nurse's experience and professional network that determined what support and help the parent was offered. When IPV was identified, there were clear routines.

Working with psychosocial risk factors can be emotional

In *both the SEEK and the control group*, alcohol misuse/abuse was perceived as the most difficult risk factor to ask and talk about with the parent. They felt uncertain and wanted more education on the subject. They suspected that some parents were hiding their abuse, and some parents became upset and felt accused when questions about alcohol were raised.

They reflected on whether they had acted correctly when they were worried about a child. They expressed ethical dilemmas about whether they should act by themselves or refer to other authorities or professions, such as the social services or a psychologist. They debated about whether to report to the social services or not. It was easy to report when concrete signs of neglect were present, but it was more difficult when they just had a slight feeling of vulnerability without clear signs of maltreatment. The child health nurses expressed that they felt discomfort when parents got upset but even more so if they had failed to recognize situations where children were maltreated.

Among *the SEEK group*, the CHS nurses expressed that gaining confidence about discussing psychosocial risk factors had been a process. Initially there was concern about how the parents would react to the questions. Some nurses found that it had become easier to talk with parents about their alcohol habits based on the score from the PSQ-S. It was stressful when risk factors were identified in several families over a short period of time. They expressed that by using the SEEK-model, they knew that identifying risk factors was easier, but they still had to deal with emotions related to possible CM. They had increased their knowledge and competence of how to discuss psychosocial risk factors and experienced a greater command of what resources were available in society to help families with psychosocial risk factors. The conversations had been enriched and they perceived them to be more meaningful and significant. The sense was that they really were helping the family. Some mentioned that their confidence in asking questions and talking about risk factors may have indirectly influenced parents to be more honest about the family's situation.

CHS nurses in *the control group* expressed that they were unsure of how to respectfully ask about IPV, financial issues and alcohol abuse. Although they all had experiences of parents who had disclosed risk factors, there was uncertainty regarding where the line for "good enough" goes. They thought that IPV was seldom recognized. They expressed that standardized methods for asking all parents would make it easier to talk about psychosocial risk factors, and that no parent would then feel left out.

Quantitative result

In both SEEK and control group (n=50), the CHS nurses reported that it is very suitable to ask about the various risk factors within the CHS. Ratings were given on a six-point Likert scale, where 1 = not at all suitable, 6 = very suitable (median SEEK/control. The median in both groups was 6 for all risk factors, and no significant differences (Independent-Samples Mann-Whitney U-test) were found between the SEEK and control groups.
When the CHS nurses scored how often they encountered families with the psychosocial risk factors enquired about in the SEEK model, there were significant differences between SEEK and the control group with respect to

depression and IPV, both of which were encountered more frequently in the SEEK group (table 8).

Table 8. Comparison between SEEK and control group concerning their scores* of how often they encountered families with psychosocial risk factors in their practice. Independent-Samples Mann-Whitney U-test (n=50).

	Median SEEK/ control	Mann-Whitney U-test	Z	P
Financial problems	3/2	224.0	-1.7	0.085
Depression	3.5/3	137.5	-3.8	0.000
Extreme parenting stress	4/3	235.0	-1.6	0.120
Alcohol misuse/abuse	2/1	261.0	-.8	0.425
IPV	2/1	184.5	-2.6	0.009

* Ratings were given on a five-point Likert scale, where 5=daily, 4=every week, 3=every month, 2=every quarter, 1=less often

There were significant differences between the SEEK and control groups regarding the respondents' self-assessment of the extent to which they had sufficient knowledge, competence and sense of security to address most psychosocial risk factors. No significant differences between groups were seen for knowledge, competence or sense of security regarding depression, and responses regarding sense of security were not significantly different for extreme parenting stress (table 9).

Table 9. Comparison between SEEK and control group regarding how strongly the nurses agreed that they had sufficient knowledge, competence and sense of security regarding psychosocial risk factors. Independent-Samples Mann-Whitney U-test (n=50).

	Knowledge				Competence				Sense of security			
	Median SEEK/ control	Mann Whitney U-test	Z	P	Median SEEK/ control	Mann Whitney U-test	Z	P	Median SEEK/ control	Mann Whitney U-test	Z	P
Financial problems	4/3	144.5	-3.3	.001	4/3	167.0	-2.7	.007	4/3	179.0	-2.6	.010
Depression	5/4	244.5	-1.3	.193	5/5	256.5	-.8	.431	5/5	250.0	-1.2	.237
Extreme parenting stress	5/4	176.5	-2.7	.007	4.5/3	176.5	-2.7	.008	5/4	216.0	-1.9	.061
Alcohol misuse/abuse	3.5/3	152.0	-3.1	.002	3/2	143.5	-3.1	.002	3/2	180.5	-2.6	.010
IPV	4/3	149.0	-3.2	.001	3/3	150.0	-3.0	.003	3.5/2	144.0	-3.3	.001

Synthesis of results

Areas in which the qualitative and quantitative results converged or diverged to give a more nuanced picture are given in table 10.

Table 10. Summaries of qualitative and quantitative results and whether the findings were convergent or divergent.

Subcategory	Qualitative findings	Quantitative findings	Convergent/ divergent
Identifying risk in the best interests of the child	Both SEEK and control nurses expressed that identifying risk factors was an important part of their work	Both groups reported high levels of suitability regarding asking about risk factors in the CHS	Convergent
What parents tell us depends on how we ask	SEEK nurses commented that they more often identified risk factors when using a structured method	Differences were seen between SEEK and control group only regarding how often they met families with depression or IPV	Divergent
Having the knowledge to ask	SEEK nurses felt more knowledgeable and competent	SEEK nurses rate higher on knowledge, competence and security	Convergent

Study III

The descriptive statistics from the PSQ-S and each standard instrument are presented in table 11. On the PSQ-S, about two thirds of parents reported at least one psychosocial problem compared to about half on any of the standard instruments. For all risk factors except IPV, the percentage of parents with a positive screen was higher in the PSQ-S compared to the corresponding standardized instrument.

Table 11. Positivity on the PSQ-S and the standardized instrument by gender

	Mothers (n=500)		Fathers (n=111)		Total (n=611)	
	%	n (total)	%	n (total)	%	n (total)
PSQ-S						
Economic worries	28	139 (494)	19	21 (109)	27	160 (603)
Depressive symptoms	43	212 (494)	41	45 (109)	43	257 (603)
Parental stress	31	147 (480)	23	24 (106)	29	171 (586)
IPV	21	102 (486)	13	14 (108)	20	116 (594)
Alcohol misuse	11	54 (493)	13	14 (109)	11	68 (602)
Any positive screen on the PSQ-S	69	337 (487)	64	68 (107)	68	405 (594)
Standardized instrument for each risk factor						
Economic worries	16	77 (492)	14	15 (111)	15	92 (603)
Depressive symptoms	15	68 (464)	12	12 (104)	14	80 (568)
Parental stress	11	47 (413)	8	8 (90)	11	54 (503)
IPV	29	133 (454)	33	34 (104)	30	167(558)
Alcohol misuse	2	11 (464)	9	9 (104)	4	20 (568)
Any problem found on standard instruments	51	222 (434)	52	51 (98)	51	273 (532)

The psychometric analyses are presented in table 12. For mothers and fathers combined, the sensitivity for each risk factor was between 70% and 100%,

with the exception of IPV, where it was 47%. Specificity was highest for IPV and lowest for depressive symptoms. NPVs were high and PPVs were low to moderate for all risk factors. For economic worries, depressive symptoms and IPV, sensitivity was higher for mothers compared to fathers. This difference was particularly evident for IPV, where only 27 percent of fathers with this problem on the CAS were detected by the PSQ-S compared to 52 percent of mothers. Specificity and NPV values were similar between mothers and fathers for all risk factors.

Table 12. Sensitivity, specificity, positive (PPV) and negative (NPV) predictive values for PSQ-S risk factors in relation to the standard instruments.

	Sensitivity (%)	**Specificity (%)**	**PPV (%)**	**NPV (%)**
Economic worries				
Mothers (n=486)	83	82	46	96
Fathers (n=109)	64	87	43	94
Total (n=595)	80	83	45	96
Depressive symptoms				
Mothers (n=464)	93	65	31	98
Fathers (n=104)	67	61	18	93
Total (n=568)	89	64	29	97
Parental stress				
Mothers (n=401)	79	76	30	96
Fathers (n=87)	71	79	23	97
Total (n=488)	78	76	29	97
IPV				
Mothers (n=447)	52	91	70	83
Fathers (n=103)	27	93	64	72
Total (n=550)	47	91	69	81
Alcohol misuse				
Mothers (n=464)	73	90	15	99
Fathers (n=104)	67	93	46	97
Total (n=568)	70	91	22	99
PSQ-S as a whole				
Mothers (n=427)	94	51	66	88
Fathers (n=95)	90	56	69	83
Total (n=522)	93	52	67	87

Study IV

More than half of the PSQ-S had at least one positive screen, with a higher proportion for mothers compared to fathers (p=0.02) (table 13).

Table 13. The rates of PSQ-S with varying numbers of positive screens among mothers and fathers

	Mothers %	Fathers %	Total %
	(n=5361)	(n=2122)	(n=7483)
Number of risk factors			
0	47	50	48
1	27	27	27
2	15	13	14
3	7	6	7
4	3	2	3
5	1	1	1
6	0.1	0.1	0.1

Averaged frequencies of positive screens from the entire intervention period are provided in table 14. Data are presented for each risk factor with respect to the five age-specific visits as well as parent gender.

Positive screens regarding child safety were found for one in seven PSQ-S. Frequencies were highest at the 6-8 week visit and incrementally lower in the older age categories (MH, p<0.001). No gender difference was seen regarding child safety (chi-square, p=0.182). Economic worries were also reported in one seventh of the PSQ-S, most commonly when the child was 8-10 months of age (z-test, p<0.05), and were equally common among mothers and fathers (chi-square, p=0.51). Nearly one third of the PSQ-S showed a positive screen for depressive symptoms. Among mothers, reports of depressive symptoms were most common at the 6–8-week visit (z-test, p<0.05), while no difference was seen among fathers with respect to child age (z-test, p>=0.05). No significant difference was seen between genders regarding the presence of depressive symptoms (chi-square, p=0.108). Almost one in five PSQ-S showed a positive screen for extreme stress. Among mothers, the percentage of positive screens was lowest for the 6-8 week visit and highest at the 4-year visit (MH, p<0.001). No such age-related differences were seen for fathers (MH, p=0.971). Extreme stress was more common among mothers compared to fathers (chi-square, p<0.001). Alcohol misuse was the least common risk factor and was reported in just under 5 percent of the PSQ-S. Among mothers, the percentage reporting alcohol misuse was significantly lower at visits during the child's first year of life compared to the visits when the child was 18 months or older (z-test, p<0.05). No age-related differences were seen for fathers (z-test, p>=0.05). Overall, positive screens for alcohol misuse were more common among fathers compared to mothers (chi-square, p=0.001). About one in ten parents reported experiences of IPV. No differences were seen with regard to IPV at different ages of the child for mothers (MH, p=0.844) or

fathers (MH, p=0.633). Positive screens for IPV were twice as common among mothers compared to fathers (chi-square, p<0.001).

Table 14. The proportion of positive screens on the PSQ-S by risk factor, parent gender and child age at the five predetermined visits

	Child safety %	Economic worries %	Depres-sive symptoms %	Parental stress %	Alcohol misuse %	IPV %	Any positive screen %
6–8 weeks							
Mothers (n=1228)	20	15	35	13	1	12	57
Fathers (n=192)	22	16	30	16	5	10	55
Total (n=1420)	20	15	35	14	2	12	56
8–10 months							
Mothers (n=1213)	17	19	31	18	3	11	53
Fathers (n=458)	16	21	28	13	7	6	52
Total (n=1671)	16	20	30	17	4	10	53
18 months							
Mothers (n=1021)	17	17	27	19	5	10	52
Fathers (n=569)	14	16	29	17	5	5	51
Total (n=1590)	16	17	28	18	5	8	51
2.5 years							
Mothers (n=961)	15	14	27	21	5	10	51
Fathers (n=464)	15	13	27	13	5	6	46
Total (n=1423)	15	14	27	19	5	9	49
4 years							
Mothers (n=938)	15	13	32	23	6	13	54
Fathers (n=441)	14	16	30	15	6	8	50
Total (n=1379)	15	14	32	22	6	11	53
Total							
Mothers (n=5361)	17	16	31	19	4	11	53
Fathers (n=2122)	15	16	29	15	6	6	50
Total (n=7483)	16	16	30	18	4	10	52

Services offered

Services were offered to the parent in all cases of a positive screen and in which the CHS nurses' assessment indicated a current problem (table 15). In some cases, the parents already had assistance and often parents declined help.

Table 15. Rates of PSQ-S with a positive screen for which services were offered.

	Child safety (n=1215)		Economic worries (n=1202)		Depressive symptoms (n=2270)		Parental stress (n=1324)		Alcohol misuse (n=316)		IPV (n=739)	
Service offered	n	%	n	%	n	%	n	%	n	%	n	%
Follow-up with the CHS	318	26	105	9	634	28	375	28	80	25	82	11
Printed information material	384	32	102	8	53	2	49	4	56	18	18	2
Report of concern to social services	2	0.2	5	0.4	1	0.04	2	0.2	0	0	8	1
Parenting support and family counselling	0	0	39	3	61	3	37	3	1	0.3	13	2
Tobacco cessation consultant	21	2	-	-	-	-	-	-	-	-	-	-
Psychologist/counseling support	7	1	0	0	212	9	118	9	2	0.6	27	4
Women's shelter	-	-	-	-	-	-	-	-	-	-	5	1
General practitioner/psychiatrist	-	-	-	-	23	1	9	1	1	0.3	3	0.4
Other, e.g. immigration agency	11	1	42	4	32	1	29	2	2	0.6	3	0.4
Total services offered*	743	58	293	27	984	35	619	42	142	43	159	18
Parent already had assistance	31	3	143	12	587	26	286	22	6	2	125	17
Parent declined assistance	192	16	239	20	500	22	277	21	47	15	104	14
Nurse assessed no current problem	277	23	538	45	394	17	199	15	127	40	378	51

*Proportions adjusted because more than one service was offered to the same parent.

