



**REVIEW**

# The Evidenced Effects of Early Childhood Interventions to Promote Mental Health and Parenting in the Nordic Countries: A Systematic Review

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## ABSTRACT

The first years of life and the family context are key to the promotion and protection of children's health and well-being, emphasizing the need for interventions aimed to support families with young children. This review aimed to explore the effectiveness of early childhood interventions developed for promoting mental health and parenting among families with young children in the Nordic countries. Six electronic databases were systematically searched, and 20 articles covering 16 studies applying various quantitative and qualitative methods met the study inclusion criteria. The studied interventions were assessed as universal health-promoting interventions and health-promoting interventions with elements of prevention. Outcomes of interest encompassed mental health, related risk and protective factors among the parents and/or the children, or child-parent interaction. The results from studies applying statistical methods show significant improvements in parents' self-efficacy, self-esteem, and parental satisfaction, while few improvements in parents' social support or parental relationship were identified. Improvements in social support and parental relationships were however reported in qualitative studies. Most quantitative studies reporting on parents' mental health problems and stress found a significant decrease, and qualitative studies highlighted experienced positive effects on mental health and well-being. The majority of studies reporting on children's mental health and/or development as well as strengths and difficulties indicated a statistically significant positive development. No significant changes were however found for existing behavioral problems. The majority of studies examining parenting strategies and/or parent-child interaction found significant positive changes after the interventions. In sum, although findings are heterogeneous, early childhood interventions show various positive effects on the parenting and mental health of both children and their parents. The fact that different types of initiatives have been developed and implemented can be seen as an advantage, considering the varying needs and expectations of different families.

## KEYWORDS

Systematic review; early childhood intervention; mental health promotion; primary prevention; parenting

## 1 Introduction

The overall population in the Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) experience a high level of well-being [1,2]. Studies show that this is largely due to the Nordic welfare model's ability to create good life conditions [3,4]. The welfare model is based on the principles of



universalism, meaning equal opportunities for good public health and well-being for the entire population. In practice, this means that the states offer the citizens various forms of welfare services and universal support strategies which are part of a universal insurance system [5,6].

Despite these favorable conditions, and the fact that the majority of the Nordic population has good mental health, 12.3% of the citizens more than 15 years of age show early signs of mental health problems [1]. It has been estimated that half of all mental health problems in adulthood begin during or before adolescence, and there is a high and increasing rate of mental health problems among young people in the European region. Seventeen million children and youth aged 10 to 19 suffer from mental health problems, which means 20% of the population in this age group [7]. This highlights the need for an increased focus on early initiatives and actions to promote and protect mental health in early childhood.

### ***1.1 Promotion and Prevention in Mental Health***

In order to improve the population's mental health, it is pivotal to not only prevent and address mental health problems but to also emphasize mental health promotion in various contexts [8,9]. Even if the terms prevention and promotion are clearly related and overlapping, it is useful to make a theoretical distinction between these concepts. Mental health promotion focuses on positive mental health, and the purpose is to build psychosocial strengths, competencies, and resources, and to create supportive environments while prevention of mental health problems focuses primarily on reducing the incidence, prevalence, or severity of targeted problems [8].

A model, initially developed by Mrazek et al. [10], divides preventive initiatives into three categories: universal, selected, and indicated. Indicated activities are designed for high-risk groups with incipient difficulties, while selective activities are targeted to identified risk groups. The universal initiatives target the whole population, focusing on protective factors rather than risk factors, hence applying a more health-promoting approach [8].

### ***1.2 The Importance of Early Childhood and Parenting***

The first years of life are recognized as a particularly sensitive period because they lay the foundation for lifelong physical, mental, and social development [11,12]. Development theorists have emphasized the importance of a safe and secure home environment, a supportive family, and early attachment, along with support from the local community, as protective factors for a child's positive psychosocial development (e.g., [13–15]). Strengthening family dynamics and the interaction between parents and children is one of the most important protective factors for child development and well-being throughout life [16–18]. Introducing health promotion and prevention efforts during the first five years of life is one important strategy for reducing mental health problems at the population level [19].

In order to support the child, it is recommended to work with the whole family as a unit [20]. Early childhood interventions are designed to reduce risk factors for negative development and to enhance protective factors for positive development. The common emphasis of these interventions is to support parent-child interaction and parenting [16,18]. Various types of structured early childhood interventions have been developed internationally [21,22]. No single intervention can meet the diverse developmental needs of all children, and there is therefore a continuous need for various types of support and services with documented effects [8,23].

The World Health Organization (WHO) has recently collected evidence and published guidelines on improving early childhood development and recommends interventions that strengthen parent-child interaction and support parents in their parenting. Such early childhood interventions encourage stable and healthy family relationships and provide a safe environment for the child which in turn promotes positive child development and mental health [24,25].

### ***1.3 Early Childhood Interventions for Promoting Mental Health***

Several international systematic reviews and meta-analyses have evaluated universally offered early childhood interventions and have found significant improvements in mental health and/or parenting outcomes (e.g., [26–35]). The early childhood interventions can be conducted with individual families in their homes (e.g., [32,35]), can be group-based, and delivered at community facilities such as hospitals, social work clinics, preschools, or churches (e.g., [27,29,31]), or be online-based (e.g., [29]). What all these interventions have in common is the aim to improve children's and parents' mental health by supporting the parent-child attachment or interaction, focusing on, e.g., the parents' knowledge, attitudes, and understanding [26,28,29,32–35].

While a narrative review of Nordic interventions focusing on promoting infants' attachment and parents' sensitivity has recently been performed [36], to date, no review has been conducted of early childhood interventions in the Nordic countries focusing on universal health-promoting initiatives. The aim of this systematic review was therefore to gather, describe and evaluate early childhood interventions developed for promoting mental health and parenting among families with young children in the Nordic welfare countries.

## **2 Method**

### ***2.1 Study Design***

This systematic review was performed in accordance with the guidelines presented in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement [37]. The selection criteria were defined in accordance with the standard PICOS terminology (Participants, Interventions, Comparisons, Outcomes, and Study design) [37].

### ***2.2 Selection Criteria***

Studies were included based on the following inclusion criteria: a) interventions targeted families and/or parents of young children (or parents-to-be), aiming to promote and protect the family's (parents' and/or children's) mental health, with a focus on parental support; b) children were aged 0–6 years, or alternatively, the mean age of the children was  $\leq 7$  years; c) interventions were delivered in the Nordic countries; d) articles were published in English, between the years 2000 and 2020.

Intervention studies where the participants were showing early signs or symptoms of mental health problems (but not fulfilling diagnostic criteria) and interventions aimed at identified risks, e.g., parental stress or children's problem behaviors, were included. Studies could use a randomized controlled or quasi-experimental design, and quantitative or qualitative methods could be applied. Studies were excluded if the intervention was: a) developed to treat mental disorders; b) delivered through schools; c) the participants exhibited severe problems, where, e.g., children were in the care of social services.

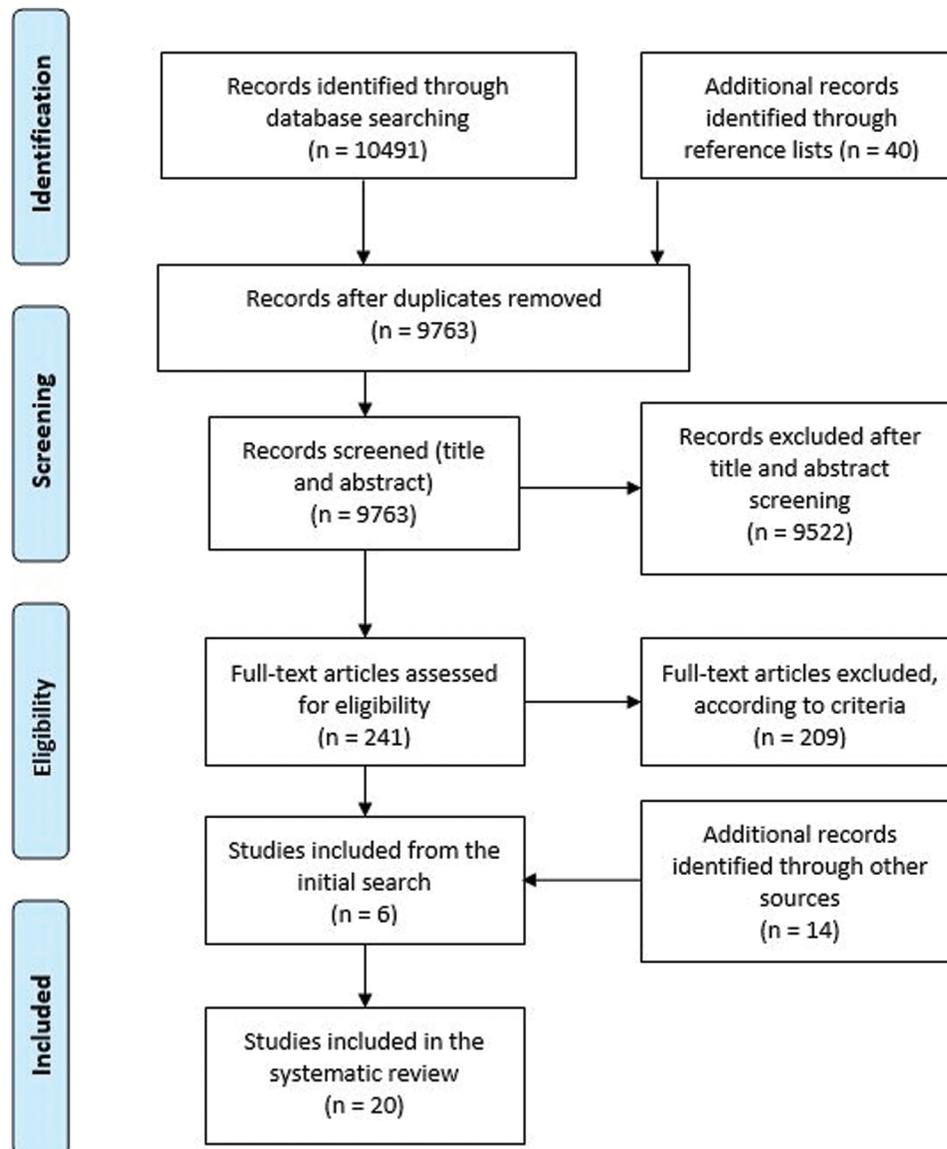
### ***2.3 Electronic Searches***

The electronic searches were conducted in October 2020. The following international databases were searched: CINAHL, ERIC, PsycInfo, PsycArticles, Pubmed, and Web of Science using database-tailored search strategies (see [Appendix A](#)).

### ***2.4 Screening Procedure and Study Selection***

A total of 10531 records were identified (see [Fig. 1](#) for the screening and selection process). After the removal of 768 duplicates, the titles and abstracts of 9763 records were independently screened by four researchers. The full-text screening was performed on 241 articles and their relevance was reevaluated based on the inclusion criteria. Uncertainties concerning the study inclusion were resolved through discussions within the research group. Additionally, the snowballing technique was applied, i.e., the reference lists of the included articles were checked for additional relevant studies, and identified reviews

were also checked for relevant original studies. Finally, 20 relevant articles were included in this systematic review.



**Figure 1:** PRISMA Flow Diagram illustrating the screening and selection process

### 2.5 Data Extraction and Coding

In this review study, outcomes related to mental health in parents and/or children and outcomes related to parenting have been of interest, while outcomes related to, e.g., sociodemographic factors and physical health have been excluded. Information covering, e.g., intervention content and execution, participants, outcome measures, method of analysis, key results, and study limitations was coded from a total of 20 publications, covering 16 studies, using an established coding scheme [37]. Articles reporting on the same study samples were parallel-coded [38–41]. Any uncertainties regarding data coding were discussed among all review authors until a consensus was reached.

### 3 Results

#### 3.1 Characteristics of Included Studies

##### 3.1.1 Study Design

A total of 20 publications covering 16 intervention studies were included in this systematic review (study details are outlined in [Appendix B](#)). Ten intervention studies applying quantitative research methods and six studies applying qualitative methods were included. Seven of the quantitative studies had a follow-up period (6 weeks to 24 months after the end of the intervention) and/or a control group design, of which four were randomized-controlled trials (RCTs). The included studies were conducted in Finland (seven), Sweden (six), and Norway (three).

##### 3.1.2 Participants

There was a considerable variation in sample size between the included studies. Some of the studies targeted the whole family or extended family (sample size ranged from 5 to 1300, mean 217.89), while other studies were limited to the parents (sample size ranged from 77 to 759, mean 376). All studies encompassed parents of both genders, with the exception of one study focusing specifically on fathers [42].