Trends over time

PSQ-S collected at the 6-8-week visits did not show significant changes in the frequency of any of the self-reported psychosocial risk factors over the two-year study period (table 16). PSQ-S collected at other than the 6–8-week visit showed significant decreasing trends for all risk factors except alcohol misuse over the course of the intervention.

Table 16. Chi-square analyses for trends in the proportion of positive screens for each risk factor over the course of the two-year intervention.

	Chi-square*	p
6-8 week visit		
Child safety	1.78	0.182
Economic worries	0.083	0.773
Depressive symptoms	1.68	0.196
Parental stress	1.68	0.194
IPV	2.19	0.139
Alcohol misuse	0.395	0.530
All other visits		
Child safety	19.26	<0.001
Economic worries	55.93	<0.001
Depressive symptoms	41.15	<0.001
Parental stress	33.22	<0.001
IPV	8.81	0.003
Alcohol misuse	1.02	0.313

*Mantel-Haenszel test for trend

There was an overall 40% decrease in the self-reported presence of at least one psychosocial risk factor, from 65% in the first month of the two-year intervention period to 39% in the final month. Positive screens decreased by 41% for child safety problems, 52% for economic worries, 52% for depressive symptoms, 66% for parental stress and 73% for IPV (figure 8).

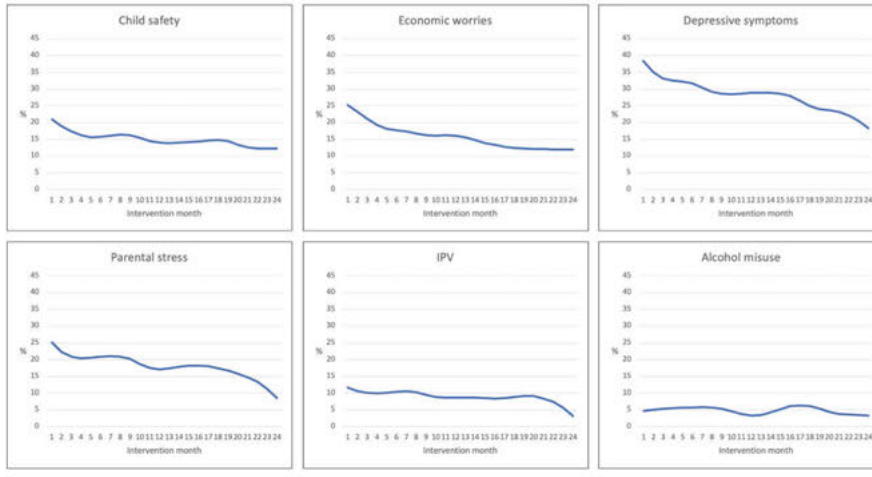

Figure 8. Time series graphs depicting the T4253H-smoothed percentage of PSQ-S with a positive screen for each respective risk factor over the course of the 24-month intervention. Based on 6063 PSQ-S submitted at visits between 8 months and 4 years of age.

Discussion

This thesis summarizes the results from the first evaluation of the SEEK model in a Swedish CHS context. The following sections will discuss the results of each study in comparison with previous findings as well as the theoretical underpinnings of the thesis. Finally, the findings will be discussed in the context of implementation science.

CHS nurses' experiences of working with psychosocial risk factors and the SEEK model

The CHS nurses find it both important and suitable to ask about whether psychosocial risk factors exist in the child's environment and to act in the child's best interest. In study I, the results indicated a gap between the attitudes and the CHS nurses' ability to do so with the current level of training and methodological support. A number of shortcomings were pointed out with regard to a lack of structured methodology, education and training that were corroborated by the survey data. The survey data also indicated that the CHS nurses perceived that they seldom came into contact with families with financial vulnerability, alcohol misuse/abuse use or IPV.

There was a great deal of agreement between the CHS nurses' comments at baseline and in the control group in study II. In both studies, the CHS nurses expressed that their task is a complex one, and the family perspective has become more central compared to previously. This is in agreement with a study of CHS nurses' use of web-based guidelines to support them in carrying out their daily work (222), as well as in line with Hjern et al (2013) overview of how the CHS has been transformed over time (24). Furthermore, the importance of paying attention to psychosocial risk factors in the child's environment for the best interests of the child was emphasized as a central task for the CHS in both the qualitative and quantitative results. This is in line with the recommendations for the CHS set out by the Swedish Board of Health and Welfare (29) as well as the UNCRC (20). The CHS nurses' experience was that parents' acceptance and understanding of addressing risk factors was good, but that having such discussions at CHS visits required a respectful relationship and good knowledge of the family, as has been shown in previous research regarding the prerequisites for discussing potentially sensitive issues in the health care setting (223). Organizational conditions within the CHS such as education, routines and team competence were also stated as key aspects.

The results in study II indicated that CHS nurses in both the SEEK and the control group had acquired skills and competencies to address psychosocial problems through practical experience over a long period of time. However, differences were observed between the SEEK and the control group with respect to how they assessed psychosocial risk factors and how they acted when a risk factor was identified. The CHS nurses in the control group applied a more generalized approach to the parents' situation, while CHS nurses in the SEEK group applied a more individualized approach. The CHS nurses in the SEEK group stated that parents readily talked about their vulnerability and that the problems are very common. They felt confident about asking and discussing sensitive issues with parents and, if necessary, referring the family for help and support. The SEEK nurses felt that their conversations with the parents were of better quality than before, problems were identified faster, and the family received help at a much earlier stage. Similar results have emerged in other evaluations of the SEEK model in the US (181, 202).

CHS nurses in the control group expressed uncertainty due to a lack of routines and organizational support. Most often, they asked general questions about the family's psychosocial situation. They commented that routines and resources regarding care and referral were lacking for several risk factors. Instead, the help parents were offered depended on the individual CHS nurse's competence and local organizational conditions.

Psychometric properties of the PSQ-S

Several models have been developed to address social determinants of health within pediatric primary care, including identifying risk factors through screening, integrating behavior change strategies and referring families to other professionals and/or community agencies for assistance (224, 225). However, a literature review showed that only a few had reported assessment of validity and/or reliability (224). Validation of the PSQ-S in study III was the first analysis of the Swedish version of the SEEK-PSQ and its psychometric properties.

Over two thirds of the answering parents (n=611) had a positive screen for at least one risk factor in the PSQ-S. Although this proportion seems strikingly high, other studies focusing on specific psychosocial issues among parents have shown comparable results (103, 122, 131, 154).

As a whole, the PSQ-S showed good sensitivity and NPVs. High sensitivity indicates that few parents who have problems are missed and high NPV suggests that most parents with a negative screen on the PSQ-S do not have the problem. Both of these aspects are important when assessing the psychosocial environment in families with young children. Specificity and PPVs however were low to moderate for the PSQ-S as a whole, indicating a relatively large

number of false positives. This may be acceptable in the context of the SEEK model, as a positive screen should quickly be followed by a brief assessment clarifying the parent's situation and should not entail a burden to healthcare workers, unwarranted referrals, or parental concern.

Although sensitivity and NPV were high in total for economic worries, differences were seen between genders particularly regarding sensitivity. Research regarding screening instruments for financial problems is very limited. Previous research has indicated that screening instruments for depression often are more effective at identifying this problem in women than men (226). This is in accordance with findings on the PQS-S. We could not find previous studies regarding screening instruments for parental stress that provided the psychometric properties presented here, therefore comparisons cannot be made. The high NPV for parental stress indicates that most parents with a negative screen on the PSQ-S do not have a high score on the SPSQ. The reasons for gender differences in self-reports for risk factor are likely complex, possibly involving differences in how women and men identify, and label emotionally or culturally charged experiences (226-228).

IPV stands out as the domain with the lowest sensitivity for both mothers and fathers. In general, sensitivity has been found to be low for survey instruments about IPV with considerable variation between methods (229). This may in part be due to the potentially sensitive nature of the issue, where feelings of shame, guilt or fear may make it difficult to answer truthfully (230). Questionnaires using several detailed questions about specific acts of violence have been shown to capture experiences of violence more effectively than singular or more general questions (231). As the PSQ-S uses only three items to assess IVP exposure, it might therefore be expected to show low sensitivity compared to the CAS. The difference in sensitivity between genders indicates that fathers who experienced IPV were not readily identified using the PSQ-S. Little is known about screening for IPV among men, and more research is needed in this regard (232).

An important component of the SEEK model is that parents answer the PSQ-S several times during the child's first five years of life, which offers many opportunities to reflect upon and respond to the questions. Seeds may be planted that the CHS nurse cares about them and also about this problem. Thus, parents may later disclose IPV as well as other problems, when they may be ready to address their situation. For this reason, missing the earlier identification may not be so consequential. Another consideration is that without systematic screening, many instances of IPV are likely missed. Given the importance of this problem, the modest sensitivity may be acceptable albeit suboptimal. Further research is needed to identify questions with greater sensitivity.

The sensitivity regarding alcohol misuse was lower than expected, given that the AUDIT-C, which is included in the PSQ-S, has previously been shown to be valid in primary care screening compared to the full version of AUDIT (233). The cutoff level (4 points for women and 5 for men) applied in study III was higher compared to the original cutoff (3 points for women and 4 points for men) used in previous validation studies from the United States. The higher cutoff has been shown to have optimal psychometric properties and is commonly used in clinical practice in several countries, including Sweden, to identify significant alcohol misuse and to avoid overidentification (234). Had we used the lower cutoff, sensitivity would have risen to over 90 percent while specificity would have fallen to 70 percent. The CHS nurses felt that the discussions with parents regarding alcohol consumption were the most challenging among the PSQ-S domains, which could evoke pushback from parents. This suggests that costs in terms of time to discuss many false positives and possible parental irritation should be weighed against potential health benefits for a small number of parents with scores near the lower threshold for alcohol misuse.

Parents' self-reported risk factors in the CHS setting

The results from study IV showed that parents of young children frequently report important psychosocial risk factors in their encounters with CHS nurses using the SEEK model. Over half of the PSQ-S had at least one positive screen, and about 11% of the PSQ-S were positive for three or more problems, which indicates a high level of vulnerability among many families with young children.

The problems were common throughout infancy and early childhood, and among both mothers and fathers. Although no gender differences were seen regarding child safety, economic worries or depressive symptoms, mothers were more likely to report parental stress and IPV than fathers. In contrast, more fathers reported alcohol misuse, especially during the child's first year of life. The visit at 6-8 weeks showed the highest proportion of PSQ-S with a positive screen (57%) - mostly depressive symptoms and child safety issues (lack of knowledge about poison control and not having a smoke detector). However, all the targeted risk factors were frequent at all ages, indicating the importance of identifying and addressing psychosocial problems in a structured way throughout infancy and the preschool period.

The self-reported prevalence of financial worries (16%) was intermediate compared to other Swedish results (122). The PSQ-S examines parents' concerns about their financial situation; responses are likely to reflect both financial vulnerability and financial stress regardless of income level. In a CHS context, the parent's concern or stress about finances may likely be the key issue as it may affect parenting ability regardless of income level.

Although the proportion of PSQ-S with a positive screen for depressive symptoms was highest at the 6-8 week visit (35%), 27-32% of PSQ-S had a positive screen at all the other ages. It is well known that postpartum depression is common among both mothers and fathers (235, 236), but considerably less is known about parental depressive symptoms later in infancy and early childhood. A recent literature review reported that on average 25% of parents of children >12 months screened positive for depressive symptoms with mothers more commonly affected (237). The present results showed no significant difference between genders, which was unexpected. This underscores the importance of screening for depressive symptoms among both mothers and fathers, recurrently throughout the child's first six years of life.

Just under one-fifth of the PSQ-S had a positive screen for major parental stress. In our study, self-reported major parental stress was more common among mothers compared to fathers. The frequency of stress among mothers was nearly two-fold higher at the 4-year visit (24%) compared to the 6-8-week visit (13%). Among fathers, the rate was relatively constant at all ages (13-16%). This is in line with a previous Swedish study which showed that mothers reported a higher level of stress compared to fathers when the child was around 18 months old (238). The difference between genders may reflect both differences in the stressors present among mothers compared to fathers as well as how these are experienced. Sweden is relatively gender equal with respect to employment and to some extent parenting, which may in effect add to the burden of stress among a large proportion of mothers, who are active in the workforce and still are the primary caregivers (239).

The self-reported alcohol misuse were less frequent compared to rates found in other Swedish and international studies (240, 241). This may be a result of underreporting due to the context of CHS visits rather than anonymous surveys. However, it is also likely that parents drink less when they have young children. PSQ-S answered by mothers reported alcohol misuse at a lower rate during infancy (1-3%) compared to when the child was 18 months or older, at which point alcohol misuse was reported at the same rate as PSQ-S answered by fathers (5-6%). Studies show that men drink more compared to women, but that the difference between the sexes has decreased over time (242). In 40% of PSQ-S with a positive screen for alcohol misuse, the SEEK nurses assessed that there was no current problem and no intervention was offered. This suggests a hesitancy among the nurses to address alcohol misuse and a need for further training to increase the nurses' competence and sense of security regarding this issue.