##### 3.1.3 Intervention Delivery

Two types of interventions were identified among the included studies; family-focused activities primarily carried out in the participating families' homes [42–48], and group-based activities carried out at community facilities e.g., social and health care centers, kindergartens, preschools, and club facilities [49–55]. One intervention [56] combined both family-focused and group-based activities, while another [57] intervention was carried out online and consisted of an information database and a discussion forum. The interventions were delivered by a range of professionals, i.e., public health nurses, social workers, family counselors, and preschool teachers, who had also received training prior to the intervention delivery.

In two of the interventions encompassing family-focused sessions, the intervention content was based on larger intervention programs or projects: The extended home visiting program [42], and The European Early Promotion Project (EEPP) [47]. In some of the group-based intervention studies, the intervention content was based on larger intervention programs or projects: The International Child Development Programme (ICDP) [49,53], The ABC parenting group program [50,55], The Short Basic Incredible Years intervention program (S-IY) [52], and The COPE program [54].

##### 3.1.4 Intervention Content and Duration

The family-focused interventions consisted mainly of psychoeducation and discussion activities. Some of the family-focused interventions also encompassed video recording, analysis, and feedback on normal family life situations. In the group-based interventions, the reported group size varied between five and twelve participants, except for The COPE program consisting of a larger group with 25–30 participants. The sessions consisted of, e.g., psychoeducation, different types of assignments and exercises, parental counseling, discussions, and feedback.

Three studies reported the intervention duration in months (1–18), while the remaining studies reported the number of visits or sessions. The number of visits or sessions ranged between 1 and 58; ten studies reported visits or sessions between 1 and 10, and three studies reported an average number of visits or sessions, ranging between 14.1 and 21. Each visit or session lasted between 15 min and 2.5 h.

##### 3.1.5 Intervention Approach

Half of the included studies had a universal health-promoting approach [42,44,48–50,53,55,57]. These interventions were designed without regard to individual risk factors. The programs were broadly aimed at supporting parenthood and family relationships, as well as recognizing and improving parents' resources.

The other half of the included studies applied a health-promoting approach with elements of prevention [43,45–47,51,52,54,56]. In these studies, the intervention content was future- and solution-oriented but devoted mostly to problem-solving and targeted families where some form of challenge occurred, e.g., parental stress or children’s problem behaviors.

### 3.1.6 Outcome Measures

Three main categories of outcome measures were distinguished (see Table 1). All ten of the included quantitative studies measured outcomes among parents, while nine measured outcomes among children, and six measured outcomes covering the parent-child interaction.

- a) Parental outcomes were measured using, e.g., the Satisfaction with Life Scale, Cantril’s Self-Anchoring Ladder of Life Satisfaction Scale, What Being the Parent of a New Baby is Like (WPBL-R), Parental Self-Efficacy Scale (PSE), Parenting Sense of Competence Scale (PSOC), Generalized Self-Efficacy Scale, General Health Questionnaire (GHQ12), Hospital Anxiety and Depression Scale (HADS), Depression Anxiety Stress Scale (DASS-21), UCLA Loneliness Scale, Interview Schedule for Social Interaction (ISSI), Dyadic Adjustment Scale, Parental Locus of Control Instrument (PLOC), Parenting Stress Index (PSI), and Swedish Parenthood Stress Questionnaire (SPSQ).
- b) Child outcomes were measured using, e.g., the Child Health and Development (CHD) instrument, Strengths and Difficulties Questionnaire (SDQ), Eyberg Child Behavior Inventory (ECBI), and Behavioral Screening Questionnaire (BSQ).
- c) Outcomes related to the parent-child interaction were measured using, e.g., the Relationship Questionnaire (RQ), Conflict Tactics Scale, and Parenting Practices Interview (PPI).

**Table 1:** Intervention impact according to approach

Interventions with a universal health-promoting approach			
Study	Outcome results		
<i>Intervention delivery</i>	<i>Parental outcomes</i>	<i>Child outcomes</i>	<i>Parent-child interaction outcomes</i>
<b>Clucas et al. [49]</b> Group-based activities at community facilities	Self-efficacy: Fathers (+), Mothers (0) Trait emotions/anger: Fathers (–), Mothers (0) Anxiety: Fathers (–), Mothers (–) Depression: Fathers (0), Mothers (0) Self-esteem: Fathers (0), Mothers (0) Physical, emotional and social health: Fathers (–), Mothers (0) Life quality: Fathers (0), Mothers (0) Life satisfaction: Fathers (0), Mothers (0) Loneliness: Fathers (0), Mothers (0) Happiness with partner: Fathers (0), Mothers (0)	Strengths and difficulties: Total difficulties: Fathers (0), Mothers (–) Total impact: Fathers (0), Mothers (–) Total prosocial behavior: Fathers (0), Mothers (0)	Parenting strategies: Fathers (+), Mothers (+) Positive discipline: Fathers (+), Mothers (+) Child management: Fathers (+), Mothers (+) Engagement with child: Fathers (–), Mothers (–) Activities with child: Fathers (0), Mothers (0) Mothers’ hours spent with child: Fathers (0), Mothers (0) Fathers’ hours spent with child: Fathers (0), Mothers (0)

(Continued)

<b>Table 1 (continued)</b>			
Interventions with a universal health-promoting approach			
Study	Outcome results		
<i>Intervention delivery</i>	<i>Parental outcomes</i>	<i>Child outcomes</i>	<i>Parent-child interaction outcomes</i>
<b>Enebrink et al. [50]</b> Group-based activities at community facilities	Depression/anxiety (-) Self-efficacy (+) Emotion regulation (0)	Psychological well-being: Emotional well-being (+) Independence (+) Child family relations (0)	Parental strategies (+)
<b>Häggman-Laitila et al. [44] *</b> Family-focused activities in the home	<i>Benefits emerged in results</i>	<i>Benefits emerged in results</i>	<i>Benefits emerged in results</i>
<b>Mekhail et al. [42] *</b> Family-focused activities in the home with fathers	<i>Benefits emerged in results</i>		
<b>Salonen et al. [57]</b> Online intervention	Satisfaction: Fathers (0), Mothers (+) Self-efficacy: Fathers: Total score (+) Cognitive skills (+) Affective skills (+) Behavioral skills (0) Mothers (+)		
<b>Sherr et al. [53]</b> Group-based activities at community facilities	Happiness with partner (0)	Strengths and difficulties: Total impact (-) Total difficulties (0) Total prosocial behavior (0)	Parenting strategy (+) Activities with child (+) Child management (-) Positive discipline (0) Engagement with child (0)
<b>Tanninen et al. [48] *</b> Family-focused activities in the home	<i>Benefits emerged in results</i>		<i>Benefits emerged in results</i>
<b>Ulfsdotter et al. [55]</b> Group-based activities at community facilities	Self-efficacy (+)	Mental health and development (+)	
Interventions with a health-promoting approach with elements of prevention			
Study	Outcome results		
<i>Intervention delivery</i>	<i>Parental outcomes</i>	<i>Child outcomes</i>	<i>Parent-child interaction outcomes</i>
<b>Häggman-Laitila et al. [43] *</b> Family-focused activities in the home	<i>Benefits emerged in results</i>		<i>Benefits emerged in results</i>
<b>Häggman-Laitila et al. [51] *</b> Group-based activities at community facilities	<i>Benefits emerged in results</i>		

(Continued)

**Table 1 (continued)**

Interventions with a universal health-promoting approach			
Study		Outcome results	
<i>Intervention delivery</i>	<i>Parental outcomes</i>	<i>Child outcomes</i>	<i>Parent-child interaction outcomes</i>
<b>Häggman-Laitila et al. [45] *</b> Family-focused activities mainly in the home	<i>Benefits emerged in results</i>	<i>Benefits emerged in results</i>	<i>Benefits emerged in results</i>
<b>Neander et al. [46]</b> Family-focused activities at community facilities	Life satisfaction (+) Couples' stress: Total stress (-) Incompetence (-) Role restriction (-) Social isolation (-) Health problems (-) Spouse relationship problems (0) Single's stress: Total stress (-) Incompetence (-) Social isolation (-) Role restriction (0) Health problems (0) Mental health problems (-) Attachment: Fearful/disorganized attachment (-) Secure attachment (0) Social support: Total score (+) Social integration (+) Availability of attachment (0) Adequacy of attachment (0) Availability of social integration (0)	Strengths and difficulties: Total difficulties (-) Impact: Total score (-) Emotional symptoms (-) Conduct problems (-) Hyperactivity (-) Prosocial behavior (+) Peer problems (0)	
<b>Puura et al. [47]</b> Family-focused activities in the home	Mental health problems: Fathers (0), Mothers (0) Minor depression: Fathers (0), Mothers (-) Parental relationship (0) Social support/isolation (0) Self-esteem and perceived family relationships (0) Parental stress (0) Maternal sensitivity, responsiveness, ability to enjoy the infant and criticism (0)	Infant characteristics: Difficulty taking child places (-) Consistency of sleep routine (0) Response to new food (0) How easily upset (0) Reaction to dressing (0) Enjoyment of play with parents (0) Excitement playing with others (0) How cuddly is the child (0) Irregular (0) Behavioral problems (0) Mental, motor and behavior development (0)	Infant's circumstances: Total score (+) Emotional and verbal responsiveness (+) Avoidance of punishment (0) Organization of the environment (0) Provision of play material (0) Maternal involvement with the child (0) Opportunities of variety (0) Parenting (0) Mother-child relationship (0)

(Continued)

<b>Table 1 (continued)</b>			
Interventions with a universal health-promoting approach			
Study	Outcome results		
<i>Intervention delivery</i>	<i>Parental outcomes</i>	<i>Child outcomes</i>	<i>Parent-child interaction outcomes</i>
<b>Reedtz et al. [52]</b> Group-based activities at community facilities	Self-esteem: Satisfaction (+) Self-efficacy (0)	Behavioral problems (0)	Parenting practices: Positive parenting (+) Harsh discipline (-)
<b>Sampaio et al. [56]</b> A combination of group-based activities and family-focused activities offered at community facilities	Mental health problems (0)	Behavioral problems (0)	
<b>Thorell [54]</b> Group-based activities at community facilities	Parental stress (-) Lack of perceived control (-)	Strengths and difficulties: Conduct problems (-) Hyperactivity/impulsivity (-) Daily problems (-) Inattention (0) Social competence (0) Peer problems (0)	

Note: \*Study applied qualitative research method, (+) Statistically significant increase, (-) Statistically significant decrease, (0) Statistically non-significant effects.

### 3.1.7 Methodological Quality of the Studies

Quality assessment was performed utilizing the NICE checklists, with separate systematic guidelines for evaluating quantitative and qualitative studies [58,59]. The overall validity of the studies was coded as ++, +, or -. ++ indicated a high-quality score, with all or most checklist criteria fulfilled. + indicated a moderate quality score, where some, but not all, checklist criteria had been met. - indicated a low-quality score, with few or none of the checklist criteria fulfilled. Study quality was assessed by two review authors. The majority (n = 12) of the included studies were rated with a moderate quality score (see Appendix B for listed study limitations).

## 3.2 Evidence on Intervention Impact according to Approach

Table 1 summarizes the intervention impact according to the two approaches: interventions with a universal health-promoting approach and interventions with a health-promoting approach with elements of prevention. The outcome results are divided into parental, child, and parent-child interaction outcomes. Seven of the quantitative studies [46–47,50,52,55–57] had a follow-up period and for these studies, pre- to follow-up-changes are reported. For the studies without a follow-up period [49,53,54], pre- to post-changes are reported. If all the subscales in an instrument showed a change in the same direction, the overall impact is reported.

### 3.2.1 Intervention Outcomes among Parents

**Parental self-efficacy and self-esteem.** Four quantitative studies covering interventions with a universal health-promoting approach [49–50,55,57], and one quantitative study classified as a health-promoting intervention with preventive elements [52] evaluated parents' self-efficacy. All four interventions with a universal health-promoting approach found statistically significant improvement in parents' self-efficacy, while no statistically significant effect was identified for the intervention with preventive elements.

Looking at the studies more in-depth, Clucas et al. [49] found significant improvement in fathers', but not in mothers', self-efficacy. Another study [57] found significant improvement in both parents' total scores, but there were differences in the subscales between the parents. Among the mothers, statistically significant positive changes were found in all the subscales of cognitive, affective, and behavioral skills, while the fathers' cognitive and affective skills improved statistically, but not their behavioral skills [57]. Furthermore, Clucas et al. [49] and Puura et al. [47] examined parental self-esteem, but no statistically significant effect was found.

Six studies applying qualitative methods indicated improved parental self-efficacy and self-esteem, e.g., parents reported that their confidence, self-knowledge, and childcaring skills had improved [44], that they had discovered their own hidden skills and felt successful and able to support their children's development [43], that their awareness of personal resources and reliance on their ability to cope was strengthened and improved [51], and that they had become better at coping with everyday life [48]. Häggman-Laitila et al. [45] reported that the parent's need for support regarding coping with parenthood decreased drastically from 77% to 3% after the intervention, and Mekhail et al. [42] reported that the intervention met the participating father's need for support regarding knowledge and parental confidence.

**Parental satisfaction.** Parental satisfaction was measured in four quantitative studies. Three interventions [46,52,57] significantly improved parental satisfaction, while one study [49] found no significant changes associated with parental satisfaction or life quality. Analyzing men and women separately, Salonen et al. [57] found significant improvement in mothers', but not fathers', satisfaction.

Three of the qualitative studies also indicate improved life satisfaction, e.g., parents reported that they had made positive discoveries about everyday life [43] and that their recreation, such as rest, joy, and company, had improved [51]. Tanninen et al. [48] reported that the participating parents evaluated that their overall living conditions had improved.

**Parental social support.** Three studies applying quantitative methods reported on outcomes related to the parents' social support. Neander et al. [46] found that the total score of social support and the subscale of social integration had significantly increased, while no significant changes were found for the availability and adequacy of attachment, or availability of social integration. Clucas et al. [49] reported no significant changes in parents' experienced loneliness and Puura et al. [47] found no significant changes in parents' experienced social support, isolation, or family relationships.

Also, four studies where interview methods were applied indicated improved social support, e.g., parents reported that their social support networks were strengthened [51], that they gained information about channels of support [42], and that their need for support regarding social relations decreased from 43% to 17% [45]. Tanninen et al. [48] reported that 85% of the participating parents felt that the intervention benefitted them with regard to getting support to raise children and handle tasks of parenting.

**Parental relationship.** Outcomes related to the relationship between the parents or spouses were evaluated in three quantitative studies. No statistically significant changes were found in parental relationships [47] nor happiness with a partner [49,53].

However, three qualitative studies reported improvements in parental relationships, e.g., that the relationship between parents was perceived to be strengthened [44], and that the intervention was experienced as beneficial for the parent's relationship as a couple [48]. Häggman-Laitila et al. [45] reported that the participants' need for support regarding the parents' relationship decreased slightly from 53% to 43% and that 73% of those who wanted the intervention to support the parent's relationship achieved this goal.

**Parental mental health and well-being.** Five quantitative studies evaluated parental mental health problems. Neander et al. [46] reported that the participating parents' mental health problems significantly

decreased. Furthermore, they found that the parents' fearful/disorganized attachment significantly decreased, but no significant changes in secure attachment were reported. Enebrink et al. [50] found that the participating parents' depression and anxiety had significantly decreased at the post-intervention measurement, but they found no significant changes in emotion regulation at the follow-up measurement. Clucas et al. [49] found that both parents' anxiety decreased significantly but found no significant changes in the participating parents' depressive symptoms. Furthermore, the study [49] found that the participating fathers', but not the mothers', emotional, and social health and also anger decreased significantly. Puura et al. [47] and Sampaio et al. [56] found no significant changes in parents' overall mental health problems. However, Puura et al. [47] did find that mothers', but not fathers', symptoms of minor depression significantly decreased. Finally, no significant changes in maternal sensitivity, responsiveness, ability to enjoy the infant, and criticism were identified in the study by Puura et al. [47].

Three qualitative studies reported an improvement in participants' well-being. Parents reported e.g., improved health and coping ability [44], and that the need for support associated with parents' health and well-being decreased from 87% to 23%, and that 83% of those who wanted the intervention to improve well-being felt that this goal was achieved [45]. Also, Häggman-Laitila et al. [43] reported on statements that may indicate increased well-being, e.g., the parents gaining distance from their own lives, learning to observe family life from the outside and free from emotions, and seeing their children and themselves in a new way.

**Parental stress.** Three of the quantitative studies of health-promoting interventions with preventive elements examined parental stress. Thorell [54] found that parental stress and parents' lack of perceived control significantly decreased. Neander et al. [46] evaluated couples' and single parents' stress separately and found that the couples' total stress and subscales covering incompetence, role restriction, social isolation, and health problems significantly decreased, while no significant changes were found in the subscale for spouse relationship problems. Single parents' total stress, incompetence, and social isolation scores significantly decreased, but no significant changes were found in the subscales for role restriction and health problems. Puura et al. [47] found no statistically significant changes in parental stress.

### 3.2.2 Intervention Outcomes among Children

**Children's mental health and development.** Three quantitative studies examined children's mental health and development. Enebrink et al. [50] found that the children's emotional well-being and independence significantly improved but found no significant changes in child family relations. Ulfsdotter et al. [55] found that the children's mental health and development significantly improved. Puura et al. [47] on the other hand, found no significant changes in children's mental, and behavioral development nor in infant characteristics (with the exception of one subscale, difficulties taking child places significantly decreased).

Two of the studies applying interview methods reported on children's outcomes. Häggman-Laitila et al. [44] reported that the children's health and conditions were improved, and Häggman-Laitila et al. [45] reported that 27% of the participating parents hoped the intervention would support their children's health and development and that this goal was achieved by 33% of participants.

**Children's strengths, difficulties, and behavioral problems.** Seven studies applying quantitative methods examined children's strengths and difficulties or behavioral problems. Four studies measured children's strengths and difficulties with the *Strengths and Difficulties Questionnaire (SDQ)*. Clucas et al. [49], Neander et al. [46] and Sherr et al. [53] reported that the *SDQ total impact score* (parental reported overall distress and social impairment resulting from child difficulties) significantly decreased. Clucas et al. [49] found a significant decrease in mothers' total impact scores, but no statistically significant changes in fathers' scores. Neander et al. [46] reported separately for each subscale; emotional symptoms, conduct problems and hyperactivity significantly decreased, while prosocial behavior significantly

increased, and no significant changes were reported in peer problems. Clucas et al. [49] and Neander et al. [46] also reported a significant decrease in *SDQ total difficulties*, meaning e.g., a decrease in children's emotional symptoms and conduct problems reported by the parents. Here, Clucas et al. [49] found a significant decrease in mothers', but not fathers', reports. Sherr et al. [53] found no statistically significant changes in child difficulties. Furthermore, Clucas et al. [49] and Sherr et al. [53] found no statistically significant changes in *SDQ prosocial behavior*, meaning positive changes in children's prosocial behavior. In another study [54] where the *SDQ* outcomes were reported in a slightly different way, children's conduct and daily problems, and hyperactivity and impulsivity significantly decreased, but no significant changes in inattention, social competence, and peer problems were identified. Three of the studies [47,52,56] examining health-promoting interventions with preventive elements assessed children's problem behaviors with instruments other than the *SDQ*. These studies identified no significant changes in children's behavioral problems.

### 3.2.3 Intervention Outcomes Related to Parent-Child Interaction

**Parenting strategies and parent-child interaction.** Outcomes related to parenting strategies and parent-child interaction were examined in five of the quantitative studies. Clucas et al. [49], Enebrink et al. [50], and Sherr et al. [53] found significant changes in parenting strategies, while Puura et al. [47] found no significant changes in parenting. Additionally, Clucas et al. [49] found significant improvement in both parents' positive discipline and child management, while the engagement with the child significantly decreased. No significant changes were found in activities with the child nor hours spent with the child [49]. In the study by Sherr et al. [53] no significant improvement in activities with the child was identified, while child management significantly decreased. In the same study, no significant changes were found in positive discipline nor engagement with the child. Reedt et al. [52] found that positive parenting significantly increased, while harsh discipline significantly decreased. Finally, the study by Puura et al. [47] examining infants' circumstances found that the subscales for total score and emotional and verbal responsivity significantly improved, while no significant changes in the mother-child relationship were found.

Four of the studies applying qualitative research methods reported an improvement in parenting and interaction. Häggman-Laitila et al. [43] reported, e.g., that the parents had gained new perspectives on parenthood, that they were interacting more positively with their children, and that they had become more sensitively able to identify their children's needs. Häggman-Laitila et al. [44] reported, e.g., that the participating parents' interactive skills were improved, and that they spent more time with the children. Häggman-Laitila et al. [45] reported, e.g., that the participating parents' need for support regarding upbringing and childcare decreased from 70% to 30%, and that 93% of the parents who were hoping that the intervention would strengthen parenthood, and 67% of those who wanted the intervention to develop their skills in raising and caring for their children, achieved these goals. Additionally, another study [48], reported that almost all participants (96%) reported increased interaction within the family.

## 4 Discussion

As the first systematic review of early childhood interventions in the Nordic countries, the goal was to gather, describe and evaluate the interventions developed for promoting mental health and parenting among families with young children in the region. Previous intervention research from the Nordic countries has mainly evaluated selected (e.g., [36,60,61]), and indicated activities targeting identified risk groups (e.g., [62–65]), but our intention was to focus on health-promoting interventions on a universal level. After a comprehensive screening procedure, the intervention studies meeting the eligibility criteria were nevertheless categorized as interventions with a universal health-promoting approach or interventions with a health-promoting approach with elements of prevention. Theoretically, while there is a distinction between universal, selective, and indicated initiatives, the differentiation in practice is naturally more fluid.

Interestingly, no Danish or Icelandic studies were identified that met the inclusion criteria of this review study. Previous studies (e.g., [66]) have identified different approaches to health-promoting initiatives in the five Nordic countries and have found that the universal health-promoting focus is least prominent in the Danish and Icelandic contexts. Further, other researchers have highlighted that the welfare systems and public health programs do vary between the Nordic countries (e.g., [67]), and the fact that this review study did not identify any Danish or Icelandic studies may reflect these variations with regard to early childhood interventions. When discussing the Nordic welfare model, it is relevant to note the importance of the sociodemographic position of families and how this may affect family mental health and well-being and related prerequisites. Several of the included studies looked at sociodemographic factors, such as parents' level of education and employment status, and highlighted the need to take these into consideration in both intervention delivery and the interpretation of intervention effects. While it was not the aim of this review study to analyze how these factors might impact the effect of the interventions, we acknowledge the increasing importance of socioeconomic status in relation to health and well-being also in the Nordic countries and the need to consider these in future family-focused research.

When analyzing the key results of the included studies, three main outcome categories were identified in the studies applying statistical methods. The outcomes were divided into effects related to the parents, children, or parent-child interaction. The qualitative studies deepened the understanding of participants' experiences', which may reflect the mechanisms involved in the findings that emerged in the studies applying statistical methods. As presented in the results, almost all of the studies reporting on parents' self-efficacy and/or self-esteem and parents' satisfaction found a significant increase as a result of the interventions. This is in line with previous international systematic reviews evaluating parenting programs, which have found similar improvements in parental self-efficacy (e.g., [26]) and confidence (e.g., [29]).

On the other hand, most of the quantitative studies that reported on parents' social support and the parental relationship did not find any significant changes after the interventions. Here the findings between the quantitative and qualitative studies differed, as qualitative studies reported on the participants' experienced improvements in social support and parental relationships. Significant statistical improvements in satisfaction with the relationship with one's partner have, however, been found in a previous systematic review by Bennett et al. [29]. Interestingly, in another review study, Bennett et al. [30] found that the majority of the included literature related to parenting programs does not consider the development of social connections as an important outcome, concluding that social connectivity should be valued as a primary goal of any parenting program.

There were challenges in analyzing the gathered evidence on interventions focusing on positive mental health and well-being outcomes among parents. Unlike the number of validated scales for measuring mental health problems, there are relatively few scales that are designed to measure mental health [8]. The WHO defines mental health as more than the absence of symptoms of mental health problems [68]. Therefore, the appropriateness of making conclusions about mental health by assessing mental health problems (such as anxiety, depression, and stress) can be questioned. Despite the definition and the questioned appropriateness, a common approach when statistically studying mental health is to investigate the absence of or decrease in mental health problems. A majority of the quantitative studies included in this systematic review found a significant decrease in parents' mental health problems and stress. Previous review studies have reported varying results in relation to parental mental health problems. For example, Bennett et al. [29] reported a significant decrease in parental depression, anxiety, stress, anger, and guilt, while Jeong et al. [33] did not find any significant reductions in depressive symptoms. To investigate the subjective nature of positive mental health and well-being, qualitative methods may be better suited. Three of the qualitative studies in this review concluded that parents experience the interventions as positively impacting their health and well-being.