Approximately one in ten PSQ-S was positive regarding current or past IPV. A positive screen regarding IPV was about twice as common among mothers compared to fathers, in keeping with national and international studies (103,

243). A national survey study among women and men 18-74 years of age in Sweden using the same questions as those in the PSQ-S showed prevalence rates twice as high for both physical and psychological violence among parents of 0-4 year-old children compared to the present results (7). As for alcohol misuse, this difference may in part be due to underreporting in the present study. In half of the PSQ-S with a positive screen for IPV, the nurses found that the problem was not current. They commented that many of these experiences had occurred in previous relationships, and that in some cases such experiences had a lasting impact and parents still needed help.

The proportion of PSQ-S with a positive screening decreased during the intervention

The proportion of positive screens on PSQ-S decreased from 65% during the first month to 39% in the last month of the two-year intervention. In many cases, based on the five pre-determined visits, parents completed the PSQ-S on two or three occasions during the two-year intervention period and problems may have arisen or been resolved within this period. In addition, some parents likely have completed the PSQ-S at visits for several of their children.

Parents reported significantly fewer problems (child safety, financial worries, depressive symptoms, stress and IPV) over the course of the two-year study period. This trend coincided with an increasing proportion of parents at SEEK CHCs who had been exposed to the model two or three times and was clear for those parents who likely had more exposure to SEEK, i.e. visits other than the 6-8 week visit. No significant changes over time were seen at the 6–8-week visit, which would be expected as most parents in this group had not been exposed to the SEEK model.

The CHS nurse's health promotion and prevention approach is embedded in practically all meetings with children and their parents. The PSQ-S provides an opportunity to discuss important psychosocial risk factors and for the parent to talk about their situation. When a parent screens positive, the CHS nurse explores more about the family's situation to get a deeper understanding of the problem.

In some situations, the CHS nurse made the assessment that no intervention was needed, despite a positive screen. Anecdotal reports from SEEK nurses have indicated various reasons for this, such as that the conversation helped the parent to begin to reflect on their situation and come up with their own solutions to the problem, or that the parent's exposure to IPV had occurred in a previous relationship and did not affect the parent's current health or situation.

Providers implementing the SEEK model had a framework that helped identify and address psychosocial problems. With experience, the CHS nurses felt more competent and confident to meet families' needs and to provide better care given their understanding of the family's situation. We cannot discern whether the model itself resulted in an actual decrease in the targeted problems. Other explanations could include fatigue among parents after responding several times or a tendency to answer "no" if a previous positive screen did not lead to help. On the other hand, parents who may initially have been hesitant could be expected to disclose problems later on when they developed a trusting relationship with the nurse or had reached a greater readiness for change (244), which would counteract the steady decrease found here. In addition to the large proportion of parents who were offered additional services, every positive screen provided an opportunity for the parent to discuss their situation with the CHS nurse. From a public health perspective, this represents a vast resource to provide support for parents in need at the thousands of health visits represented in the data. Anecdotally, CHS nurses described many situations in which parents who had screened positive later described better situations and attributed this to the help they received.

Theoretical discussion of the findings

The BarnSäkert study is based on an understanding of the social determinants of health and application of the concepts of proportionate universalism to effect positive changes in health and health equity for children.

Studies I and II showed that CHS nurses had a pre-understanding of the determinants of health and how they affect children's health and development. However, for the nurses exposed to the intervention (SEEK nurses), it became clear that the problems were common, and they felt that their work made a difference to the family. They also rated that they felt secure in addressing psychosocial problems to a significantly greater extent than the control group. The nurses also expressed that it was both relevant and important to address psychosocial risk factors in their daily CHS practice and that the SEEK model helped them to do so in a structured manner.

Regarding the Transtheoretical Model, the SEEK model's universal approach, together with the repeated opportunity to answer the PSQ-S during the CHS period, confers that the model is relevant no matter where a parent currently is in their process of readiness to change. Answering the questions in the PSQ-S can plant seeds whereby a parent begins to reflect on their situation, which can lead to progress in the readiness for change process.

The findings provide support that the theoretical underpinnings of the SEEK model are in line with the dynamics between the CHS nurse and the family when the method is used in the Swedish CHS setting.

Implementation perspectives

The results of the studies included in the thesis provide valuable findings regarding the validity and clinical utility of the SEEK model when applied in the CHS.

Validity

The Swedish version of the SEEK model was constructed by the creator of the original SEEK model together with the research team in Sweden, psychologists and CHS nurses with insight into psychosocial issues in families with young children. *Content validity* of the model could therefore be expected to be high, although there are no objective measures for this.

Criterion validity of the Swedish SEEK parent questionnaire (PSQ-S) was high regarding both sensitivity and NPV for the instrument as a whole, indicating that most parents with problems were identified and most without problems were not. However, results from the psychometric analyses suggested that some aspects of IPV were not covered by the PSQ-S, indicating that adjustments may be necessary to improve validity for this risk factor.

The CHS nurses who used SEEK reported that the PSQ-S was effective in identifying the targeted issues, and that the SEEK model as a whole was an effective way of addressing these problems. The CHS nurses also expressed that parents were positive to the questions in the PSQ-S and showed a willingness to talk about their problems in their meeting with the CHS nurses. *Face validity* was thus high for the PSQ-S and for the SEEK model.

The overall assessment of the validation process indicates high *construct validity*, such that the SEEK model assesses the presence of the targeted psychosocial risk factors among families with young children in the CHS context and facilitates the provision of adequate services. This reflects consistency with the model's theoretical underpinnings in ecological systems theory and the transtheoretical model of readiness to change.

Several aspects of *external validity* of the SEEK model as tested in the CHS setting were elucidated by the studies in this thesis. The nurses who participated in studies I and II were representative of the professionals who use the model in practice. This adds to the transferability of the results and the ecological validity of the model. Parents in study III were more highly educated and a smaller proportion were of non-Swedish origin compared to the general population, which may in some ways limit the generalizability of the findings. Study IV was performed in a real-life clinical setting, and therefore reflects a high degree of ecological relevance which adds to the external validity of the study. As this was the first trial of the SEEK model in Sweden, additional

studies will be needed to evaluate how the method performs in other geographical regions and diverse populations.

Reliability

The complex nature of the SEEK model makes it difficult to examine its reliability in the clinical CHS setting. This may be seen as a limitation with regard to a rigorous evaluation of the method. However, the qualitative data indicate the nurses in the SEEK group found that the SEEK model helped them by providing a structured way of offering the same questions and opportunity to discuss psychosocial issues compared to previous practice, which was more haphazard and subjective. This suggests an improvement in reliability when using the SEEK model compared to current practice. Because the SEEK PSQ-S was designed to capture different aspects of psychosocial problems in the family and stimulate a broader discussion of the family's needs, internal consistency was not seen as an optimal measure of the model's reliability and was therefore not included in the analyses.

Clinical utility

With respect to clinical utility, the results of study II showed that CHS nurses in the SEEK group found the method to be useful in their everyday practice, that it identified families with problems that otherwise would not have been brought to light, and that the method provided them with a valuable tool to discuss problems and provide relevant assistance and support to the parents. The SEEK nurses also expressed that the methodology added to their understanding of the limits of their own professional responsibilities and where they could refer parents for the most adequate services. The SEEK nurses rated to a significantly greater extent that they possessed sufficient knowledge, competence and sense of security in addressing psychosocial issues, which is an important prerequisite for feasibility of the model. Study III showed that the PSQ-S is a valid method to identify psychosocial problems among parents and study IV showed in a real-life clinical situation that many parents disclosed psychosocial problems and were offered services as a result of the SEEK model. In summary, the results suggest that the SEEK model as applied in these studies shows a high degree of clinical utility.

Implementation science

The present studies may also be viewed against the background of the UK framework for the development and evaluation of complex interventions (198). The original SEEK model was designed and studied in the context of pediatric primary care in the United States. The *development* phase therefore involved a process of adaption of the SEEK model to the Swedish environment and the CHS contexts, but with an explicit focus on preserving the core mechanisms of the SEEK model. The final version of the SEEK model as applied in these studies was the result of this collaborative efforts through three pilot studies with sequential changes to the PSQ-S and the structure of the

delivery of the model in the CHS. A comprehensive database containing contact information for resources within healthcare, social services and other municipal services and non-governmental organizations was created.

The *feasibility* of the model was assessed as described above. In addition, the coordinators functioned as a link between the SEEK nurses and the project management team, which ensured that problems and barriers that arose, such as documentation issues, were discussed and resolved relatively quickly. Their role in engaging the SEEK nurses in their daily work with the SEEK model including assistance, support and follow-up has been of considerable relevance to preserving the SEEK nurses' compliance with the structured approach. Despite this, the number of PSQ-S uploaded to the database on a monthly basis decreased over the course of the intervention, which may indicate problems of declining motivation and fidelity to the model among individual nurses and/or CHCs. This should warrant particular focus when implementation is planned in a new geographical area so that strategies are developed to maintain longevity of the method.

Evaluation of the SEEK model through the randomized controlled intervention in the BarnSäkert study has so far only started. Among other analyses, the impact of the intervention on children's health and development as well as health economic analyses will be undertaken. The high proportion of parents who disclose psychosocial problems as a result of using the SEEK model and the nurses' description that using SEEK provides an effective way of identifying families in need indicate that the model does what it is designed to do. The frequency of self-reported psychosocial risk factors decreased over the course of the intervention, which may reflect a decrease in these problems among the families enrolled at SEEK centers. This needs to be further studied.

The promising preliminary findings regarding the CHS nurses' experiences of using the SEEK model has led to interest in several other counties in Sweden to test the model in their own CHS context. This first stage of the *implementation* phase has led to further refinement of the model in collaboration with the social services including development of an educational program as well as a structure for interprofessional home visits.

The contact lists became a central part of the support to the SEEK nurses during the intervention, and have been further developed, and now constitute a digital resource palette with information that facilitates the mediation of contact between parents and support services. To ensure homogeneous and equal access to resources wherever BarnSäkert is implemented, creation of a national platform containing national, regional and local resources is planned.

Methodological considerations

Studies I, II and IV were conducted in a real clinical CHS context. This can be seen as an important and overall strength as the results reflect practicing CHS nurses' experiences of identifying and responding to families with psychosocial risk factors as well as what the parent was willing to disclose in the meeting with CHS nurses. Another strength was that the intervention lasted for a period of two years and a relatively large sample of PSQ-S were generated during the period.

Both studies I and II used a mixed-methods design. According to Tashakkori & Creswell (2007) mixed-methods research is defined as research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry (245). The Focus group interviews, and the web-based survey were combined to obtain both breadth and depth regarding the CHS nurses' experiences of working with psychosocial risk factors. This was judged to be an efficient way to obtain different but complimentary data on the subject in focus within a limited time frame.

A convergent parallel design, which entails that the researcher concurrently conducts the quantitative and qualitative parts in the same phase of the research process to gain simultaneous insights into statistical associations and individual perspectives, weighs the methods equally, analyzes the two components independently, and interprets the results together (246). Accordingly, in the analysis, quantitative and qualitative data were first analyzed separately and then compared to see if the data were convergent or divergent.

The choice of using Systematic Text Condensation (209) in study I was based on the method's practical approach. The methodology is considered to be well suited for researchers new to qualitative studies as it can be conducted in a sustainable way without requiring extensive experience or theoretical knowledge of qualitative methodology. In study II, Qualitative Content Analysis with an inductive approach was used (211). Qualitative Content Analysis, frequently used in nursing research including areas of public health, describes variations by identifying patterns in, for example interview text. Both the manifest content and interpretations of the latent content are inherent in the method (247), which was considered relevant to the purpose of the study.

Most of the quantitative data gathered in studies I-IV were categorical, and dichotomous variables were created for most of the analyses. The choice to apply Pearson's chi-square, the Mann-Whitney U-test and the Mantel-Haenszel test for trends was therefore based on the dichotomous nature of the variables used. Had the data been continuous, other methods such as Student's T-test, ANOVA or the Mann-Kendall test for trend could have been used. Based on the fact that PSQ-S were collected in a database in real time using the REDCap tool, it was possible to measure the proportion of PSQ-S with a positive screen throughout the intervention period. Most often, evaluations of complex interventions compare pre- and post-intervention levels of outcome indicators. We used the Mantel-Haenszel test for trend to further clarify if there were trends in the frequency of positive screens for the respective risk factors on a monthly basis over the course of the two-year intervention. This added to an understanding that there was a progressive decline in these rates from the beginning to the end of the study period and that the differences between pre- and post-intervention levels were not spurious.

The same survey as well as interview guide was used in both study I and II (except for one question in the interview guide about the general impression of working with the SEEK model was added to the SEEK nurses in study II). We did not use previously validated questions, instead questions were developed specifically for these studies which can be seen as a limitation. However, the questions in both the interview guide and survey were developed in close collaboration between researchers with good methodological skills and good knowledge about both the CHS setting and the SEEK model.

Results from the survey in study II showed no significant differences between SEEK and control regarding how often they encountered families with financial vulnerability, extreme stress and misuse of alcohol. This was surprising, as it was clear in the interviews that CHS nurses in the SEEK group frequently met parents with these problems, especially financial vulnerability. This may be due to improper phrasing, which did not make it clear that these survey questions were in regard to all degrees of problem severity, including lesser issues. The CHS nurses' responses may therefore have reflected more severe problems which they encounter less frequently, for example parents whose problems required referral for outside help.

Unfortunately, data collection for study II coincided with the Covid-19 pandemic, which probably limited the number of participants. The focus group interviews with the SEEK nurses consisted of relatively few participants, which may be a limiting factor. Still, the material contained a rich breadth and depth of the CHS nurses' descriptions. Since the intervention lasted for two years, the SEEK nurses' experience of the SEEK model should be considered sufficient. To ensure *credibility*, all data collection was made in direct connection with the conclusion of the intervention.