Most of the quantitative studies that examined children's mental health and/or development found significant improvements, and all four studies that examined children's strengths and difficulties found some significant changes that indicate a positive development. Positive results reflecting these findings also emerged in two of the qualitative studies. When it comes to children's mental health and development, previous review studies have come to different conclusions. For instance, Barlow et al. [27] and Jeong et al. [33] found significant improvement in children's socioemotional development while Pontoppidan et al. [69] found no statistically significant effects on child development. Notably, none of the studies included in this review found significant changes in existing behavioral problems, while Jeong et al. [33] have found significant reductions in child behavior problems.

Almost all of the studies that examined parenting strategies and/or parent-child interaction found significant positive changes after the interventions. This favorable development also emerged in four qualitative studies. With regard to these outcomes, previous research has come to different conclusions, e.g., Filene et al. [32] and Jeong et al. [33] found improved parenting knowledge, skills, practices, and parent-child interaction, while Pontoppidan et al. [69] found no statistically significant effects on parent-child relationships.

#### ***4.1 Strengths and Limitations***

A strength of our review study is the mixed-method design, i.e., the inclusion of intervention studies applying quantitative or qualitative methods. Even if the results of studies applying qualitative methods are not generalizable, they can increase the understanding of the subjective experiences of mental health, family dynamics, and the perceived benefits of the interventions.

The included studies reported several limitations, including, e.g., participants being self-selected, small sample size, lack of control group, no randomization, self-report data, and lack of follow-up period. The overall quality of the included studies varied, and mainly due to the reported limitations most of the studies were rated with a moderate quality score. The variation in follow-up periods (and the fact that some studies merely reported pre- and post-intervention measurements), a wide range of measuring instruments, and different intervention content made the studies difficult to compare and prevented data pooling, meaning that a statistical meta-analysis was not possible.

There are some limitations to this review study as well. The first limitation concerns the screening and selection process. Even if we searched a relatively large number of databases and applied broad search terms, there is always a risk of missing relevant Nordic studies. Some interventions targeted at a specific risk group were included, e.g., families with children with behavioral problems, while others risk groups, e.g., families where domestic violence may have occurred, were excluded.

Another limitation to be discussed is our attempt to make a distinction between interventions with a universal health-promoting approach and a health-promoting approach with preventive elements. Although the results were separated according to interventions in these two categories, there was no clear overarching difference in the outcomes between the two types of interventions. Selective and indicated interventions may not always be adaptable on a universal level for the general public, since the initiatives are developed for certain risk or high-risk groups [26,70].

#### ***4.2 Implications for Research and Practice***

This review shows that early childhood interventions encompassing various forms of parenting support can have positive effects on mental health and well-being and related outcomes among both parents and children and thus should be considered a feasible health-promoting activity. However, more studies covering the effects of existing intervention programs and longer follow-up periods evaluating the long-term effects of the specific interventions would strengthen the evidence base. When it comes to complex

phenomena such as mental health, parenting strategies, and family dynamics, it might not be purposeful to attempt to identify a one-size-fits-all model early childhood intervention, rather the interventions need to be flexible and adapted to the participants' individual situations and needs. The implementation and realization of an intervention is a compound of several interacting components. Health-promoting interventions are characterized by a participatory approach, and previous research highlights that actively engaged parents are of great importance for the effect of the intervention [71]. In addition to participant attitudes, the practitioners and group leaders influence the implementation success and intervention sustainability [64].

As previous systematic reviews (e.g., [26–27,29,33]) of the international evidence have shown, this Nordic study also found that early childhood interventions improve the short-term mental health of both parents and children, but the long-term effectiveness of the interventions need to be further investigated preferably through longitudinal prospective studies.

## 5 Conclusion

In conclusion, this Nordic systematic review of quantitative and qualitative evidence highlights that early childhood interventions seem to be promising, the limited number of studies synthesized showed various positive effects on mental health and well-being of both children and their parents. The fact that different types of initiatives have been developed and implemented can be seen as an advantage, considering the varying needs and expectations of different families.

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\*) Studies included in the systematic review are marked with an asterisk sign

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## Appendix A: Databases and search strategies

Database	Search strategy	Results
CINAHL (EBSCOhost)	<p>Limiters-Publication Year: 2000–2021 Expanders-Apply equivalent subjects Search modes-Boolean/Phrase</p> <p><b>S1</b> SU mental health OR psychological well-being</p> <p><b>S2</b> AB (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health” OR maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR “caregiver*” OR “partnership*” OR “family” OR “families” OR “parent*” OR “preschool*” OR “pre school*” OR “toddler*” OR “infant*” OR “early years” OR “early childhood” OR “family-cent*” OR “family cent*” OR “family orient*” OR “parent child interaction*” OR “family-based” OR “connect*”) AND AB (“intervention*” OR “initiative*” OR “program*” OR “model*” OR “action*” OR “evaluat*” OR “implement*” OR “appraisal*” OR “resource enhance*” OR “enhanc*”) AND AB (“nordic*” OR “scandinavia*” OR “denmark*” OR “danish” OR “dane*” OR “greenland*” OR “finland*” OR “finn*” OR “iceland*” OR “norway*” OR “norweg*” OR “sweden*” OR “swed*” OR “faroe*” OR “aland*” OR “aland*”)</p> <p><b>S3</b> TI (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health” OR maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR “caregiver*” OR “partnership*” OR “family” OR “families” OR “parent*” OR “preschool*” OR “pre school*” OR “toddler*” OR “infant*” OR “early years” OR “early childhood” OR “family-cent*” OR “family cent*” OR “family orient*” OR “parent child interaction*” OR “family-based” OR “connect*”) AND TI (“intervention*” OR “initiative*” OR “program*” OR “model*” OR “action*” OR “evaluat*” OR “implement*” OR “appraisal*” OR “resource enhance*” OR “enhanc*”) NOT TI (“patient*” OR “specialist care” OR “specialised care” OR “long-term care” OR “specialized care” OR “specialised health care” OR “specialized health care” OR “intensive care” OR “trauma” OR “disorder*” OR “diagnosis” OR “disease*” OR medic* OR genetic* OR genomic* OR neuro* OR vaccin* OR dna* OR dementia* OR alzheimer* OR infect* OR brain* OR hospital* OR cell* OR elder* OR “nursing home*” OR “older people” OR “older adult*” OR geriatric* OR obes* OR bmi* OR cancer* OR diabetes* OR chronic* OR stroke* OR cardiovascular* OR parkinson* OR somatic* OR palliative* OR “physical disabili*” OR “physically disable*” OR “physical impairment*” OR “physically impair*”)</p> <p><b>S4</b> S2 OR S3</p> <p><b>S5</b> S1 AND S4</p>	1056
ERIC	<p>Publication Year: 2000–2021</p> <p><b>S1</b> abstract:(“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well-being promot*” OR attachment OR psychosocial OR resilien* OR empower* OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health”) OR (maternal OR paternal OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR caregiver* OR partnership* OR family OR families OR parent* OR preschool* OR “pre-school*” OR toddler* OR infant* OR “early years” OR “early childhood” OR “family-cent*” OR “family-orient*” OR “parent-child interaction*” OR “family-based” OR connect*) AND (intervention* OR initiative* OR program* OR action* OR evaluat* OR implement* OR appraisal* OR “resource-enhanc*” OR enhance*) AND (nordic* OR scandinavia* OR denmark* OR danish OR dane* OR greenland* OR finland* OR finn* OR iceland* OR norway* OR norweg* OR sweden* OR swed* OR faroe* OR aland* OR åland*)</p> <p><b>S2</b> title:(“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well-being promot*” OR attachment OR psychosocial OR resilien* OR empower* OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health”) OR (maternal OR paternal OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR caregiver* OR partnership* OR family OR families OR parent* OR preschool* OR “pre-school*” OR toddler* OR infant* OR “early years” OR “early childhood” OR “family-cent*” OR “family-orient*” OR “parent-child interaction*” OR “family-based” OR connect*) AND (intervention* OR initiative* OR program* OR action* OR evaluat* OR implement* OR appraisal* OR “resource-enhanc*” OR enhance*) AND (nordic* OR scandinavia* OR denmark* OR danish OR dane* OR greenland* OR finland* OR finn* OR iceland* OR norway* OR norweg* OR sweden* OR swed* OR faroe* OR aland* OR åland*) NOT (“patient*” OR “specialist care” OR trauma OR disorder* OR diagnosis OR disease*)</p>	1697
PsycInfo & PsycArticles (EBSCOhost)	<p>Limiters-Publication Year: 2000–2021 Expanders-Apply equivalent subjects Search modes-Boolean/Phrase</p> <p><b>S1</b> SU mental health OR well being</p> <p><b>S2</b> AB (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health” OR maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR “caregiver*” OR “partnership*” OR “family” OR “families” OR “parent*” OR “preschool*” OR “pre school*” OR “toddler*” OR “infant*” OR “early years” OR “early childhood” OR “family-cent*” OR “family cent*” OR “family orient*” OR “parent child interaction*” OR “family-based” OR “connect*”) AND AB (“intervention*” OR “initiative*” OR “program*” OR “model*” OR “action*” OR “evaluat*” OR “implement*” OR “appraisal*” OR “resource enhance*” OR “enhanc*”) AND AB (“nordic*” OR “scandinavia*” OR “denmark*” OR “danish” OR “dane*” OR “greenland*” OR “finland*” OR “finn*” OR “iceland*” OR “norway*” OR “norweg*” OR “sweden*” OR “swed*” OR “faroe*” OR “aland*” OR “aland*”)</p> <p><b>S3</b> TI (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health” OR maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant”</p>	2035

(Continued)

## Appendix A (continued)

Database	Search strategy	Results
	<p>OR "mother-child" OR "father-child" OR "parent-child" OR "early parenting" OR "caregiver*" OR "partnership*" OR "family" OR "families" OR "parent*" OR "preschool*" OR "pre school*" OR "toddler*" OR "infant*" OR "early years" OR "early childhood" OR "family-cent*" OR "family cent*" OR "family orient*" OR "parent child interaction*" OR "family-based" OR "connect*") AND TI ("intervention*" OR "initiative*" OR "program*" OR "model*" OR "action*" OR "evaluat*" OR "implement*" OR "appraisal*" OR "resource enhanc*" OR "enhanc*") NOT TI ("patient*" OR "specialist care" OR "specialised care" OR "long-term care" OR "specialized care" OR "specialised health care" OR "specialized health care" OR "intensive care" OR "trauma" OR "disorder*" OR "diagnosis" OR "disease*" OR medic* OR genetic* OR genomic* OR neuro* OR vaccin* OR dna* OR dementia* OR alzheimer* OR infect* OR brain* OR hospital* OR cell* OR elder* OR "nursing home*" OR "older people" OR "older adult*" OR geriatric* OR obes* OR bmi* OR cancer* OR diabetes* OR chronic* OR stroke* OR cardiovascular* OR parkinson* OR somatic* OR palliative* OR "physical disabilit*" OR "physically disable*" OR "physical impairment*" OR "physically impair*")</p> <p>S4 S2 OR S3 S5 S1 AND S4</p>	
Pubmed	<p>S1 "mental health"[MeSH Major Topic] S2 "mental health"[MeSH Terms] S3 "family health"[MeSH Major Topic] S4 "family health"[MeSH Terms] S5 "scandinavian and nordic countries"[MeSH Terms] S6 "mental health" OR "mental health promot*" OR "mental well*" OR "psychological well*" OR "mental illness prevent*" OR "well being promot*" OR "wellbeing promot*" OR "well being promot*" OR "attachment" OR "psychosocial" OR "resilien*" OR "empower*" OR "family cohesion" OR "social cohesion" OR "family dynamic" OR "family health"[Title/Abstract] S7 "maternal" OR "paternal" OR "mother-infant" OR "father-infant" OR "parent-infant" OR "mother-child" OR "father-child" OR "parent-child" OR "early parenting" OR "caregiver*" OR "partnership*" OR "family" OR "families" OR "parent*" OR "preschool*" OR "pre school*" OR "toddler*" OR "infant*" OR "early years" OR "early childhood" OR "family-cent*" OR "family cent*" OR "family orient*" OR "parent child interaction*" OR "family-based" OR "connect*"[Title/Abstract] S8 "intervention*" OR "initiative*" OR "program*" OR model* OR "action*" OR "evaluat*" OR "implement*" OR "appraisal*" OR "resource enhanc*" OR "enhanc*" OR support* OR practice* OR service* [Title/Abstract] S9 "nordic*" OR "scandinavia*" OR "denmark*" OR "danish" OR "dane*" OR "greenland*" OR "finland*" OR "finn*" OR "iceland*" OR "norway*" OR "norveg*" OR "sweden*" OR "swed*" OR "faroe*" OR "aland*" OR "aland*"[Title/Abstract] S10 "patient*" OR "specialist care" OR "specialised care" or "specialized care" or "specialised health care" or "specialized health care" OR "intensive care" OR "trauma*" OR "disorder*" OR "diagnosis" OR "disease*" or medic* or genetic* or genomic* or neuro* or vaccin* or dna* or dementia* or alzheimer* or infect* or brain* or hospital* or cell* or elder* or "nursing home*" or "older people" or "older adult*" or geriatric* or obes* or bmi* or cancer* or diabetes* or chronic* or stroke* or cardiovascular* or parkinson* or somatic* or palliative* or "physical disabilit*" or "physically disable*" or "physical impairment*" or "physically impair*"[Title/Abstract] S11 #1 OR #2 OR #3 OR #4 S12 #6 OR #7 S13 #5 OR #9 S14 #8 AND #11 AND #12 AND #13 S15 Time limit 2000–2020</p>	2691
Web of Science	<p>Timespan: 2000–2020 S1 TS = ("mental health" OR "mental health promot*" OR "mental well*" OR "psychological well*" OR "mental illness prevent*" OR "well being promot*" OR "wellbeing promot*" OR "well being promot*" OR "attachment" OR "psychosocial" OR "resilien*" OR "empower*" OR "family cohesion" OR "social cohesion" OR "family dynamic" OR "family health") S2 TS = ("maternal" OR "paternal" OR "mother-infant" OR "father-infant" OR "parent-infant" OR "mother-child" OR "father-child" OR "parent-child" OR "early parenting" OR "caregiver*" OR "partnership*" OR "family" OR "families" OR "parent*" OR "preschool*" OR "pre school*" OR "toddler*" OR "infant*" OR "early years" OR "early childhood" OR "family-cent*" OR "family cent*" OR "family orient*" OR "parent child interaction*" OR "family-based" OR "connect*") S3 TS = ("intervention*" OR "initiative*" OR "program*" OR "model*" OR "action*" OR "evaluat*" OR "implement*" OR "appraisal*" OR "resource enhanc*" OR "enhanc*" OR support* or practice* or service*) S4 AB = ("nordic*" OR "scandinavia*" OR "denmark*" OR "danish" OR "dane*" OR "greenland*" OR "finland*" OR "finn*" OR "iceland*" OR</p>	3012

(Continued)

## Appendix A (continued)

Database	Search strategy	Results
	<p>“norway*” OR “norweg*” OR “sweden*” OR “swed*” OR “faroe*” OR “aland*” OR “aland*”</p> <p><b>S5</b></p> <p>AB = (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health”)</p> <p><b>S6</b></p> <p>AB = (“maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR “caregiver*” OR “partnership*” OR “family” OR “families” OR “parent*” OR “preschool*” OR “pre school*” OR “toddler*” OR “infant*” OR “early years” OR “early childhood” OR “family-cent*” OR “family cent*” OR “family orient*” OR “parent child interaction*” OR “family-based” OR “connect”)</p> <p><b>S7</b></p> <p>AB = (“intervention*” OR “initiative*” OR “program*” OR “model*” OR “action*” OR “evaluat*” OR “implement*” OR “appraisal*” OR “resource enhanc*” OR “enhanc*” OR support* or practice* or service*)</p> <p><b>S8</b></p> <p>TI = (“nordic*” OR “scandinavia*” OR “denmark*” OR “danish” OR “dane*” OR “greenland*” OR “finland*” OR “finn*” OR “iceland*” OR “norway*” OR “norweg*” OR “sweden*” OR “swed*” OR “faroe*” OR “aland*” OR “aland”)</p> <p><b>S9</b></p> <p>TI = (“mental health” OR “mental health promot*” OR “mental well*” OR “psychological well*” OR “mental illness prevent*” OR “well being promot*” OR “wellbeing promot*” OR “well being promot*” OR “attachment” OR “psychosocial” OR “resilien*” OR “empower*” OR “family cohesion” OR “social cohesion” OR “family dynamic” OR “family health”)</p> <p><b>S10</b></p> <p>TI = (“maternal” OR “paternal” OR “mother-infant” OR “father-infant” OR “parent-infant” OR “mother-child” OR “father-child” OR “parent-child” OR “early parenting” OR “caregiver*” OR “partnership*” OR “family” OR “families” OR “parent*” OR “preschool*” OR “pre school*” OR “toddler*” OR “infant*” OR “early years” OR “early childhood” OR “family-cent*” OR “family cent*” OR “family orient*” OR “parent child interaction*” OR “family-based” OR “connect”)</p> <p><b>S11</b></p> <p>TI = (“intervention*” OR “initiative*” OR “program*” OR “model*” OR “action*” OR “evaluat*” OR “implement*” OR “appraisal*” OR “resource enhanc*” OR “enhanc*” OR support* or practice* or service*)</p> <p><b>S12</b></p> <p>AB = (“patient*” OR “specialist care” OR “specialised care” or “specialized care” or “specialised health care” or “specialized health care” OR “intensive care” OR “long term care” OR “long-term care” OR “trauma” OR “disorder*” OR “diagnosis” OR “disease*” or medic* or genetic* or genomic* or neuro* or vaccin* or dna* or dementia* or alzheimer* or infect* or brain* or hospital* or cell* or elder* or “nursing home*” or “older people” or “older adult*” or geriatri* or obes* or bmi* or cancer* or diabetes* or chronic* or stroke* or cardiovascular* or parkinson* or somatic* or palliative* or “physical disabilit*” or “physically disable*” or “physical impairment*” or “physically impair”)</p> <p><b>S13</b></p> <p>TI = (“patient*” OR “specialist care” OR “specialised care” or “specialized care” or “specialised health care” or “specialized health care” OR “intensive care” OR “long term care” OR “long-term care” OR “trauma” OR “disorder*” OR “diagnosis” OR “disease*” or medic* or genetic* or genomic* or neuro* or vaccin* or dna* or dementia* or alzheimer* or infect* or brain* or hospital* or cell* or elder* or “nursing home*” or “older people” or “older adult*” or geriatri* or obes* or bmi* or cancer* or diabetes* or chronic* or stroke* or cardiovascular* or parkinson* or somatic* or palliative* or “physical disabilit*” or “physically disable*” or “physical impairment*” or “physically impair”)</p> <p><b>S14</b></p> <p>#10 OR #9 OR #6 OR #5 OR #2 OR #1</p> <p><b>S15</b></p> <p>#8 OR #4</p> <p><b>S16</b></p> <p>#11 AND (#7 OR #3)</p> <p><b>S17</b></p> <p>#16 AND #15 AND #14</p> <p><b>S18</b></p> <p>#13 OR #12</p> <p><b>S19</b></p> <p>#17 NOT #18</p>	
Total		10491

## Appendix B: Details on studies included in the systematic review (n = 20)

First author and year:	Setting:	Method of allocation:	Outcome measures:	Key results:	Limitations:
Clucas et al. (2014) [49]	The ICDP groups were run at kindergartens and child health centers during the data collection period (October 2008–March 2010).	No control group	<i>Parental measures:</i> Parent's self-efficacy (The Generalized Self-Efficacy Scale)	<i>Parental outcomes:</i> Self-efficacy: Fathers (+) (29.03 to 31.03, $p = .001$ ) Mothers (0)	No control group; self-selected participants; small sample size; the data is based on self-report; no follow-up.
Norway	The ICDP is a psychosocial parenting program with the aim to improve parenting practices and thereby child development and well-being by supporting sensitive adult adjustment and empathy.	<b>Participants:</b> 269 parents (64 fathers, 202 mothers and three did not indicate their gender) in 69 intervention groups. The fathers focus child had an average age of 5.13 years (SD = 3.93) and the mothers focus child had an average age of 3.60 years (SD = 1.91).	Parent's trait emotions/anger (The Basic Emotion Trait Test)	Trait emotions/anger: Fathers (-) (3.20 to 2.92, $p = .048$ ) Mothers (0)	<b>Quality assessment score:</b> +
<b>Aim of study:</b> To investigate whether mothers and fathers show similar changes in parenting behavior and self-reported mental health after attending a generally implemented International Child Development Programme (ICDP) in Norway and the possible differences related to sons and daughters.	<b>Intervention:</b> The ICDP is a psychosocial parenting program with the aim to improve parenting practices and thereby child development and well-being by supporting sensitive adult adjustment and empathy.	<b>Follow-up periods:</b> No follow-up	Parent's anxiety and depression (The Hospital Anxiety and Depression Scale, HADS)	Anxiety: Fathers (-) (5.84 to 4.39, $p < .001$ ) Mothers (-) (5.50 to 5.02, $p = .046$ ) Depression: Fathers (0)	
<b>Study design:</b> Questionnaire study using a pre-post design.	<b>Intervention delivery:</b> Groups usually consist of 5–10 caregivers attending eight 2-h meetings. ICDP courses includes group discussions, caregiver assignments and report back. Trained facilitators with standardized ICDP training, often staff working in kindergartens and child health centers, delivered the intervention.	<b>Attrition:</b> 36 fathers and 105 mothers returned the post-intervention questionnaire (52.4%).	Parent's self-esteem (The Rosenberg Self-esteem Scale)	Self-esteem: Fathers (0) Mothers (0)	
			Parent's health and quality of life (Two SF-36 VAS scales)	Physical, emotional, and social health: Fathers (-) (81.76 to 77.50, $p = .037$ ) Mothers (0)	
			Parent's life satisfaction (The Satisfaction with Life Scale)	Life quality: Fathers (0)	
			Parent's loneliness (The UCLA Loneliness Scale)	Mothers (0)	
			Happiness with partner (Dyadic Adjustment Scale)	Life satisfaction: Fathers (0)	
			<i>Child measures:</i> Children's strengths and difficulties (The Strength and Difficulties Questionnaire, SDQ)	Mothers (0)	
			<i>Parent-child interaction measures:</i> Discipline (Conflict Tactics Scales)	Loneliness: Fathers (0)	
			Parenting strategy (a parenting strategy scale)	Happiness with partner: Fathers (0)	
			Child management (twenty-two items scored on a Likert scale)	Mothers (0)	
			Engagement with the child (an "engagement scale")	Mothers (-) (0.43 to 0.20, $p = .041$ ) SDQ total prosocial behavior: Fathers (0)	
			Commotion in the household (The Household Chaos Scale)	Mothers (0)	
			Activities with child (The Parent-Child Activity Scale)	<i>Parent-child interaction outcomes:</i> Parenting strategies: Fathers (+) (20.97 to 22.53, $p < .001$ ) Mothers (+) (23.26 to 23.86, $p = .003$ )	
			Hours spent with child	Positive discipline: Fathers (+) (32.26 to 39.54, $p = .035$ ) Mothers (+) (46.38 to 53.89, $p = .001$ )	
			<b>Method of analysis:</b> Chi-squared tests and t-tests. Mixed ANOVA with repeated measures.	Child management: Fathers (+) (2.13 to 1.92, $p = .012$ ) Mothers (+) (1.83 to 1.74, $p = .006$ )	
			Multiple linear regression or two-level random intercept regression models with repeated measures.	Engagement with child: Fathers (-) (2.95 to 2.53, $p = .006$ ) Mothers (-) (2.31 to 2.12, $p = 0.32$ )	
				Household commotion: Fathers (0)	
				Mothers (-) (2.61 to 2.19, $p = .025$ )	
				Parents' activities with child: Fathers (0)	
				Mothers (0)	
				Mothers' hours spent with child: Fathers (0)	
				Mothers (0)	
				Fathers' hours spent with child: Fathers (0)	
				Mothers (0)	

(Continued)