The choice of interviewing the SEEK nurses and the control nurses separately makes it possible to see differences in patterns of their experiences of working with psychosocial risk factors. But, since BarnSäkert was a large and ongoing project, everyone within the CHS in the county of Dalarna may be affected in some way, including the control nurses. One potential risk in this respect is that the control nurses' experiences may not be representative of CHS nurses in general. Another limitation was that only female CHS nurses participated in study I and II, which may affect the transferability of the results in a broader context. However, with respect to their knowledge of the child health field, nurses within the CHS are generally a quite homogeneous group, which increases the *transferability* to others in the same profession.

The project leaders of the BarnSäkert study, who had met with the SEEK nurses on several occasions, planned study II and participated in the analysis. In order to increase the CHS nurses' opportunity to talk freely about their experiences, the focus group interviews were conducted by an external researcher with good methodological knowledge of qualitative research. The same researcher was also involved in the analysis process. The project leaders' pre-understanding of the subject could have influenced the results by toning down or over-emphasizing parts of the material (248). To minimize this risk and assure *reflexivity*, all the researchers reflected together on the data and the analysis process to avoid or identify possible bias. Together with the triangulation afforded by the authors' different professional backgrounds, this contributed to the study's credibility.

The standardized insturments used for comparison to evaluate the psychometric properties of the PSQ-S in study III were mostly ones considered optimal albeit less than "gold standards". In addition, logistical and cost constraints precluded a thorough clinical evaluation for all parents in the study. There is a risk that the standard instruments used here did not accurately identify the phenomena they were intended to measure (249) or that they measured problems that did not quite match the screening questions. Previous studies however have shown their validity (213, 216, 218, 220, 221).

For all the risk factors, the proportion of parents with a positive screen was higher in the study sample compared to parents who completed the PSQ-S at child health visits during the first months of the intervention in Dalarna county (financial worries 21%, depressive symptoms 33%, parental stress 20%, alcohol misuse 5%, IPV 11%, any positive screen 58%). This may relate to skewing due to self-selection, e.g. those who chose to participte may have experienced psychosocial problems in the past or at the time of the study, or they may represent a group that is more inclined to disclose such problems. However, the differences in rates could also reflect an influence of the setting. Results from a previous national survey in Sweden using the same questions

regarding IPV showed prevalence rates similar to those found here, which suggests that the context in which the questions are asked may affect the respondents' willingness to disclose psychosocial problems (7).

Relatively few fathers (n=111) participated in study III, and the validity of the questions in the PSQ-S regarding fathers should therefore be interpreted with caution. The sample in study III also differed in several ways compared to the population in general. The extent to which this may have influenced the results cannot be evaluated, but as the sample is not representive with regard to gender, educational level or country of birth (250), generalisability of the results may have been affected.

The results in study IV represent what parents are willing to talk about during visits to CHCs, and may not be a reflection of true prevalence rates. We do not know the extent to which parents may have underreported, but the fact that more than half of the PSQ-S had at least one positive screen speaks to parents' trust in their relationship with the nurses.

The number of occasions and intervals between the predetermined visits at which the PSQ-S was offered means that many parents were exposed to SEEK on multiple occasions and may have had additional experience if they had other children within the targeted age group. The number of parents who completed the PSQ-S is unknown. In addition, we cannot follow parents through the study period, as all data were collected anonymously. This precludes individual-level analyses that would have been valuable. Data were not collecting information about the parents' cohabiting status, and it was therefore not possible to examine differences between single and two-parent households.

Conclusions

Although it was clear that CHS nurses have extensive experience in dealing with psychosocial risk factors in the families the meet, using the SEEK model strengthened the CHS nurses' knowledge, competence and sense of security in identifying and responding to the needs of families with such problems. Using the SEEK model seems to have narrowed the gap between the nurses' perception that it is both important and suitable to address psychosocial risk factors within the CHS and their limited ability to do so.

As a whole, the PSQ-S performed well, with high sensitivity (93%) and NPV (87%), indicating that most parents with and without the targeted psychosocial risk factors were correctly identified. The psychometrics were good for identification of economic worries, depressive symptoms, and parental stress and adequate for alcohol misuse, but were poorer for IPV.

When the SEEK model was used in the CHS context, many parents disclosed child safety issues, economic worries, depressive symptoms, parental stress, IPV or alcohol misuse. This seems to provide opportunities for assistance that may otherwise have been missed. The problems were common throughout the child's first five years of life and were about as common among mothers and fathers.

The rates of problems identified via the PSQ-S do not necessarily represent the prevalence rates; rather, they reflect what parents are willing to disclose in the context of a trusting relationship with a CHS nurse. The decline in all the targeted problems other than alcohol misuse suggests that many parents may have received effective help.

The results of the studies indicate high internal and external validity and clinical utility when SEEK is applied in the CHS setting.

Clinical implications

Just like the national CHS program, BarnSäkert is based on an understanding of the social determinants of health and application of the concepts of proportionate universalism to effect positive changes in health and health equity for children.

A reasonable prerequisite for the CHS to provide equitable care is the ability to identify children and families who need extra support. Since we do not know in advance which individuals have such needs, a universal method is needed that can identify such needs even when they are not obvious, and thus provide support and services according to each family's situation and needs.

The results from this thesis showed that the CHS setting is highly relevant to address and help families with important psychosocial risk factors. The SEEK nurses' experiences indicate that the approach worked, and many parents were willing to talk about risk factors in their home environment. The SEEK model allows the conversation with the parent to open up to topics they had never discussed before, and it makes difficult things talkable.

Addressing alcohol misuse was identified as a key uncertainty among the CHS nurses. Although the SEEK nurses received in-depth training by a certified alcohol therapist on how to talk to parents about their drinking habits during the intervention, there seems to be a need for further training to improve their skills and sense of security in addressing this issue with parents.

Sensitivity of the PSQ-S questions regarding IPV was relatively low, suggesting that there may be a need to revise these items in future versions of the model. Although this is suboptimal, many parents with previous or ongoing IPV exposure were identified and offered help. Identification and prevention of IPV is currently a high priority in health care as well as national and regional policy-based programs throughout Sweden, in which the SEEK model can be an important tool.

The results show that psychosocial risk factors were common during the first five years of the child's life for both mothers and fathers. It is therefore important to address psychosocial risk factors in a structured way among all parents on repeated occasions throughout the entire CHS period.

The findings of the studies in this thesis have shown that, through its universal approach and ability to identify the needs of families and offer indicated support, the SEEK model provides a structure that assists the CHS in fulfilling many of the duties outlined in the national CHS program.

The results are promising from the perspective that many families have been able to obtain help that they would not have received otherwise, which may make a positive difference for the child's health and development.

Future research

The BarnSäkert study has and will generate a wealth of data and several research questions from the BarnSäkert study still remain unanswered.

Analysis of the impact of the intervention on parents' mental health, well-being and attitudes towards child rearing and conflict management as well as on children's health, health care utilization and need for special care, protection and educational interventions will be conducted. Data pertain to parents and their children at both SEEK and control centers participating in the validation study. Individual data as well as aggregated data at the CHC level will be collected regarding referrals for the child, contacts with health services and diagnoses from medical records up to the age of 10, as well as the results of assessments carried out within the CHS. School data will also be collected regarding school absences, any decisions on special resources and results from national tests in the third grade.

Health economic analyses
Additional information from the health care system in Dalarna regarding health care consumption and related costs will be collected to complement our previously collected data from the intervention and the in-depth study. This will allow us to conduct cost-effectiveness analyses to assess whether the SEEK intervention has led to health gains among children and parents as well as reductions in consumption of healthcare resources. For example, if the proportion of parents with symptoms indicative of depression has decreased, this implies a reduction in costs closely associated with depression, such as medical visits, therapy, medication, sick leave and reduced production.

Parents' experiences of BarnSäkert
To further explore the usefulness of the model, two studies are ongoing to evaluate how parents perceived SEEK and whether their situation has changed. In total, individual interviews have been conducted with 18 parents and data analysis is ongoing. In parallel with the parent interviews, we have initiated a survey study to find out to what extent the parents have been offered and received help through the approach, and whether they feel that the SEEK model has changed their life situation. Data collection is ongoing from several regions that use the SEEK model in their CHS.

Continued development of SEEK in Sweden – BarnSäkert
During the BarnSäkert study, we realized that the model could be significantly strengthened by integrating structured collaboration between the CHS and the supportive arm of the social services. A cooperation model has been developed, which means, among other things, that family counselors and the CHS nurses make joint home visits to explore more about the family's situation and, based on their respective professions, offer the family help and support. Data collection through interviews regarding CHS nurses' and family counselors' experiences of the cooperation, as well as the parents' perceptions will be performed.

As the SEEK model is tested in an increasing number of regions, there are great opportunities to study the implementation process in detail. This can give us insights into important factors that can strengthen the introduction and maintenance of the approach within the CHS. Research on BarnSäkert as a complex intervention can also help us understand the long-term effects of the approach on children's and parents' health and wellbeing and needs for health care and special support.

The SEEK model in antenatal health services
An ongoing pilot study is testing the SEEK model in the antenatal maternal health services. The pilot study is also developing and testing a collaborative model between the maternal health services, the CHS and the social services. We plan to initiate data collection and analyses regarding the midwives' and expectant parents' experiences of the SEEK model, as well as the mothers' self-reported presence of each psychosocial risk factor and what measures, if any, were offered.

Sammanfattning på Svenska

Inledning
Varje barns rätt till en god och jämlik hälsa och utveckling och en barndom fri från våld och försummelse är utgångspunkten för arbetet i den här avhandlingen. Ekonomiska bekymmer, psykisk ohälsa, stress hos föräldrarna, våld i nära relationer och alkoholmissbruk är riskfaktorer som kan påverka föräldraförmågan negativt. Barn som växer upp i sådana miljöer löper större risk att få sämre fysisk och psykisk hälsa och att utsättas för övergrepp och vanvård jämfört med barn som inte växer upp i sådana miljöer.

Safe Environment for Every Kid (SEEK) är en amerikans modell som går ut på att tidigt identifiera barn som lever i en hemmiljö där det finns psykosociala problem och vid behov erbjuda hjälp och stöd för att förbättra familjens och barnets förutsättningar. SEEK-modellen har testats i två randomiserade studier i USA. Barnläkarna som hade använt modellen kände sig kunnigare och mer kompetenta att samtala med föräldrar kring psykosociala problem och de tog upp sådana ämnen i större utsträckning vid sina patientbesök. Föräldrar som hade tagit del av modellen uppgav att de mindre ofta använde kroppslig bestraffning mot sina barn och färre barn blev föremål för anmälan till socialtjänsten.

Den svenska barnhälsovården (BHV) tillhandahåller hälsofrämjande primärpreventiva tjänster för alla barn i åldern 0-5 år. Det nationella BHV-programmet är behovsindelat, och innefattar tre nivåer av insatser som kan erbjudas till alla barn och familjer utifrån deras individuella behov. Arbetet inom BHV ska i största möjliga utsträckning utgå från evidensbaserade metoder. Den universella nivån erbjuds till alla, och innefattar bland annat hälsoövervakning, hälsosamtal, utvecklingsbedömning, vaccinationer och kartläggning av skydds- och riskfaktorer vid åldersbestämda besök. Nivå två innefattar framför allt ökade insatser från BHV-personalen, eventuellt i samverkan med andra aktörer såsom psykolog, kurator eller läkare, till exempel extra hembesök, stödsamtal eller uppföljande mottagningsbesök på BVC. Den tredje nivån beskriver insatser som initieras av BHV, men som ofta ges av en annan verksamhet eller kompetens, till exempel barnläkare, socialtjänst eller familjerådgivare. För att kunna erbjuda insatser i den andra och tredje kolumnen behöver BHV-personalen verktyg för att identifiera barnets och familjens behov. I dagsläget ingår screening för postpartumdepression hos den födande kvinnan

vid ett tillfälle när barnet är 6-8 veckor gammalt och för den icke-födande föräldern erbjuds ett enskilt samtal sedan 2018 i många sjukvårdsregioner. Men för övrigt saknas ett strukturerat sätt för BHV att identifiera psykosociala riskfaktorer i barnets hemmiljö och erbjuda hjälp till föräldrarna i ett tidigt stadium.

Syfte

Det övergripande syftet med avhandlingen var att bedöma centrala aspekter av Safe Environment for Every Kid modellens validitet, klinisk användbarhet och resultat när den tillämpas inom den svenska barnhälsovården.

Metod

BarnSäkert-studien, i vilken SEEK-modellen testats inom BHV i Region Dalarna, planerades med en så kallad kluster-randomiserad, kontrollerad design. Det innebär att varje barnavårdscentral (BVC) utgör ett kluster och där samtliga BHV-sjuksköterskor på den BVC arbetar antingen enligt SEEK-modellen eller enligt befintliga rutiner. Interventionen pågick i två år och totalt deltog 27 av 28 BVC. Avhandlingens fyra studier har genomförts inom ramen för BarnSäkert-studien.

Studie I och II undersökte BHV-sjuksköterskornas upplevelser av att arbeta med psykosociala riskfaktorer, studie I genomfördes innan interventionen startade och studie II efter att interventionen hade avslutats.

Studie I använde en så kallad mixed-methods design, innehållande både fokusgruppsintervjuer och en enkätundersökning. Samtliga BHV-sjuksköterskor som arbetade kliniskt inom BHV i Region Dalarna (n=84) bjöds in att delta i de kvalitativa och kvantitativa delarna av studien. 12 BHV-sjuksköterskor deltog i fokusgruppsintervjuer och 59 BHV-sjuksköterskor besvarade enkäten.