## Appendix B (continued)

<p><b>First author and year:</b> Enebrink et al. (2015) [50]</p> <p><b>Country of study:</b> Sweden</p> <p><b>Aim of study:</b> To evaluate the effects of a 4-session, universal health promoting parenting group program ABC "All Children in Focus".</p> <p><b>Study design:</b> Pre- to post measurement design (2 weeks before/ after intervention) and a 4-month follow-up.</p>	<p><b>Setting:</b> The interventions were conducted in e.g., family centers, preschools and schools, during spring 2011–spring 2012.</p> <p><b>Intervention:</b> The ABC program is a universal parenting intervention aiming at strengthening the relationship between parents and children and to provide parents with evidence-based parental strategies and knowledge.</p> <p><b>Intervention delivery:</b> Approximately 5–10 parents per group participate in the biweekly, four 2.5-h long sessions. Sessions structured to include psychoeducation, discussions, films, role plays, and homework. Professionals employed at the involved units, e.g., at family centers, preschools, and schools, delivered the intervention.</p>	<p><b>Method of allocation:</b> No control group</p> <p><b>Participants:</b> 104 parents of 104 children participated in the program.</p> <p>Child mean age was 6.0 years (SD = 2.5). If parents participated together (N = 11), only the mother's assessment was used in the analyses.</p> <p><b>Follow-up periods:</b> 4 months after the end of the intervention</p> <p><b>Attrition:</b> 75 (72%) parents filled in the post-measurements, and 61 (58.7%) parents completed 4-month follow-up measurements. The attrition was considered non-systematic.</p>	<p><b>Outcome measures:</b> <i>Parental measures:</i> Parent's mental health (The General Health Questionnaire, GHQ12) Parent's emotion regulation (The Emotion Regulation Questionnaire, ERQ) <i>Parental and parent-child interaction measures:</i> Parental strategies and self-efficacy (Parental Self-efficacy scale, PSE) <i>Child measures:</i> Parent's reports of children's physical and mental health, emotional development and family relations (Child Health and Development (CHD) influenced by the KIDSCREEN) <b>Method of analysis:</b> T tests, Wilcoxon's signed rank test and ANOVA repeated measures. Effect sizes (Cohen's d and partial eta squared).</p>	<p><b>Key results:</b> All measures reported for 4-month follow-up except depression/anxiety (post-measure) <i>Parental outcomes:</i> Depression/anxiety (–) (11.15 to 9.99, <math>p = .012</math>) Emotion regulation, subscales: Reappraisal (0) Suppression (0) <i>Parental and parent-child interaction outcomes:</i> Parental strategies and self-efficacy, subscales: Empathy/understanding (+) (49.85 to 52.41, <math>p = .001</math>) Guidance (+) (39.19 to 42.08, <math>p = .001</math>) Rules/discipline (+) (42.20 to 46.80, <math>p = .001</math>) Self-competence (+) (47.95 to 49.86, <math>p = .001</math>) Knowledge/experience (+) (50.49 to 51.14, <math>p = .008</math>) <i>Child outcomes:</i> Child psychological well-being, subscales: Emotional well-being (+) (27.44 to 29.05, <math>p = .003</math>) Independence (+) (18.68 to 19.69, <math>p = .001</math>) Child family relations (0)</p>	<p><b>Limitations:</b> No control group; the evaluation was based on parental self-report.</p> <p><b>Quality assessment score:</b> +</p>
<p><b>First author and year:</b> Hägglman-Laitila et al. (2003) [43]</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To describe the process of video home training as a method of early support in problems of family life control.</p> <p><b>Study design:</b> Qualitative approach</p>	<p><b>Setting:</b> The study material consisted of the videotapes recorded during the MLL (<i>Mannerheim League for Child Welfare</i>) Families with Children Project in 1997–1999 and the family service plans produced during the process of video home training.</p> <p><b>Intervention:</b> Video home training focusing on helping parents to control their everyday family life at home and to recognize successful instances of interaction and child rearing and teaches parents to use positive interaction skills.</p> <p><b>Intervention delivery:</b> Each home training process included 2–10 sessions of videotaping primarily in the participating families homes and subsequent counselling discussions. The sessions were led by family counsellors.</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> The research consisted of material from five families. The children were aged 2–8 years. Each family had at least one child aged under three.</p> <p><b>Follow-up periods:</b> A follow-up visit 6 months after the end of the process</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> The research material consisted of the family service plans, including the video home training plan, and video home training process of five families, including 20 videotaped episodes of home life and the related family counselling discussions, as well as five follow-up visits.</p> <p><b>Method of analysis:</b> Visual image analysis approach</p>	<p><b>Key results:</b> <i>Uses from parent's views:</i> Gain distance from their own life See things differently Relate events differently to everyday reality Observe family life from the outside and free from emotions See children and themselves in a new way Make positive discoveries about everyday life <i>Benefits from parent's views:</i> Interact more positively with their children Discover their own hidden skills on the video Gain new perspectives on parenthood Become more sensitively able to identify children's needs and initiatives Become aware of knowing their children and the ability to hold the ropes in family life Feel themselves to be successful and able to support their children's development Gain concrete evidence of their everyday life experiences See what practices and habits are inherited from their own childhood</p>	<p><b>Limitations:</b> Limited sample size (5 of 92 families receiving home visiting training participated); it may be that parents, when videotaped, behave in the way they expect good parents to behave.</p> <p><b>Quality assessment score:</b> +</p>

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## Appendix B (continued)

<p><b>First author and year:</b> Häggman-Laitila &amp; Pietilä (2007) [51]</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To describe the experiences of families with young children concerning resource-enhancing small support groups, and to identify the benefits to family health described by participating parents.</p> <p><b>Study design:</b> Qualitative approach</p>	<p><b>Setting:</b> The study was implemented during the <i>MLL Families with Children Project</i> during a 10-month period and 123 parents attending 13 small groups were given the choice to participate in the evaluation interviews.</p> <p><b>Intervention:</b> The goals of the intervention were support of parenthood, recognition and enhancement of parental resources and counseling of the families to find early solutions to problems.</p> <p><b>Intervention delivery:</b> The average number of participants per group was 13.9. The groups met an average of 7 times, each session lasted for 1.5 h. Meeting places were in family health centers, family work offices, or in club facilities. Family workers served as group supervisors. Central methods were resource-enhancing discussions, introductory presentations and activity exercises.</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> 77 parents (63 mothers, 14 fathers) participated in an evaluation interview. Some of the children were babies aged &lt;1 year.</p> <p><b>Follow-up periods:</b> No follow-up</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> <i>Evaluation interview themes:</i> Expectations and goals concerning small group attendance Group's activities and their personal significance for the participants Experiences of peer support Benefits of small group participation for the family health Future significance of small group work</p> <p><b>Method of analysis:</b> Qualitative content analysis</p>	<p><b>Key results:</b> <i>Emerged main categories and subcategories of perceived intervention benefits:</i> Knowledge (factual and situational, need for further knowledge) Recreation (rest, joy, company) Strengthening of social support networks Strengthening and improved awareness of personal resources (acceptance, being heard, personal thinking and actions, interaction within family) Reliance of one's ability to cope (confidence, future orientation, planning of family life)</p>	<p><b>Limitations:</b> The representation of fathers was low; it may be assumed that the interviewees would have been likely to give predominantly positive feedback to the familiar group supervisor because of group interview.</p> <p><b>Quality assessment score:</b> +</p>
<p><b>First author and year:</b> Häggman-Laitila et al. (2010) [44]</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To describe the benefits of video home training on families' health and interaction from the perspective of parents six months after the training.</p> <p><b>Study design:</b> Qualitative approach</p>	<p><b>Setting:</b> The study material consisted of families that participated in the <i>MLL Families with Children Project</i> between 1997–2001.</p> <p><b>Intervention:</b> Video home training is a short-term intensive process which has the benefit of making the children seen and heard in their families. It aims to increase instances of positive and successful interaction.</p> <p><b>Intervention delivery:</b> The video home training process includes 2–10 sessions of videotaping primarily in the participating families homes and subsequent counselling discussions. The video home training was delivered by family counsellors.</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> 15 families with a total of 66 family members (15 mothers, 12 fathers, and 39 children) participated in the study. The children were between 0 to 16 years. Each of the participating families had at least one child younger than three years of age.</p> <p><b>Follow-up periods:</b> 6 months after the end of the process</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> The research data (90 h, 900 written pages) consisted of 60 videotaped episodes, 60 related family counselling discussions, 15 follow-up visits, and 15 family service plans.</p> <p><b>Method of analysis:</b> Visual analysis approach and qualitative content analysis.</p>	<p><b>Key results:</b> <i>Benefits of video home training based on follow-up visits:</i> <i>Achieved goals:</i> Strengthening the relationship between the parents, e.g., increased satisfaction with the relationship and improvement of feedback skills Strengthening parenthood, e.g., stronger sense of responsibility and increased confidence and self-knowledge Improvement of childcare and child rearing skills, e.g., increased knowledge and skills and increased motivation for growing as a parent <i>Outcomes on family life:</i> Improvement of parents', children's, and family's health, e.g., improved coping ability of the parents and improved conditions for the child Improvement of parents', children's, and family's interaction, e.g., improvement of interactive skills and increase of the time spent with children</p>	<p><b>Limitations:</b> Self-assessment; the viewpoint of children and youth was not included.</p> <p><b>Quality assessment score:</b> +</p>

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## Appendix B (continued)

<p><b>First author and year:</b> Häggman-Laitila et al. (2010) [45]</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To assess the effectiveness of resource-enhancing family-oriented intervention.</p> <p><b>Study design:</b> A descriptive service evaluation with a qualitative and quantitative approach.</p>	<p><b>Setting:</b> This study was implemented during the provision of resource-enhancing support services for families during 2004–2005.</p> <p><b>Intervention:</b> Resource-enhancing family nursing is future-oriented, and it aims to create an encouraging atmosphere. The goal is to make the parents perceive they have alternatives and possibilities to improve their situation.</p> <p><b>Intervention delivery:</b> The family nurse, who was a public health nurse and a family therapist, met the families 3–58 times (mean 18.5) during at mean 7 months in the participating families homes (81%) or in health service facilities (19%). Resource-enhancing discussions were carried out either separately or together with the whole family. Other methods included video guidance, creation of a family tree and parents' role map, network collaboration with close relatives of the family and authorities, observation of the family situation and parent-child group activity.</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> 30 families with 129 family members (71 children, 30 mothers and 28 fathers).</p> <p>Child mean age was 4.8 years (SD = 4.2).</p> <p><b>Follow-up periods:</b> No follow-up</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> The research data consisted of family care plans and client reports. Family care plans included open-ended questions dealing with e. g., the most important support needs identified by the parents, and the parents' goals for family nursing. The data collection was based on a discussion with the family and the family nurse.</p> <p><b>Method of analysis:</b> Data were analyzed in two phases: qualitative content analysis (first phase); descriptive statistical methods (second phase).</p>	<p><b>Key results:</b> <i>Need for support (%) at the beginning and the conclusion of family nursing:</i> Parents' health and well-being (87% to 23%) Coping with parenthood (77% to 3%) Upbringing and childcare (70% to 30%) Parents' relationship (53% to 43%) Social relations (43% to 17%) Children's health and growth (43% to 23%) <i>Realization of the goals set and achieved:</i> 90% set the strengthening of their parenthood as a goal (achieved by 93%) 73% hoped to improve the parents' health and well-being (achieved by 83%) 70% set a goal of developing their skills in raising and caring for their children (achieved by 67%) 60% hoped the intervention would support the parents' relationship (achieved by 73%) 27% hoped the intervention would support their children's health and development (achieved by 33%)</p>	<p><b>Limitations:</b> Small sample size; no randomization; results cannot be generalized; children and adolescents' own perspective is missing; fewer fathers than mothers participated; the study did not evaluate the effectiveness of different methods used by the family nurse.</p> <p><b>Quality assessment score:</b> +</p>
<p><b>First author and year:</b> Mekhail et al. (2019) [42]</p> <p><b>Country of study:</b> Sweden</p> <p><b>Aim of study:</b> To gain in-depth knowledge of the parental experiences and needs of fathers, who took part in an extended home visiting program in a multi-cultural suburb in Stockholm, Sweden.</p> <p><b>Study design:</b> Qualitative design with in-depth interviews</p>	<p><b>Setting:</b> The fathers from families participating in the extended home visiting program, which was offered at the study site from September 2013 to December 2014, were offered to participate in the study.</p> <p><b>Intervention:</b> The extended home visiting program follows the guidelines of the Swedish CHC program, and the visits are integrated in the universal CHC center-based services, including themes about development, safety, nutrition, interaction, parenthood, social network and support.</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> A total of nine fathers participated in in-depth interviews. The informants' children were 16 months or older when the interviews were conducted. Eight of the nine participants were first-time fathers.</p> <p><b>Follow-up periods:</b> No follow-up</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> <i>An interview guide was used including the following themes:</i> Health and well-being The child The extended home visiting program The future</p> <p><b>Method of analysis:</b> The analysis was based on Charmaz's guidelines for Constructivist grounded theory</p>	<p><b>Key results:</b> <i>The following core category was identified in analyses:</i> Striving for stability in living conditions (describing the experiences of becoming a father and the paternal needs for support in parenthood) <i>As well as three categories:</i> Everyday life conditions (describing the residential area, paternal responsibility, and reflection) Adjustment to fatherhood in Sweden (describing meeting reality, family life in Sweden, and child and household) Channels of support (describing expressed needs, channels of knowledge, and home visits) The home visiting program benefitted the fathers on an individual level by meeting part of their need for support regarding knowledge and parental confidence. On a structural level the program helped fathers gain information</p>	<p><b>Limitations:</b> Seven of the interviews were not conducted in the primary language of the participants, which could limit the fathers' ability to express themselves freely. Six interviews were conducted in the participants homes, while their wife and child were at home, which may have affected the participants' opportunity to express themselves freely. As a small qualitative study its findings were not meant to be generalized.</p> <p><b>Quality assessment score:</b> -</p>

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## Appendix B (continued)

	<b>Intervention delivery:</b> Parents are offered up to 6 home visits by a child health care nurse and a parental advisor from social services. Parents are supported in their parental roles, and their questions are discussed from a perspective emphasizing resilience, promoting health, and supporting and encouraging a positive parent-child relation.				about available societal services and resources in their local area.
<b>First author and year:</b> Neander & Engström (2009) [46]	<b>Setting:</b> The families included in this study participated in the parent-child intervention in one of four Swedish municipalities.	<b>Method of allocation:</b> No control group	<b>Outcome measures:</b> <i>Parental measures:</i> Parent's present and expected life satisfaction (Cantril's Self-Anchoring Ladder of Life Satisfaction) Parent's experience of parental stress (The Swedish Parenthood Stress Questionnaire, SPSQ) Parent's mental health problems (General Health Questionnaire 12, GHQ12) Parent's patterns of attachment (The Relationship Questionnaire, RQ) Parent's social support (The Interview Schedule for Social Interaction, ISSI) with scores Availability of Social Integration (AVSI), Adequacy of Social Integration (ADSI), Availability of Attachment (AVAT) and Adequacy of Attachment (ADAT) <i>Child measures:</i> Children's strengths and difficulties (The Strengths and Difficulties Questionnaire, SDQ)	<b>Key results:</b> <i>Parental outcomes:</i> Life satisfaction, subscales: Present (+) (5.50 to 6.99, $p < .001$ ) Future (+) (7.78 to 8.28, $p = .002$ )  Couples' total stress (-) (2.94 to 2.67, $p < .001$ ), subscales: Incompetence (-) (2.86 to 2.53, $p < .001$ ) Role restriction (-) (3.60 to 3.28, $p < .001$ ) Social isolation (-) (2.63 to 2.38, $p = .007$ ) Spouse relationship problems (0) Health problems (-) (2.97 to 2.64, $p < .001$ ) Singles' total stress (-) (3.22 to 2.75, $p = .001$ ), subscales: Incompetence (-) (3.29 to 2.79, $p = .002$ ) Role restriction (0) Social isolation (-) (2.91 to 2.33, $p = .009$ ) Health problems (0) Mental health problems (-) (4.46 to 2.70, $p < .001$ ) Attachment, subscales: Secure attachment (0) Fearful/disorganized attachment (-) (3.42 to 2.84, $p = .001$ )  Social support ISSI (total) (+) (17.11 to 19.36, $p = .008$ ), subscales: ADSI (+) (4.72 to 5.49, $p = .001$ ) AVAT (0) ADAT (0) AVSI (0)  <i>Child outcomes:</i> Children's strengths and difficulties subscales: SDQ total difficulties (-) (18.71 to 14.21, $p < .001$ ) SDQ total impact (-) (3.23 to 1.50, $p < .001$ ), subscales: Emotional symptoms (-) (3.82 to 2.71, $p = .006$ ) Conduct problems (-) (4.65 to 3.36, $p < .001$ ) Hyperactivity (-) (6.73 to 5.43, $p = .001$ ) Peer problems (0) Prosocial behavior (+) (6.52 to 7.27, $p = .007$ )	<b>Limitations:</b> No control group; parents' subjective perspective and self-reports; one-third of the parents taking part in the study were either unemployed or on sick leave, which constitutes a considerably higher proportion than in the population as a whole. <b>Quality assessment score:</b> +
<b>Country of study:</b> Sweden	<b>Intervention:</b> One of the fundamental principles behind the intervention is that the parents have the right to define the problems and to take an active part in planning the intervention. The goals of the intervention should be based on the parents own descriptions of the problem with the changes they desire being crucial.	<b>Participants:</b> 101 families (94 mothers, 60 fathers, and 118 children) participated in the study.  <b>Follow-up periods:</b> 6 and 18 months after beginning of treatment <b>Attrition:</b> Attrition T1 → T2: 6 families Attrition T2 → T3: 7 families, 2 families returned to study	<b>Method of analysis:</b> The long-term changes (T1 → T3) and short-term changes (T1 → T2) were analyzed using Wilcoxon's Signed-Rank test and Cohen's d for effect		
<b>Aim of study:</b> To describe families with small children who participated in parent-child interaction interventions at four centers in Sweden, and to examine long-term and short-term changes regarding the parents' experience of parental stress, parental attachment patterns, the parents' mental health and life satisfaction, the parents' social support and the children's problems.	<b>Intervention delivery:</b> The time of treatment varied between 1–18 months, the median treatment period was 10 months. The interventions were led by therapists with different degrees, e.g., social workers and preschool teachers. The intervention consisted of video recording, analysis and feedback, exercises in everyday family situations, discussions, and self-reflection.				
<b>Study design:</b> A longitudinal multi-center study					

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## Appendix B (continued)

First author and year:	Setting:	Method of allocation:	Outcome measures:	Key results:	Limitations:
<p>Puura et al. (2005) [47] (Chapter 7)</p> <p><i>Parallel chapters used:</i> Davis et al. (2007) [38] (Chapter 6)</p> <p>Puura et al. (2005) [40] (Chapter 2)</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> The aims of the European Early Promotion Project (EPPP) were to provide a universal service acceptable to all families with young children, and to use a partnership model in professional-parent relationship. This gave the opportunity to promote parent-infant interaction in all families, and to ensure that recourses could be targeted most appropriately to those families in need of more support.</p> <p><b>Study design:</b> A group comparison design with a 2-year follow-up</p>	<p>The EPPP was developed as a partnership between centers in Cyprus, Finland, Greece, Serbia &amp; Montenegro and the UK.</p> <p>The project was commissioned in 1998 and completed in 2004. The intervention in Finland was conducted in Tampere and delivered by Public Health Nurses. Families were recruited when the infants were between six and eight weeks old by the primary health care professionals (PHCP).</p> <p><b>Intervention:</b> The general and main focus of the intervention is the parent-infant relationship, with the intention of helping parents to see and fulfill the physical, mental and social needs of the infant. Parents are particularly encouraged to attend to, talk to and play with their infants, and to follow the infant's cues.</p> <p><b>Intervention delivery:</b> Number of contacts (range 0–100, mean 18.6), number of phone calls (range 0–100, mean 4.4), visits in person (range 9–26, mean 14.1), contacts under 30 min (range 0–109, mean 7.9), contacts over 30 min (range 0–20, mean 10.6). The sessions consisted of home visits, social support, parent counselling, relationship counselling, information, parenting preparation, and play exercises. The intervention was delivered by public health nurses.</p>	<p>Families (receiving the EPPP service) were reasonably matched with comparison families (receiving usual services) on most variables initially.</p> <p><b>Participants:</b> In Finland 165 families participated in total; 93 families participated in the intervention group and 72 families participated in the control group.</p> <p><b>Follow-up periods:</b> 24-month follow-up</p> <p><b>Attrition:</b> The attrition rate at the initial assessment varied between 0% and 15.3% for different instruments and at outcome assessment between 5.6% and 39.8%.</p>	<p><b>Parental measures:</b> Parent's psychological functioning (The Structured Clinical Interview for DSM-IV, SCID) Parent's self-esteem and perceived family relationships (Family Grid) Parent's stress (The Parenting Stress Index, Short Form, PSI/SF) Maternal sensitivity, responsiveness, ability to enjoy the infant and criticism (The EPPP Interview)</p> <p><b>Child measures:</b> Children's behavioral problems (Behavioral Screening Questionnaire, BSQ) Infant's characteristics (The Infant Characteristics Questionnaire, ICQ) Children's mental, motor and behavior development (Bayley Mental Development Index)</p> <p><b>Parent-child interaction measures:</b> Observational assessment of the infant's circumstances (The HOME Inventory) Global Rating Scales for Mother-Infant Interaction Mother-infant observation at the outcome assessment</p> <p><b>Method of analysis:</b> IG and CG in each country were compared on all variables at initial assessment, using Mann-Whitney U test. Effect sizes were determined from the point estimate of the Mee confidence intervals translated into d values. This enabled comparison with the convention used by Cohen of assuming 0.2, 0.5 and 0.8 to equate to small, medium and large effect sizes respectively.</p>	<p><b>Parental outcomes:</b> Mental health problems: Fathers (0) Mothers (0) Minor depression: Fathers (0) Mothers (-) (<math>p = .03</math>, <math>ES = 0.22</math>) IG: <math>n = 10</math> (12.7%), CG: <math>n = 17</math> (25%) Parental relationship, subscales: Marriage quality (0) Breakdown (0) Social support/isolation (0)</p> <p>Self-esteem and perceived family relationships, subscales: Self-esteem (0) Positiveness to partner (0) Positiveness to child (0) Parental stress, subscales: Parental distress (0) Difficult child (0) Parent-child dysfunctional interaction (0) Total stress score (0) Maternal sensitivity, responsiveness, ability to enjoy the infant and criticism, subscales: Maternal sensitivity (0) Enjoyment/pleasure of the child (0) Responsiveness to needs (0) Critical of rejecting (0)</p> <p><b>Child outcomes:</b> Behavioral problems (0) Infant characteristics, subscales: Difficulty taking child places (-) (<math>p = .05</math>, <math>ES = 0.25</math>, IG: 2 (1–5), CG: 3 (1–6)) Consistency of sleep routine (0) Response to new food (0) How easily upset (0) Reaction to dressing (0) Enjoyment of play with parents (0) Excitement playing with others (0) How cuddly is the child (0) Irregular (0) Development, subscales: Mental (0) Motor (not reported) Behavior (0)</p> <p><b>Parent-child interaction outcomes:</b> Infant circumstances, subscales: Total score (+) (<math>p = .01</math>, IG: mean 1.6, median 2, CG: mean 0.3, median not reported) Emotional and verbal responsiveness (+) (<math>p = .01</math>, IG: mean 1.3, median 1, CG: mean 0.6, median 0) Avoidance of punishment (0) Organization of the environment (0) Provision of play material (0) Maternal involvement with the child (0) Opportunities for variety (0) Parenting, subscales: Child-centered family (0) Mother enjoyment of child (0) Mother-child relationship, subscales: Involvement (0) Facilitate (0) Positive affect (0) Mutual affect (0) Negative affect 1 (0) Negative affect 2 (0) Mother follow (0) Child follow (0) Poor limiting (0) Inappropriate demand (0) Seeks co-operation (0) Instruct (0) Child complies (0) Control (0)</p>	<p>No randomization between intervention and control groups; small sample size; the PHCPs characteristics and experiences may have affected the results; the validity of the new instruments developed for this study; the same instruments should have been used throughout the study.</p> <p><b>Quality assessment score:</b> +</p>

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## Appendix B (continued)