I studie II undersöktes eventuella kontraster mellan BHV-sjuksköterskor som arbetat enligt SEEK-modellen (SEEK-gruppen) och de som arbetat enligt befintliga rutiner (kontrollgruppen) gällande upplevelsen av att arbeta med familjer med psykosociala riskfaktorer. Vi använde samma metodik som i studie I. Totalt deltog 18 BHV-sjuksköterskor i fokusgruppsintervjuerna och 50 BHV-sjuksköterskor besvarade enkäten.

I SEEK-modellen ingår att föräldrar erbjuds att besvara ett frågeformulär med frågor om psykosociala riskfaktorer. I studie III utvärderades sensitiviteten, specificiteten samt det positiva och negativa prediktiva värdet av det svenska föräldraformuläret jämfört med vedertagna, standardiserade instrument som används för att upptäcka samma problem. Data bestod av enkätsvar från 611 föräldrar som innan interventionen hade besvarat en omfattande enkät

bestående av SEEK-modellens frågeformulär samt vedertagna frågeformulär för att värdera förekomsten av ekonomiska problem, nedstämdhet, extrem föräldrastress, riskbruk eller missbruk av alkohol och våld i nära relationer.

I studie IV undersöktes den självrapporterade förekomsten av psykosociala riskfaktorerna, så som de uttryckts i SEEK-modellens föräldraformulär, BHV-sjuksköterskornas vidtagna åtgärder vid utfall samt trender över tid gällande utfall för respektive riskfaktor. Totalt analyserades svaren från 7483 föräldraformulär som hade besvarats på en SEEK-BVC under interventionen.

Resultat

Resultat från studie I visade att BHV-sjuksköterskor ansåg att det var både viktigt och relevant för deras arbete att identifiera psykosociala riskfaktorer. De hade dock lite formell utbildning om riskfaktorerna som efterfrågades och de saknade strukturerade metoder för att ta itu med flera av dem. De beskrev också att det var otydligt vart man skulle hänvisa föräldrar för hjälp och vilka resurser som fanns tillgängliga. Inom områdena ekonomiska problem, riskbruk av alkohol och våld i nära relationer uppgav sjuksköterskorna att de i låg grad hade tillräcklig kompetens och känsla av trygghet jämfört med områden där de hade formell utbildning och en strukturerad metodik (depression, föräldra-stress).

Resultat från studie II visade att upplevelser av färdigheter och kompetens i att hantera psykosociala riskfaktorer framkom i båda grupperna. SEEK-gruppen upplevde att problemen var vanliga och ringades in tidigare, vilket gjorde en positiv skillnad för familjen. SEEK-gruppen skattade också i signifikant högre grad att de hade tillräcklig kunskap, kompetens och känsla av trygghet att arbeta med ekonomiska problem, extrem föräldrastress, riskbruk/missbruk av alkohol och våld i nära relationer jämfört med kontrollgruppen

I studie III framkom att sensitiviteten var måttlig till mycket god för alla riskfaktorer förutom våld i nära relationer. Sensitivitet var generellt högre för kvinnor jämfört med män för alla riskfaktorer förutom riskbruk av alkohol. Specificiteten var måttlig till mycket god för alla riskfaktorer. Det positiva prediktiva värdet var generellt lågt, förutom för våld, som uppvisade ett måttligt värde. Det negativa prediktiva värdet var högt till mycket högt för alla riskfaktorer.

Studie IV visade att över hälften av frågeformulären hade utfall inom minst ett område, problemen var vanliga under barnets första fem levnadsår och var ungefär lika vanliga bland mödrar som bland fäder. BHV-sjuksköterskan erbjöd stöd och hjälp till många föräldrar. Andelen frågeformulär med en positiv screening minskade signifikant under interventionen.

Sammanfattning

Resultaten från studierna i denna avhandling tyder på att SEEK-modellen, såsom den tillämpats i dessa studier, har en hög grad av validitet och klinisk användbarhet i en barnhälsovårdsmiljö. SEEK-sjuksköterskornas erfarenhet visade att SEEK-modellen var till hjälp i deras dagliga arbete. Resultaten visar också på behov av utveckling gällande frågeformulärets känslighet för våld i nära relationer och hur BHV-sjuksköterskorna hanterar föräldrar med alkoholproblem. Resultaten visade dock att många föräldrar var villiga att diskutera problem gällande barnsäkerhetsfrågorna, ekonomiska bekymmer, nedstämdhetssymtom, föräldrastress, våld i nära relationer och riskbruk av alkohol i en förtroendefull relation med BHV-sjuksköterskan och att det sannolikt gav möjligheter till hjälp som annars hade missats.

Acknowledgements

This thesis is the final product of several years of work and there are many people who have been important to me during my years as a doctoral student. Developing the BarnSäkert study has been the result of teamwork involving many people and organizations. I am deeply grateful to all of you who have supported and helped me during this journey and to you who have contributed to and influenced the project through your commitment and knowledge.
In particular, I would like to thank:

All the children and parents who participated in the BarnSäkert study in the county of Dalarna. Your responses and conversations with the CHS nurses were a prerequisite for the BarnSäkert study and the studies in this thesis.

My main funders, the World Childhood Foundation and the Children's Welfare Foundation Sweden (Stiftelsen Allmänna Barnhuset), without you none of this would have become possible. In addition to the financial support, you have contributed through an invaluable partnership that has made the BarnSäkert-project and this thesis possible. Thanks also to The Regional Health Research Council, Gillbergska stiftelsen, the Uppsala County Council Grants for Healthcare Research and the Sigurd & Elsa Golje Memorial Foundation for funded my doctoral studies.

Steven Lucas, my main supervisor, for taking me on this amazing journey, it has been incredibly fun, stimulating, intense and at sometimes challenging. I am deeply grateful that you so generously and pedagogically shared your extensive knowledge with me. With a considerate, always encouraging and stable hand, you have navigated me in the right direction in both good and bad times. Thank you for giving me both guidance and freedom to grow and develop. I have really appreciated our cooperation.

Thomas Wallby my co-supervisor, for generously sharing your in-depth knowledge of the CHS and for patiently and pedagogically helping me with statistical analyses. As a specialist nurse, coordinator and former colleague, researcher and friend, you are a true role model and have inspired me. I am so happy and grateful for all our conversations and for your unwavering support.

Staffan Janson, my co-supervisor, for your generosity in sharing your vast experience and knowledge in child health and the vulnerability of children. I am so grateful for your support, tips and advice along the way.

Inna Feldman, my co-supervisor, for your kind and perceptive support throughout my studies, which I have highly appreciated. I am looking forward to future collaboration regarding the health economic evaluation of the BarnSäkert study.

Howard Dubowitz, professor and pediatrician, and the founder of the SEEK model. I am so grateful that you entrusted us with testing and evaluating the SEEK model in a Swedish CHS context and for your calm and strong support throughout the entire process.

Kristin Lindblom, chief medical officer in the county of Dalarna, for your vision and your fantastic ability to create trust and understanding of the importance of the BarnSäkert study within your organization. Anna Berg and Inga-Lill Hellsing, project coordinators and inspirers, for your never-ending enthusiasm, hard work and tremendous knowledge and experience. The central CHS team members Elisabeth Tangring Wållgast, Ulrika Nygren, Åsa Forsberg and Helena Nyman, for insightful support in the development of the model and support to the CHS nurses in Dalarna. Your team is amazing!

Anna-Kari Olsson, Helena Jofs, Veronica Andersson Topic, Maria Bäck, Birgitta Söderlund, Anna Berg and Inga-Lill Hellsing for your invaluable efforts in the adaptation and development of the SEEK model and the first tests in your own encounters with the families at the CHS in connection with the pilot study.

All CHS nurses in both the SEEK and control groups, for your fantastic work with the families and for providing us with invaluable insight and feedback on how the SEEK model works in CHS practice.

Margaretha Magnusson, former manager and colleague, Elisabeth Hagelin and Dagmar Lagerberg, former colleagues, your commitment and research in the field has been a great inspiration to me

Monica Mäki Karlstrand, my boss, for your support and your understanding of the complexity of combining my employment as coordinator for CHS in the county of Uppsala with doctoral studies.

Marie Golsäter, Eva Randell and Junia Joffer, my research colleagues, for extremely stimulating and exciting collaboration.

Former and current colleagues and teammates, Lena Widing, Sara Nielsen, Gordana Gjurovski, Marie Blomberg, Eva Hjelmstedt, Barbro Ljunghammar, Py Rundkvist, Maria Thörnhage, Ulrika Lindahl, Veronica Wikström, Jenny Fagerström Johansson, Gabriel Otterman, Therese Norrman, Laleh Nyeb, Helena Edin, Dan Seligsohn, Anna Sarkadi, Camilla Lövgren, Caroline Torstensson and Anna Högberg, for your great support and encouragement.

Birgitta and Sven-Erik, my parents, for your love, support and for always encouraging and believing in me. Magnus my brother, Lourdes my sister-in-law and Hanna, my niece, for your support and encouragement. I am privileged to have you in my life.

My beloved family, the hub of my life, Ove, my wonderful husband, Linnea and Emma, our amazing children, for beeing in my life. You mean everything to me.

References

1. Chung EK, Siegel BS, Garg A, Conroy K, Gross RS, Long DA, et al. Screening for Social Determinants of Health Among Children and Families Living in Poverty: A Guide for Clinicians. Curr Probl Pediatr Adolesc Health Care. 2016;46(5):135-53.
2. Dahlgren G, Whitehead M. European strategies for tackling social inequities in health: Levelling up Part 2. World Health Organization Regional office for Europe Copenhagen; 2006.
3. Belsky J. Etiology of child maltreatment: a developmental-ecological analysis. Psychol Bull. 1993;114(3):413-34.
4. Göran D, Whitehead M. Policies and strategies to promote social equity in health. Background document to WHO – Strategy paper for Europe. Stockholm: Institute for Futures Studies; 1991.
5. World Health Organization. INSPIRE Seven Strategies for Ending Violence Against Children. Geneva: World Health Organization; 2016.
6. Lucas S, Janson S. Childhood exposure to physical and emotional violence over a 57-year period in Sweden. Scand J Public Health. 2021:14034948211023634.
7. Öberg M, Heimer G, Lucas S. Lifetime experiences of violence against women and men in Sweden. Scandinavian journal of public health. 2021;49(3):301-8.
8. Jernbro C, Landberg Å. Multiutsatta barn, om barn som utsatts för flera typer av barnmisshandel [In Swedish. English translation by the author: Multi-exposed children, about children exposed to several types of child abuse]. Stockholm: The Children's Welfare Foundation Sweden; 2020.
9. Jernbro C, Janson S. Violence against children in Sweden 2016. Stockholm: The Children's Welfare Foundation, Sweden. 2017.
10. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. American journal of preventive medicine. 1998;14(4):245-258.
11. Peterson C, Florence C, Klevens J. The economic burden of child maltreatment in the United States, 2015. Child abuse & neglect. 2018;86:178-83.
12. Bellis MA, Hughes K, Ford K, Rodriguez GR, Sethi D, Passmore J. Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. The Lancet Public Health. 2019;4(10):e517-e28.
13. Dubowitz H, Feigelman S, Lane W, Kim J. Pediatric primary care to help prevent child maltreatment: the Safe Environment for Every Kid (SEEK) Model. Pediatrics. 2009;123(3):858-64.

14. Dubowitz H, Lane WG, Semiatin JN, Magder LS. The SEEK model of pediatric primary care: can child maltreatment be prevented in a low-risk population? Acad Pediatr. 2012;12(4):259-68.
15. Rikshandboken [In Swedish. The National Handbook for Child Health Services]. [Internet]. 2023. [cited 2023 August18]. Available from: https://www.rikshandboken-bhv.se/metoder--riktlinjer/barnhalsovardens-nationella-program/.
16. Carey G, Crammond B, De Leeuw E. Towards health equity: a framework for the application of proportionate universalism. International journal for equity in health. 2015;14(1):1-8.
17. Föräldrabalk (SFS 1949:381). Stockholm:Justitiedepartementet.
18. Key E. The century of the child: GP Putnam̓s sons; 1909.
19. United Nations (UN) General Assembly. Convention on the Rights of the Child. United Nations, Treaty Series.1989;1577(3):1-23.
20. Förenta nationernas konvention om barnets rättigheter. (SFS 2018:1197). [In Swedish: UN Convention on the Rights of the Child] [Internet]. Stockholm: Socialdepartementet.[cited 2023 August18]. Available from: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/lag-20181197-om-forenta-nationernas-konvention_sfs-2018-1197/
21. McKee M, editor. For the sake of children: social paediatrics in action. Karlstad: Karlstads universitet; 2012.
22. Andresen A, Gardarsdóttir Ó, Janfelt M, Lindgren C, Markkola P, Söderlind I. Barnen och välfärdspolitiken: nordiska barndomar 1900-2000 [In Swedish. English translation by the author: Children and. the welfare policy: Nordic childhoods 1900-2000]: Dialogos förlag; 2011.
23. Myrdal A. Gunnar (1934) Kris i befolkningsfrågan [In Swedish. English translation by the author: Crisis in the Population Question]. Stockholm: Albert Bonniers Förlag; 1934.
24. Hjern A, Bremberg S, Janson S, Köhler L. Barnhälsovetenskap [In Swedish. English translation by the author: Child health sciences]. Lund: Studentlitteratur; 2013.
25. Lagerberg D, Magnusson M, Sundelin C. Barnhälsovård i förändring - resultat av ett interventionsförsök [In Swedish. English translation by the author: Child health services in transition - results of an intervention trial]. Stockholm: Gothia Förlag; 2008.
26. Lagerberg D. Socialpediatriska studier vid Barnhälsovården [In Swedish. English translation by the author: Social pediatric studies in Child Health Services]. Socialmedicinsk tidskrift. 2005;82(2):122-32.
27. Föräldrabalk (SFS 1949:381). Stockholm:Justitiedepartementet.
28. The Medical Research Council. Barnhälsovårdens betydelse för barns hälsa – en analys av möjligheter och begränsningar i ett framtidsperspektiv. A State of the Art Document. 1999.
29. National Board of Health and Welfare. Vägledning för barnhälsovården [In Swedish. English translation by the author: National guidelines for child health care]. Stockholm: National Board of Health and Welfare; 2014.
30. Wallby T, Hjern A. Child health care uptake among low-income and immigrant families in a Swedish county. Acta paediatrica (Oslo, Norway : 1992). 2011;100(11):1495-503.

31. Bronfenbrenner U, Morris PA, Damon W, Lerner RM. Handbook of child psychology. Theoretical models of human development. 1998;1:993-1028.
32. Merçon-Vargas EA, Lima RFF, Rosa EM, Tudge J. Processing proximal processes: What Bronfenbrenner meant, what he didn't mean, and what he should have meant. Journal of Family Theory & Review. 2020;12(3):321-34.
33. Britto PR, Lye SJ, Proulx K, Yousafzai AK, Matthews SG, Vaivada T, et al. Nurturing care: promoting early childhood development. The Lancet. 2017;389(10064):91-102.
34. Hepper P. Behavior during the prenatal period: Adaptive for development and survival. Child Development Perspectives. 2015;9(1):38-43.
35. Hertzman C, Boyce T. How experience gets under the skin to create gradients in developmental health. Annual review of public health. 2010;31:329-47.
36. Marshall PJ, Kenney JW. Biological perspectives on the effects of early psychosocial experience. Developmental Review. 2009;29(2):96-119.
37. Britto PR, Pérez-Escamilla R. No second chances? Early critical periods in human development. 2013.
38. Shonkoff JP. Capitalizing on advances in science to reduce the health consequences of early childhood adversity. JAMA pediatrics. 2016;170(10):1003-7.
39. Shonkoff JP, Garner AS, Child CoPAo, Family Health CoEC, Adoption,, Dependent Care, Developmental So, et al. The lifelong effects of early childhood adversity and toxic stress. Pediatrics. 2012;129(1):e232-e46.
40. Black MM, Walker SP, Fernald LC, Andersen CT, DiGirolamo AM, Lu C, et al. Early childhood development coming of age: science through the life course. The Lancet. 2017;389(10064):77-90.
41. Shonkoff JP, Garner AS. The lifelong effects of early childhood adversity and toxic stress. Pediatrics. 2012;129(1):e232-46.
42. Garner, A. S., Shonkoff, J. P., Siegel, B. S., Dobbins, M. I., Earls, M. F., Wood, D. L, et al. Early childhood adversity, toxic stress, and the role of the pediatrician: translating developmental science into lifelong health. Pediatrics. 2012;129(1): e224-e231.
43. Garner AS, Shonkoff JP. Early childhood adversity, toxic stress, and the role of the pediatrician: translating developmental science into lifelong health. Pediatrics. 2012;129(1):e224-31.
44. Walker SP, Wachs TD, Grantham-McGregor S, Black MM, Nelson CA, Huffman SL, et al. Inequality in early childhood: risk and protective factors for early child development. The lancet. 2011;378(9799):1325-38.
45. Ross N, Gilbert R, Torres S, Dugas K, Jefferies P, McDonald S, et al. Adverse childhood experiences: assessing the impact on physical and psychosocial health in adulthood and the mitigating role of resilience. Child abuse & neglect. 2020;103:104440.
46. Masten AS. Ordinary magic: Resilience processes in development. American psychologist. 2001;56(3):227.
47. Luthar S, Cicchetti D, Cohen D. Developmental psychopathology: Risk, disorder, and adaptation. 2006.
48. Masten AS. Resilience in developing systems: Progress and promise as the fourth wave rises. Development and psychopathology. 2007;19(3):921-30.
49. Ordway MR, Webb D, Sadler LS, Slade A. Parental Reflective Functioning: An Approach to Enhancing Parent-Child Relationships in Pediatric Primary

Care. Journal of pediatric health care : official publication of National Association of Pediatric Nurse Associates & Practitioners. 2015;29(4):325-34.
50. Nurturing care for early childhood development: a framework for helping children survive and thrive to transform health and human potential. Geneva: World Health Organization; 2018.
51. Health promotion glossary of terms 2021. Geneva: World Health Organization;2021.
52. Spencer N. The social determinants of child health. Paediatrics and Child Health. 2018;28(3):138-43.
53. Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health: final report of the commission on social determinants of health: World Health Organization; 2008.
54. Marmot M. Fair society, healthy lives. Fair society, healthy lives. 2013:1-74.
55. Marmot M, Friel S, Bell R, Houweling TA, Taylor S. Closing the gap in a generation: health equity through action on the social determinants of health. The lancet. 2008;372(9650):1661-9.
56. World Health Organization. The constitution of the world health organization. Geneva: World Health Organ. 1946;2:100.
57. World health Organization, editor Ottawa Charter for health promotion. First international conference on health promotion; 1986.
58. Eriksson M, Lindström B. A salutogenic interpretation of the Ottawa Charter. Health promotion international. 2008;23(2):190-9.
59. Pearce A, Dundas R, Whitehead M, Taylor-Robinson D. Pathways to inequalities in child health. Archives of disease in childhood. 2019;104(10):998-1003.
60. Andershed A-K, Andershed H. Risk and protective factors among preschool children: integrating research and practice. Journal of evidence-informed social work. 2015;12(4):412-24.
61. Walsh F. Family resilience: A framework for clinical practice. Family process. 2003;42(1):1-18.
62. Appleyard K, Egeland B, van Dulmen MH, Alan Sroufe L. When more is not better: The role of cumulative risk in child behavior outcomes. Journal of child psychology and psychiatry. 2005;46(3):235-45.
63. Harper Browne C. The strengthening families approach and protective factors framework™: A pathway to healthy development and well-being. Innovative approaches to supporting families of young children. 2016:1-24.
64. Cicognani E, Albanesi C, Valletta L, Prati G. Quality of collaboration within health promotion partnerships: Impact on sense of community, empowerment, and perceived projects' outcomes. Journal of Community Psychology. 2020;48(2):323-36.
65. Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. Lancet (London, England). 2009;373(9657):68-81.
66. Krug EG, Mercy JA, Dahlberg LL, Zwi AB. The world report on violence and health. Lancet (London, England). 2002;360(9339):1083-8.

67. World Health Organization. Violence and Injury Prevention Team. Report of the Consultation on Child Abuse Prevention. Geneva: World Health Organization; 1999.
68. Government Offices of Sweden.(SOU 2001:72). Barnmisshandel - Att förebygga och åtgärda [In Swedish. English translation by the author: Child maltreatment - Prevention and intervention]. Stockholm: Ministry of Health and Social Affairs.
69. Annerbäck EM, Wingren G, Svedin CG, Gustafsson PA. Prevalence and characteristics of child physical abuse in Sweden - findings from a population-based youth survey. Acta paediatrica. 2010;99(8):1229-36.
70. Jernbro C, Landberg Å, Thulin J. Våld mot barn 2022: En nationell kartläggning [In Swedish. English translation by the author: Violence Against Children 2022: a natioal survey]: Stockholm:The Children's Welfare Foundation, Sweden; 2023.
71. Landberg Å, Svedin CG, Priebe G, Wadsby M, Jonsson L, Fredlund C. Det gäller en av fem: Fakta om barn, sexuella övergrepp och sexuell exploatering i Sverige 2014 [In Swedish. English translation by the author: It concerns one in five: Facts about children, sexual abuse and sexual exploitation in Sweden 2014]. Stockholm: The Children's Welfare Foundation, Sweden; 2014.
72. Butchart A PHA, Kahane T. Preventing child maltreatment: a guide to taking action and generating evidence.; 2006.
73. Sullivan PM, Knutson JF. Maltreatment and disabilities: A population-based epidemiological study. Child abuse & neglect. 2000;24(10):1257-73.
74. Edwards VJ, Holden GW, Felitti VJ, Anda RF. Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. American Journal of Psychiatry. 2003;160(8):1453-60.
75. Jernbro C, Tindberg Y, Lucas S, Janson S. Quality of life among Swedish school children who experienced multitype child maltreatment. Acta paediatrica. 2015;104(3):320-5.
76. Finkelhor D, Ormrod RK, Turner HA. Poly-victimization: a neglected component in child victimization. Child abuse & neglect. 2007;31(1):7-26.
77. Higgins DJ, McCabe MP. Relationships between different types of maltreatment during childhood and adjustment in adulthood. Child maltreatment. 2000;5(3):261-72.
78. Hamby S, Finkelhor D, Turner H, Ormrod R. The overlap of witnessing partner violence with child maltreatment and other victimizations in a nationally representative survey of youth. Child abuse & neglect. 2010;34(10):734-41.
79. Annerbäck E-M, Sahlqvist L, Svedin CG, Wingren G, Gustafsson P. Child physical abuse and concurrence of other types of child abuse in Sweden—Associations with health and risk behaviors. Child abuse & neglect. 2012;36(7-8):585-95.
80. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. American journal of preventive medicine. 1998;14(4):245-58.

81. Chung EK, Mathew L, Elo IT, Coyne JC, Culhane JF. Depressive symptoms in disadvantaged women receiving prenatal care: the influence of adverse and positive childhood experiences. Ambulatory Pediatrics. 2008;8(2):109-16.
82. Chung EK, Nurmohamed L, Mathew L, Elo IT, Coyne JC, Culhane JF. Risky health behaviors among mothers-to-be: The impact of adverse childhood experiences. Academic pediatrics. 2010;10(4):245-51.
83. Wade R, Shea JA, Rubin D, Wood J. Adverse childhood experiences of low-income urban youth. Pediatrics. 2014;134(1):e13-e20.
84. McCoy DC, Raver CC. Household instability and self-regulation among poor children. Journal of Children and Poverty. 2014;20(2):131-52.
85. Evans GW, Kim P. Childhood poverty, chronic stress, self-regulation, and coping. Child development perspectives. 2013;7(1):43-8.
86. Hildyard KL, Wolfe DA. Child neglect: developmental issues and outcomes. Child abuse & neglect. 2002;26(6-7):679-95.
87. Moylan CA, Herrenkohl TI, Sousa C, Tajima EA, Herrenkohl RC, Russo MJ. The Effects of Child Abuse and Exposure to Domestic Violence on Adolescent Internalizing and Externalizing Behavior Problems. J Fam Violence. 2010;25(1):53-63.
88. Strathearn L, Giannotti M, Mills R, Kisely S, Najman J, Abajobir A. Long-term Cognitive, Psychological, and Health Outcomes Associated With Child Abuse and Neglect. Pediatrics. 2020;146(4).
89. Jaffee SR. Child Maltreatment and Risk for Psychopathology in Childhood and Adulthood. Annu Rev Clin Psychol. 2017;13:525-51.
90. London S, Quinn K, Scheidell JD, Frueh BC, Khan MR. Adverse Experiences in Childhood and Sexually Transmitted Infection Risk From Adolescence Into Adulthood. Sex Transm Dis. 2017;44(9):524-32.
91. Thibodeau ME, Lavoie F, Hébert M, Blais M. Childhood maltreatment and adolescent sexual risk behaviors: Unique, cumulative and interactive effects. Child abuse & neglect. 2017;72:411-20.
92. Oshri A, Kogan SM, Kwon JA, Wickrama KAS, Vanderbroek L, Palmer AA, et al. Impulsivity as a mechanism linking child abuse and neglect with substance use in adolescence and adulthood. Dev Psychopathol. 2018;30(2):417-35.
93. Widom CS, Czaja S, Dutton MA. Child abuse and neglect and intimate partner violence victimization and perpetration: a prospective investigation. Child abuse & neglect. 2014;38(4):650-63.
94. Manchikanti Gómez A. Testing the cycle of violence hypothesis: Child abuse and adolescent dating violence as predictors of intimate partner violence in young adulthood. Youth & Society. 2011;43(1):171-92.
95. Lippard ETC, Nemeroff CB. The Devastating Clinical Consequences of Child Abuse and Neglect: Increased Disease Vulnerability and Poor Treatment Response in Mood Disorders. Am J Psychiatry. 2020;177(1):20-36.
96. Humphreys KL, LeMoult J, Wear JG, Piersiak HA, Lee A, Gotlib IH. Child maltreatment and depression: A meta-analysis of studies using the Childhood Trauma Questionnaire. Child abuse & neglect. 2020;102:104361.
97. Behr Gomes Jardim G, Novelo M, Spanemberg L, von Gunten A, Engroff P, Nogueira EL, et al. Influence of childhood abuse and neglect subtypes on

late-life suicide risk beyond depression. Child abuse & neglect. 2018;80:249-56.
98. Seff I, Stark L. A sex-disaggregated analysis of how emotional violence relates to suicide ideation in low- and middle-income countries. Child abuse & neglect. 2019;93:222-7.
99. Jung H, Herrenkohl TI, Lee JO, Hemphill SA, Heerde JA, Skinner ML. Gendered Pathways From Child Abuse to Adult Crime Through Internalizing and Externalizing Behaviors in Childhood and Adolescence. Journal of interpersonal violence. 2017;32(18):2724-50.
100. Christ C, de Waal MM, Dekker JJM, van Kuijk I, van Schaik DJF, Kikkert MJ, et al. Linking childhood emotional abuse and depressive symptoms: The role of emotion dysregulation and interpersonal problems. PLoS One. 2019;14(2):e0211882.
101. Poole JC, Dobson KS, Pusch D. Do adverse childhood experiences predict adult interpersonal difficulties? The role of emotion dysregulation. Child abuse & neglect. 2018;80:123-33.
102. Ryan JP, Jacob BA, Gross M, Perron BE, Moore A, Ferguson S. Early Exposure to Child Maltreatment and Academic Outcomes. Child maltreatment. 2018;23(4):365-75.
103. Andersson T, Heimer G, Lucas S. Violence and health in Sweden: a national prevalence study on exposure to violence among women and men and its association to health. Uppsala: National Centre for Knowledge on Men's Violence Against Women; 2015.
104. Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The impact of adverse childhood experiences on health problems: evidence from four birth cohorts dating back to 1900. Prev Med. 2003;37(3):268-77.
105. Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. Lancet Public Health. 2017;2(8):e356-e66.
106. Brown DW, Anda RF, Tiemeier H, Felitti VJ, Edwards VJ, Croft JB, et al. Adverse childhood experiences and the risk of premature mortality. American journal of preventive medicine. 2009;37(5):389-96.
107. Bronfenbrenner U. Towards an experimental ecology of human devlopment, S. 513-531. American Psychologist. 1997;32.
108. Ammerman RT, Hersen M, Van Hasselt VB, Lubetsky MJ, Sieck WR. Maltreatment in psychiatrically hospitalized children and adolescents with developmental disabilities: Prevalence and correlates. Journal of the American Academy of Child & Adolescent Psychiatry. 1994;33(4):567-76.
109. Svensson B, Bornehag CG, Janson S. Chronic conditions in children increase the risk for physical abuse - but vary with socio-economic circumstances. Acta paediatrica. 2011;100(3):407-12.
110. Flaherty EG, Stirling J, Jr. Clinical report—the pediatrician's role in child maltreatment prevention. Pediatrics. 2010;126(4):833-41.
111. Lane WG. Prevention of child maltreatment. Pediatric clinics of North America. 2014;61(5):873-88.
112. Evans R, Garner P, Honig AS. Prevention of violence, abuse and neglect in early childhood: A review of the literature on research, policy and practice. Early Child Development and Care. 2014;184(9-10):1295-335.

113. Meng X, Fleury MJ, Xiang YT, Li M, D'Arcy C. Resilience and protective factors among people with a history of child maltreatment: a systematic review. Social psychiatry and psychiatric epidemiology. 2018;53(5):453-75.
114. Runyan DK, Hunter WM, Socolar RR, Amaya-Jackson L, English D, Landsverk J, et al. Children who prosper in unfavorable environments: the relationship to social capital. Pediatrics. 1998;101(1 Pt 1):12-8.
115. Lyons SJ, Henly JR, Schuerman JR. Informal support in maltreating families: Its effect on parenting practices. Children and Youth Services Review. 2005;27(1):21-38.
116. Coleman PK, Karraker KH. Self-efficacy and parenting quality: Findings and future applications. Developmental review. 1998;18(1):47-85.
117. Kurtz S, Levine J, Safyer M. Ask the question: Screening for postpartum mood and anxiety disorders in pediatric primary care. Current problems in pediatric and adolescent health care. 2017;47(10):241-53.
118. Socialstyrelsen. Barn som far illa eller riskerar att fara illa. Stockholm; 2014. 2014-10-4.
119. Pascoe JM, Wood DL, Duffee JH, Kuo A. Mediators and Adverse Effects of Child Poverty in the United States. Pediatrics. 2016;137(4).
120. Dubowitz H, Finkelhor D, Zolotor A, Kleven J, Davis N. Addressing adverse childhood experiences in primary care: challenges and considerations. Pediatrics. 2022;149(4):e2021052641.
121. Semega J, Fontenot K, Kollar M. Income and Poverty in the United States: 2018. US Census Bureau. Report; 2019.
122. The Public Health Agency of Sweden. Inkomster och försörjningsmöjligheter – Resultat för uppföljningen av folkhälsopolitikens målområde 4 [English translation by the author: Income and livelihoods - Results for the monitoring of public health policy goal area 4]. [Internet]. Stockholm: The Public Health Agency of Sweden; 2022. [cited 2023 August18]. [Available from: https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/i/inkomster-och-forsorjningsmojligheter-malomrade-4/?pub=120887#120899
123. Save the Children. Barnfattigdom i Sverige - Årsrapport 2021 [Child poverty in Sweden -annual report 2021]. [Internet] Stockholm: Save the children, 2021. [cited 2023 August 18]. Available from: https://resourcecentre.savethechildren.net/pdf/Barnfattigdom-i-Sverige-211206UPDATED.pdf/
124. Krueger PM, Jutte DP, Franzini L, Elo I, Hayward MD. Family structure and multiple domains of child well-being in the United States: a cross-sectional study. Popul Health Metr. 2015;13:6.
125. Pelton LH. The continuing role of material factors in child maltreatment and placement. Child abuse & neglect. 2015;41:30-9.
126. Doidge JC, Higgins DJ, Delfabbro P, Edwards B, Vassallo S, Toumbourou JW, et al. Economic predictors of child maltreatment in an Australian population-based birth cohort. Children and youth services review. 2017;72:14-25.
127. Cancian M, Yang M-Y, Slack KS. The effect of additional child support income on the risk of child maltreatment. Social Service Review. 2013;87(3):417-37.
128. Raissian KM, Bullinger LR. Money matters: Does the minimum wage affect child maltreatment rates? Children and youth services review. 2017;72:60-70.

129. Warren EJ, Font SA. Housing insecurity, maternal stress, and child maltreatment: An application of the family stress model. Social Service Review. 2015;89(1):9-39.
130. Massoudi P, Hwang CP, Wickberg B. Fathers' depressive symptoms in the postnatal period: Prevalence and correlates in a population-based Swedish study. Scand J Public Health. 2016;44(7):688-94.
131. Kerstis B, Nohlert E, Öhrvik J, Widarsson M. Association between depressive symptoms and parental stress among mothers and fathers in early parenthood: A Swedish cohort study. Upsala Journal of Medical Sciences. 2016;121(1):60-4.
132. Ramchandani P, Stein A, Evans J, O'Connor TG, Team AS. Paternal depression in the postnatal period and child development: a prospective population study. The Lancet. 2005;365(9478):2201-5.
133. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. The British journal of psychiatry. 1987;150(6):782-6.
134. Davé S, Petersen I, Sherr L, Nazareth I. Incidence of maternal and paternal depression in primary care: a cohort study using a primary care database. Archives of pediatrics & adolescent medicine. 2010;164(11):1038-44.
135. Windham AM, Rosenberg L, Fuddy L, McFarlane E, Sia C, Duggan AK. Risk of mother-reported child abuse in the first 3 years of life. Child abuse & neglect. 2004;28(6):645-67.
136. Chemtob CM, Gudiño OG, Laraque D. Maternal posttraumatic stress disorder and depression in pediatric primary care: association with child maltreatment and frequency of child exposure to traumatic events. JAMA pediatrics. 2013;167(11):1011-8.
137. Abidin RR. Parenting Stress Index: a measure of the parent–child system. 1997.
138. Pinderhughes EE, Dodge KA, Bates JE, Pettit GS, Zelli A. Discipline responses: influences of parents' socioeconomic status, ethnicity, beliefs about parenting, stress, and cognitive-emotional processes. J Fam Psychol. 2000;14(3):380-400.
139. Webster-Stratton C. Enhancing the effectiveness of self-administered videotape parent training for families with conduct-problem children. J Abnorm Child Psychol. 1990;18(5):479-92.
140. Black DA, Heyman RE, Slep AMS. Risk factors for child physical abuse. Aggression and violent behavior. 2001;6(2-3):121-88.
141. Haskett ME, Scott SS, Grant R, Ward CS, Robinson C. Child-related cognitions and affective functioning of physically abusive and comparison parents. Child abuse & neglect. 2003;27(6):663-86.
142. Rodriguez CM. Personal contextual characteristics and cognitions: Predicting child abuse potential and disciplinary style. Journal of interpersonal violence. 2010;25(2):315-35.
143. Ethier LS, Lacharite C, Couture G. Childhood adversity, parental stress, and depression of negligent mothers. Child abuse & neglect. 1995;19(5):619-32.
144. Anthony LG, Anthony BJ, Glanville DN, Naiman DQ, Waanders C, Shaffer S. The relationships between parenting stress, parenting behaviour and preschoolers' social competence and behaviour problems in the classroom.

Infant and Child Development: An International Journal of Research and Practice. 2005;14(2):133-54.
145. Taylor CA, Guterman NB, Lee SJ, Rathouz PJ. Intimate partner violence, maternal stress, nativity, and risk for maternal maltreatment of young children. American journal of public health. 2009;99(1):175-83.
146. Rodgers AY. Multiple sources of stress and parenting behavior. Children and youth services review. 1998;20(6):525-46.
147. Crnic KA, Greenberg MT. Minor parenting stresses with young children. Child development. 1990;61(5):1628-37.
148. Berry JO, Jones WH. The parental stress scale: Initial psychometric evidence. Journal of social and personal relationships. 1995;12(3):463-72.
149. Barnett MA. Economic disadvantage in complex family systems: Expansion of family stress models. Clinical child and family psychology review. 2008;11(3):145-61.
150. Gershoff ET, Aber JL, Raver CC, Lennon MC. Income is not enough: Incorporating material hardship into models of income associations with parenting and child development. Child development. 2007;78(1):70-95.
151. Gray PH, Edwards DM, O'Callaghan MJ, Cuskelly M, Gibbons K. Parenting stress in mothers of very preterm infants—influence of development, temperament and maternal depression. Early Human Development. 2013;89(9):625-9.
152. Kelley SW. Developing customer orientation among service employees. Journal of the academy of Marketing Science. 1992;20(1):27-36.
153. Kalil A, Tolman R, Rosen D, Gruber G. Domestic violence and children's behavior in low-income families. Journal of emotional abuse. 2003;3(1-2):75-101.
154. Ramstedt M, editor. Hur många barn växer upp med föräldrar som har alkoholproblem?– Resultat från en systematisk litteraturöversikt [In Swedish. [English translation by the author: How many children grow up with parents who have alcohol problems - Results from a systematic literature review.]. [Internet]. Stockholm: The Swedish Council for Information on Alcohol and Other Drugs; 2019.
[cited 2023 August 18]. Available from:https://www.can.se/publikationer/hur-manga-barn-vaxer-upp-med-foraldrar-som-har-alkoholproblem/; 2019.
155. Neger EN, Prinz RJ. Interventions to address parenting and parental substance abuse: conceptual and methodological considerations. Clin Psychol Rev. 2015;39:71-82.
156. Wekerle C, Wall A-M, Leung E, Trocmé N. Cumulative stress and substantiated maltreatment: The importance of caregiver vulnerability and adult partner violence. Child abuse & neglect. 2007;31(4):427-43.
157. Stith SM, Liu T, Davies LC, Boykin EL, Alder MC, Harris JM, et al. Risk factors in child maltreatment: A meta-analytic review of the literature. Aggression and violent behavior. 2009;14(1):13-29.
158. Dube SR, Anda RF, Felitti VJ, Croft JB, Edwards VJ, Giles WH. Growing up with parental alcohol abuse: exposure to childhood abuse, neglect, and household dysfunction. Child abuse & neglect. 2001;25(12):1627-40.

159. Sedlak AJ, Mettenburg J, Basena M, Peta I, McPherson K, Greene A. Fourth national incidence study of child abuse and neglect (NIS-4). Washington, DC: US Department of Health and Human Services. 2010;9:2010.
160. Smith, S.G., Chen, J., Basile, K.C., Gilbert, L.K., Merrick, M.T., Patel, N., Walling, M., & Jain, A. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010-2012 State Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2017.
161. Finkelhor D, Turner HA, Shattuck A, Hamby SL. Prevalence of childhood exposure to violence, crime, and abuse: Results from the national survey of children's exposure to violence. JAMA pediatrics. 2015;169(8):746-54.
162. McTavish JR, MacGregor JC, Wathen CN, MacMillan HL. Children's exposure to intimate partner violence: An overview. International review of psychiatry. 2016;28(5):504-18.
163. Ehrensaft MK, Cohen P, Brown J, Smailes E, Chen H, Johnson JG. Intergenerational transmission of partner violence: a 20-year prospective study. Journal of consulting and clinical psychology. 2003;71(4):741.
164. Kitzmann KM, Gaylord NK, Holt AR, Kenny ED. Child witnesses to domestic violence: a meta-analytic review. J Consult Clin Psychol. 2003;71(2):339-52.
165. United Nations Children´s Fund, Hidden in Plain Sight: A Statistical analysis of violence against children. New York: UNICEF; 2014.
166. Chen M, Chan KL. Effects of Parenting Programs on Child Maltreatment Prevention: A Meta-Analysis. Trauma, violence & abuse. 2016;17(1):88-104.
167. Dubowitz H. The Safe Environment for Every Kid (SEEK) Model: helping promote children's health, development, and safety: SEEK offers a practical model for enhancing pediatric primary care. Child abuse & neglect. 2014;38(11):1725-33.
168. Socialtjänstlagen (2001:453)[Social Services Act].[Internet]. Stockholm: Socialdepartementet.[cited 2023 August 18]. Available from: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/socialtjanstlag-2001453_sfs-2001-453/
169. Mikton C, Butchart A. Child maltreatment prevention: a systematic review of reviews. Bulletin of the World Health Organization. 2009;87(5):353-61.
170. Olds DL. The nurse-family partnership: An evidence-based preventive intervention. Infant Ment Health J. 2006;27(1):5-25.
171. Szilagyi M, Kerker BD, Storfer-Isser A, Stein RE, Garner A, O'Connor KG, et al. Factors associated with whether pediatricians Inquire about parents' adverse childhood experiences. Academic pediatrics. 2016;16(7):668-75.
172. Hornor G, Bretl D, Chapman E, Herendeen P, Mitchel N, Mulvaney B, et al. Child Maltreatment Screening and Anticipatory Guidance: A Description of Pediatric Nurse Practitioner Practice Behaviors. Journal of pediatric health care : official publication of National Association of Pediatric Nurse Associates & Practitioners. 2017;31(6):e35-e44.
173. Trowbridge MJ, Sege RD, Olson L, O'Connor K, Flaherty E, Spivak H. Intentional injury management and prevention in pediatric practice: results from 1998 and 2003 American Academy of Pediatrics Periodic Surveys. Pediatrics. 2005;116(4):996-1000.

174. Olson AL, Kemper KJ, Kelleher KJ, Hammond CS, Zuckerman BS, Dietrich AJ. Primary care pediatricians' roles and perceived responsibilities in the identification and management of maternal depression. Pediatrics. 2002;110(6):1169-76.
175. Cheng TL, DeWitt TG, Savageau JA, O'Connor KG. Determinants of counseling in primary care pediatric practice: physician attitudes about time, money, and health issues. Archives of pediatrics & adolescent medicine. 1999;153(6):629-35.
176. Eija P, Mika H, Aune F, Leila L. How public health nurses identify and intervene in child maltreatment based on the national clinical guideline. Nurs Res Pract. 2014;2014:425460.
177. Anderzen-Carlsson A, Gillå C, Lind M, Almqvist K, Lindgren Fändriks A, Källström Å. Child healthcare nurses' experiences of asking new mothers about intimate partner violence. Journal of clinical nursing. 2018;27(13-14):2752-62.
178. Almqvist K, Källström Å, Appell P, Anderzen-Carlsson A. Mothers' opinions on being asked about exposure to intimate partner violence in child healthcare centres in Sweden. Journal of child health care. 2018;22(2):228-37.
179. Garg A, Toy S, Tripodis Y, Silverstein M, Freeman E. Addressing social determinants of health at well child care visits: a cluster RCT. Pediatrics. 2015;135(2):e296-e304.
180. Nimborg J, Lindskog U, Nordgren L, Annerbäck EM. Routine conversations about violence conducted in Swedish child health services—A mixed methods study of nurses' experiences. Acta paediatrica. 2023;112(3):442-51.
181. Eismann EA, Theuerling J, Maguire S, Hente EA, Shapiro RA. Integration of the Safe Environment for Every Kid (SEEK) Model Across Primary Care Settings. Clin Pediatr (Phila). 2019;58(2):166-76.
182. Feigelman S, Dubowitz H, Lane W, Grube L, Kim J. Training pediatric residents in a primary care clinic to help address psychosocial problems and prevent child maltreatment. Acad Pediatr. 2011;11(6):474-80.
183. Bridle C, Riemsma RP, Pattenden J, Sowden AJ, Mather L, Watt IS, et al. Systematic review of the effectiveness of health behavior interventions based on the transtheoretical model. Psychology & Health. 2005;20(3):283-301.
184. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: toward an integrative model of change. Journal of consulting and clinical psychology. 1983;51(3):390.
185. Reisenhofer S, Taft A. Women's journey to safety–The Transtheoretical model in clinical practice when working with women experiencing Intimate Partner Violence: A scientific review and clinical guidance. Patient education and counseling. 2013;93(3):536-48.
186. Heather N, Hönekopp J, Smailes D. Progressive stage transition does mean getting better: a further test of the Transtheoretical Model in recovery from alcohol problems. Addiction. 2009;104(6):949-58.
187. Lundahl B, Burke BL. The effectiveness and applicability of motivational interviewing: A practice-friendly review of four meta-analyses. Journal of clinical psychology. 2009;65(11):1232-45.

188. Seals JG. Integrating the transtheoretical model into the management of overweight and obese adults. Journal of the American Academy of Nurse Practitioners. 2007;19(2):63-71.
189. Haynes, S. N., Smith, G. T., & Hunsley, J. D. Introduction to the Scientific Foundations of Clinical Assessment. Scientific Foundations of Clinical Assessment. 2nd ed. New York: Routledge Taylor & Francis Group, 1-30. 2019.
190. Taylor CS. Validity and validation: Understanding Statistics. New York: Oxford University Press; 2013.
191. Gravetter FJ, Forzano L-AB. Research Methods for the Behavioural Sciences . 4th edition. Belmont, CA: Wadsworth; ISBN 978-1-111-34225-8; 2012.
192. Slade M, Thornicroft G, Glover G. The feasibility of routine outcome measures in mental health. Social psychiatry and psychiatric epidemiology. 1999;34:243-9.
193. Polit DF, Beck CT. Nursing research: Generating and assessing evidence for nursing practice. 10th ed. Lippincott Williams & Wilkins; 2017.
194. Elo S, Kääriäinen M, Kanste O, Pölkki T, Utriainen K, Kyngäs H. Qualitative content analysis: A focus on trustworthiness. SAGE open. 2014;4(1):2158244014522633.
195. Bauer MS, Damschroder L, Hagedorn H, Smith J, Kilbourne AM. An introduction to implementation science for the non-specialist. BMC psychology. 2015;3(1):1-12.
196. Bauer MS, Kirchner J. Implementation science: What is it and why should I care? Psychiatry research. 2020;283:112376.
197. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. 2013.
198. Skivington K, Matthews L, Simpson SA, Craig P, Baird J, Blazeby JM, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. bmj. 2021;374.
199. World Health Organization. Regional Office for Europe. Screening programmes: a short guide. Increase effectiveness, maximize benefits, and minimize harm. [Internet]. Copenhagen. World Health Organization. Regional Office for Europe; 2020. [cited 2023 August18]. Available from: https://apps.who.int/iris/handle/10665/330829
200. World Health Organization. Ethical and safety recommendations for intervention research on violence against women. Building on lessons from the WHO publication. Geneva: World Health Organization; 2016.
201. National Board of Health and Welfare. Socialstyrelsens föreskrifter och allmänna råd om våld i nära relationer [In Swedish. English translation by the author: National Board of Health and Welfare regulations and general advice on domestic violence]. Stockholm: National Board of Health and Welfare; 2014.
202. Dubowitz H, Lane WG, Semiatin JN, Magder LS, Venepally M, Jans M. The safe environment for every kid model: impact on pediatric primary care professionals. Pediatrics. 2011;127(4):e962-70.
203. Sundquist K, Malmström M, Johansson S, Sundquist J. Care Need Index, a useful tool for the distribution of primary health care resources. Journal of Epidemiology & Community Health. 2003;57(5):347-52.

204. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al. The REDCap consortium: Building an international community of software platform partners. Journal of biomedical informatics. 2019;95:103208.
205. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. Journal of biomedical informatics. 2009;42(2):377-81.
206. Miller WR, Rollnick S. Motivational interviewing: Helping people change: Guilford press; 2012.
207. Creswell JW, Creswell JD. Research design: Qualitative, quantitative, and mixed methods approaches: Sage publications; 2017.
208. Malterud K. Systematic text condensation: a strategy for qualitative analysis. Scand J Public Health. 2012;40(8):795-805.
209. Malterud K. Kvalitativa forskningsmetoder i medicinsk forskning. Lund: Studentlitteratur; 2014.
210. Pattorn MQ. Oualitative Research & Evaluation Methods. 4rd ed. London: SAGE Publications,Inc.; 2015.
211. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24(2):105-12.
212. Setia MS. Methodology series module 3: Cross-sectional studies. Indian journal of dermatology. 2016;61(3):261.
213. The Public Health Agency of Sweden. Purpose and background of the questions in the Swedish national public health survey the Public Health Agency of Sweden; 2021.
214. Bjelland I, Dahl AA, Haug TT, Neckelmann D. The validity of the Hospital Anxiety and Depression Scale: an updated literature review. Journal of psychosomatic research. 2002;52(2):69-77.
215. Smarr KL, Keefer AL. Measures of depression and depressive symptoms. Arthritis Care & Research. 2020;72:608-29.
216. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta psychiatrica Scandinavica. 1983;67(6):361-70.
217. Abidin R. Parenting Stress Index (PSI) manual. 3rd ed. Odessa, FL: Psychological Assessment Resources. Inc; 1995.
218. Östberg M, Hagekull B, Wettergren S. A measure of parental stress in mothers with small children: dimensionality, stability and validity. Scandinavian journal of psychology. 1997;38(3):199-208.
219. Hegarty K, Bush R, Sheehan M. The composite abuse scale: further development and assessment of reliability and validity of a multidimensional partner abuse measure in clinical settings. Violence and victims. 2005;20(5):529-47.
220. Hegarty K, Sheehan M, Schonfeld C. A multidimensional definition of partner abuse: Development and preliminary validation of the Composite Abuse Scale. Domestic Violence: Routledge; 2017. p. 15-31.
221. Bergman H, Källmén H. Alcohol use among Swedes and a psychometric evaluation of the alcohol use disorders identification test. Alcohol and alcoholism. 2002;37(3):245-51.

222. Tell J, Olander E, Anderberg P, Berglund JS. Nurses' Use and Ways of Understanding Web-Based National Guidelines for Child Healthcare. Computers, Informatics, Nursing. 2020;38(2):62.
223. Irving P, Dickson D. Empathy: towards a conceptual framework for health professionals. International Journal of Health Care Quality Assurance. 2004.
224. Sokol R, Austin A, Chandler C, Byrum E, Bousquette J, Lancaster C, et al. Screening children for social determinants of health: a systematic review. Pediatrics. 2019;144(4).
225. Lane WG, Dubowitz H. Social determinants of health, personalized medicine, and child maltreatment. Pediatric research. 2021;89(2):368-76.
226. Scarff JR. Postpartum depression in men. Innovations in clinical neuroscience. 2019;16(5-6):11.
227. Cavanagh A, Wilson CJ, Kavanagh DJ, Caputi P. Differences in the expression of symptoms in men versus women with depression: a systematic review and meta-analysis. Harvard review of psychiatry. 2017;25(1):29-38.
228. Follingstad DR, Rogers MJ. Validity concerns in the measurement of women's and men's report of intimate partner violence. Sex Roles. 2013;69(3):149-67.
229. Rabin RF, Jennings JM, Campbell JC, Bair-Merritt MH. Intimate partner violence screening tools: a systematic review. American journal of preventive medicine. 2009;36(5):439-45. e4.
230. Chan KL. Gender differences in self-reports of intimate partner violence: A review. Aggression and Violent Behavior. 2011;16(2):167-75.
231. United Nations. Guidelines for producing statistics on violence against women: Statistical surveys: New York: Department of Economic and Social Affairs, UN; 2014.
232. Velonis A, Maddox R, Buhariwala P, Kamalanathan J, Hassan MA, Fadhil T, et al. Asking the right questions: screening men for partner violence. Journal of interpersonal violence. 2022;37(15-16):NP13813-NP29.
233. Bradley KA, DeBenedetti AF, Volk RJ, Williams EC, Frank D, Kivlahan DR. AUDIT-C as a brief screen for alcohol misuse in primary care. Alcoholism: Clinical and Experimental Research. 2007;31(7):1208-17.
234. Gual A, Segura L, Contel M, Heather N, Colom J. Audit-3 and audit-4: effectiveness of two short forms of the alcohol use disorders identification test. Alcohol and alcoholism. 2002;37(6):591-6.
235. Shorey S, Chee CYI, Ng ED, Chan YH, San Tam WW, Chong YS. Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. Journal of psychiatric research. 2018;104:235-48.
236. Paulson JF, Bazemore SD. Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis. Jama. 2010;303(19):1961-9.
237. Hunt AM, Uthirasamy N, Porter S, Jimenez ME. Parental depression screening in pediatric health care settings: a scoping review. Pediatrics. 2022;150(1).
238. Widarsson M, Engström G, Rosenblad A, Kerstis B, Edlund B, Lundberg P. Parental stress in early parenthood among mothers and fathers in S weden. Scandinavian journal of caring sciences. 2013;27(4):839-47.

239. Eek F, Axmon A. Gender inequality at home is associated with poorer health for women. Scandinavian journal of public health. 2015;43(2):176-82.
240. Ramstedt M, Raninen J, Larm P, Livingston M. Children with problem drinking parents in Sweden: Prevalence and risk of adverse consequences in a national cohort born in 2001. Drug and alcohol review. 2022;41(3):625-32.
241. World Health Organization. Global status report on alcohol and health 2018. Geneva: World Health Organization; 2018.
242. White AM. Gender differences in the epidemiology of alcohol use and related harms in the United States. Alcohol research: current reviews. 2020;40(2).
243. Smith, S.G., Zhang, X., Basile, K.C., Merrick, M.T., Wang, J., Kresnow, M., et al. The National Intimate Partner and Sexual Violence Survey (NISVS): 2015 Data Brief – Updated Release. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2018.
244. Dalton CC, Gottlieb LN. The concept of readiness to change. Journal of advanced nursing. 2003;42(2):108-17.
245. Tashakkori A, Creswell JW. The new era of mixed methods. Sage Publications; 2007. p. 3-7.
246. Creswell JW, Clark VLP. Designing and conducting mixed methods research: Sage publications; 2017.
247. Elo S, Kyngäs H. The qualitative content analysis process. Journal of advanced nursing. 2008;62(1):107-15.
248. Berger R. Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. Qualitative research. 2015;15(2):219-34.
249. Bellamy N. Principles of clinical outcome assessment. Philadelphia, PA, United States: Mosby; 2014.
250. Statistics Sweden. Statistics. Demographic statistics Sweden. [Internet]. Stockholm: Statistics Sweden. Statistics; 2022. [cited 2023 August18]. Available from: https://www.scb.se/hitta-statistik/statistik-efter-amne/befolk-ning/

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Editor: The Dean of the Faculty of Medicine

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