<p><b>First author and year:</b> Reedtz et al. (2011) [52]</p> <p><b>Country of study:</b> Norway</p> <p><b>Aim of study:</b> To evaluate whether a short parent-training program (PT)/Short Basic Incredible Years intervention program (S-IY) reduces risk factors related to development of childhood socioemotional and behavior problems in a non-clinical community sample.</p> <p><b>Study design:</b> A randomized controlled trial (RCT) at pre- and post-intervention and 1-year follow-up.</p>	<p><b>Setting:</b> Families who had a 2 to 8-year-old child were recruited from the city of Tromsø.</p> <p><b>Intervention:</b> The Incredible Years (IY) intervention program is a manualized and video-based training program for parents of young children with conduct problems. The Short Basic IY (S-IY) intervention differs from the regular IY in both length and content. The program taught parents positive disciplinary strategies (play, praise and rewards).</p> <p><b>Intervention delivery:</b> Groups of 10–12 parents met weekly for six 2-hour sessions at a public health care center. Each group leader was a trained nurse specialized in public health care. The sessions consisted of discussions, video vignettes, role plays, homework, and video-based training.</p>	<p><b>Method of allocation:</b> Each family who made contact and who fulfilled the inclusion criteria, was assigned an id number, and was randomized to either intervention or control group.</p> <p><b>Participants:</b> 186 families participated in the study. 89 families participated in the intervention group and 97 families participated in the control group. The children were between 2 and 8 years of age (mean age of the boys was 3.95 years (SD = 1.63), and of the girls 3.81 years (SD = 1.13)).</p> <p><b>Follow-up periods:</b> 12-month follow-up</p> <p><b>Attrition:</b> At post-intervention, 24.7% in the intervention group and 46.4% in the control group failed to complete the questionnaires. At one year follow-up, 24.7% in the intervention group and 52.6% in the control group failed to complete the questionnaires.</p>	<p><b>Outcome measures:</b></p> <p><i>Parental measures:</i> Parent's self-esteem; subscales for efficacy and satisfaction (Parenting Sense of Competence, PSOC)</p> <p><i>Child measures:</i> Children's problem behaviors reported by parents of children with behavioral problems (Eyberg Child Behavior Inventory, ECBI)</p> <p><i>Parent-child interaction measures:</i> Harsh discipline and positive parenting reported by parents (Parenting Practices Interview, PPI)</p> <p><b>Method of analysis:</b> ANOVA or Chi-square tests, depending on the variables. ANCOVA, (using the pre-score as covariate). Effect sizes were calculated using partial eta square.</p>	<p><b>Key results:</b></p> <p><i>Parental outcomes:</i> Self-esteem, subscales: Satisfaction (+) (39.4 to 43.0, <math>p = .02</math>) Self-efficacy (0) <i>Child outcomes:</i> Behavioral problems (0) <i>Parent-child interaction outcomes:</i> Parenting practices, subscales: Positive parenting (+) (4.56 to 5.05, <math>p = .12</math>) Harsh discipline (-) (1.96 to 1.76, <math>p = .05</math>)</p>	<p><b>Limitations:</b> Children who already exhibit high levels of problem behavior got excluded; child behavior was only examined based on parents' perceptions; parental self-recruitment to the study; large attrition from pre- to post-intervention and follow-up.</p> <p><b>Quality assessment score:</b> ++</p>
<p><b>First author and year:</b> Salonen et al. (2011) [57]</p> <p><i>Information on intervention development and participant baseline characteristics available in Salonen et al. (2008) [41]</i></p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To evaluate the effectiveness of an internet-based intervention to support mothers' and fathers' parenting satisfaction and parenting self-efficacy (PSE).</p> <p><b>Study design:</b> A quasi-experimental design with a non-equivalent control group and repeated measures.</p>	<p><b>Setting:</b> The study was conducted in two public university/maternity hospitals in southern Finland. The data were collected from August 2007 to April 2008 in the intervention hospital and from December 2007 to April 2008 in the control hospital. The participants were recruited during pregnancy.</p> <p><b>Intervention:</b> The intervention was designed to strengthen parenting satisfaction and parent's self-efficacy by offering online support for parenting, breast-feeding and infant care. It comprised an information database, a peer discussion forum and expert advice. The online services complemented the care and guidance given at the intervention hospital after childbirth.</p> <p><b>Intervention delivery:</b> Online support from the middle of pregnancy till two weeks post-partum based on the parents' individual need. Parents' anonymous questions were answered by a registered nurse or midwife.</p>	<p><b>Method of allocation:</b> One hospital was used for the intervention group and one hospital was used for the control group. Randomization was not possible because the intervention was developed through multi-professional collaboration in the intervention hospital.</p> <p><b>Participants:</b> 1300 families participated in the study. Mothers/fathers of 700 families participated in the intervention group and mothers/fathers of 600 families participated in the control group.</p> <p><b>Follow-up periods:</b> After childbirth, and a 6–8-week post-partum follow-up.</p> <p><b>Attrition:</b> A total of 1196 questionnaires were returned after childbirth (760 mothers (58%) and 436 fathers (34%)). Follow-up questionnaires were returned by 500 mothers (66%) and 242 fathers (56%).</p>	<p><b>Outcome measures:</b></p> <p><i>Parental measures:</i> Parent's satisfaction (What Being the Parent of a New Baby is Like, WPBL-R) Parent's self-efficacy (PSE is an instrument developed for this study, which consisted of cognitive, affective and behavioral skills related to infant care tasks)</p> <p><b>Method of analysis:</b> Chi-square test or Fisher's exact test. <math>p</math>-Values for change in outcome measures were determined by paired samples test (within group) and Tukey Honest Significant Difference multiple comparisons (between groups). While comparing the outcome measures, parenting satisfaction and PSE, all groups were compared with each other.</p>	<p><b>Key results:</b></p> <p><i>Parental outcomes:</i> Fathers' satisfaction (within group changes): Intervention group: users (0) Intervention group: non-users (0) Control group (0) All fathers (0) Between-group changes not significant (ns) Mothers' satisfaction (within group changes): Intervention group: users (+) (7.79 to 7.93, <math>p = .006</math>) Intervention group: non-users (0) Control group (+) (7.82 to 8.01, <math>p \leq .001</math>) All mothers (+) (7.80 to 7.94, <math>p \leq .001</math>) Between-group changes ns Fathers' self-efficacy, subcategories: Total score: Intervention group: users (+) (4.51 to 4.72, <math>p = .026</math>) Intervention group: non-users (+) (4.55 to 4.82, <math>p \leq .001</math>) Control group (+) (4.53 to 4.81, <math>p \leq .001</math>) All fathers (+) (4.53 to 4.80, <math>p \leq .001</math>) Between-group changes ns Cognitive skills: Intervention group: users (+) (4.50 to 4.74, <math>p = .035</math>) Intervention group: non-users (+) (4.60 to 4.76, <math>p = .011</math>) Control group (+) (4.55 to 4.78, <math>p \leq .001</math>) All fathers (+) (4.56 to 4.77, <math>p \leq .001</math>) Between-group changes ns Behavioral skills: Intervention group: users (0) Intervention group: non-users (+) (4.72 to 5.02, <math>p \leq .001</math>) Control group (+) (4.72 to 4.96, <math>p \leq .001</math>) All fathers (+) (4.73 to 4.97, <math>p \leq .001</math>)</p>	<p><b>Limitations:</b> No randomization; the intervention group was divided into users and non-users based on the participants individual needs; large attrition rate; controlling performance bias.</p> <p><b>Quality assessment score:</b> +</p>

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## Appendix B (continued)

				<p>Between-group changes ns</p> <p>Affective skills:</p> <p>Intervention group: users (+) (4.17 to 4.45, <math>p = .037</math>)</p> <p>Intervention group: non-users (+) (4.23 to 4.65, <math>p \leq .001</math>)</p> <p>Control group (+) (4.27 to 4.66, <math>p \leq .001</math>)</p> <p>All fathers (+) (4.25 to 4.63, <math>p \leq .001</math>)</p> <p>Between-group changes ns</p> <p>Mothers' self-efficacy, with subcategories:</p> <p>Total score:</p> <p>Intervention group: users (+) (4.90 to 5.20, <math>p \leq .001</math>)</p> <p>Intervention group: non-users (+) (4.89 to 5.16, <math>p \leq .001</math>)</p> <p>Control group (+) (4.93 to 5.24, <math>p \leq .001</math>)</p> <p>All mothers (+) (4.91 to 5.20, <math>p \leq .001</math>)</p> <p>Between-group changes ns</p> <p>Cognitive skills:</p> <p>Intervention group: users (+) (5.02 to 5.21, <math>p \leq .001</math>)</p> <p>Intervention group: non-users (+) (5.00 to 5.16, <math>p \leq .001</math>)</p> <p>Control group (+) (5.04 to 5.26, <math>p \leq .001</math>)</p> <p>All mothers (+) (5.02 to 5.21, <math>p \leq .001</math>)</p> <p>Between-group changes ns</p> <p>Behavioral skills:</p> <p>Intervention group: users (+) (5.09 to 5.38, <math>p \leq .001</math>)</p> <p>Intervention group: non-users (+) (5.09 to 5.34, <math>p \leq .001</math>)</p> <p>Control group (+) (5.11 to 5.40, <math>p \leq .001</math>)</p> <p>All mothers (+) (5.10 to 5.4, <math>p \leq .001</math>)</p> <p>Between-group changes ns</p> <p>Affective skills:</p> <p>Intervention group: users (+) (4.47 to 4.95, <math>p \leq .001</math>)</p> <p>Intervention group: non-users (+) (4.46 to 4.93, <math>p \leq .001</math>)</p> <p>Control group (+) (4.54 to 5.00, <math>p \leq .001</math>)</p> <p>All mothers (+) (4.50 to 4.97, <math>p \leq .001</math>)</p> <p>Between-group changes ns</p> <p>Being a first-time vs. experienced parent and intervention use in minutes or based on frequency did not impact outcomes.</p>	
<p><b>First author and year:</b> Sampaio et al. (2015) [56]</p> <p><b>Country of study:</b> Sweden</p> <p><b>Aim of study:</b> This study describes the effects of levels 2 and 3 of the Triple P Positive Parenting Programme. The outcomes assessed were child externalizing behaviour problems and parental mental health compared to a waitlist control held over an 18-month follow-up period. Costs of delivering the programme were collected prospectively.</p> <p><b>Study design:</b> A cluster randomized controlled trial (RCT)</p>	<p><b>Setting:</b> The study was conducted in 2009–2011 in Uppsala, Sweden, comprising an intervention condition (the Triple P programme offered universally and allowing for self-selection of participants) and a waitlist control condition (no intervention).</p> <p><b>Intervention:</b> The Triple-Positive Parenting Program has five different levels with increasing strength, from universal parenting information strategies (Level 1) to an intensive intervention for families facing multiple sources of distress (Level 5). In this study, Level 2 and 3 were included.</p> <p><b>Intervention delivery:</b> Level 2 consists of a series of three stand-alone 90-min group seminars providing developmental</p>	<p><b>Method of allocation:</b> Preschools interested to participate in the study were matched into pairs and randomized to the intervention or the control group. Preschool teachers invited parents to children aged 2–5 years to participate.</p> <p><b>Participants:</b> <i>Parents:</i> A total of 759 parents participated. 488 parents (286 mothers and 202 fathers) in the intervention group, and 271 parents (160 mothers and 111 fathers) in the control group. <i>Children:</i> 234 children of 213 mothers, and 21 fathers in the intervention group, and 121 children of 111 mothers, and 10 fathers in the control group.</p>	<p><b>Outcome measures:</b> <i>Parental measures:</i> Parent's mental health problems (Depression Anxiety Stress Scales, DASS-21) <i>Child measures:</i> Children's externalizing behavior problems (an abbreviated version of the Eyberg Child Behaviour Inventory, ECBI-22) <b>Method of analysis:</b> A Linear Mixed Models performed for repeated measures analyses. Effect sizes were estimated using the difference in mean change scores between baseline and each follow-up between conditions divided by the pooled standard deviation of both conditions at baseline.</p>	<p><b>Key results:</b> <i>Parental outcomes:</i> Mental health problems, subscales: Depression (0) Anxiety (0) Stress (0) <i>Child outcomes:</i> Behavioral problems (0)</p>	<p><b>Limitations:</b> Insufficient sample size; the assessment of child behavior relied on a single source (parental report); prevalence estimates of child behavior problems vary according to the measure used.</p> <p><b>Quality assessment score:</b> ++</p>

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## Appendix B (continued)

	guidance to parents. Level 3 includes 1–4 15–20-min individual sessions of active skills training, rehearsal advice, and self-evaluation. Both levels were delivered to by trained preschool teachers.	<p><b>Follow-up periods:</b> 6-, 12-, and 18-month follow-up</p> <p><b>Attrition:</b> <i>Parents:</i> Completed questionnaires at 6 months (78.9%), 12 months (60.2%) and 18 months (60.9%) in the intervention group. Completed questionnaires at 6 months (82.7%), 12 months (69%) and 18 months (66.1%) in the control group.</p> <p><i>Children:</i> Completed questionnaires at 6 months (80%), 12 months (63%) and 18 months (64%) in the intervention group. Completed questionnaires at 6 months (87%), 12 months (74%) and 18 months (71%) in the control group.</p>			
<p><b>First author and year:</b> Sherr et al. (2014) [53]</p> <p><b>Country of study:</b> Norway</p> <p><b>Aim of study:</b> To examine the impact of the International Child Development Programme (ICDP) courses on a general community sample of caregivers in Norway.</p> <p><b>Study design:</b> A questionnaire study with a two-group design (an intervention group, and a control group)</p>	<p><b>Setting:</b> All ICDP facilitators were contacted and logged forthcoming groups for potential inclusion. A total of 75 ICDP groups were approached during the data collection period October 2008 to March 2010. The groups were run at kindergartens and health centers.</p> <p><b>Intervention:</b> The ICDP is non-instructive and aims to guide caregivers' understanding of their children and interaction with them.</p> <p><b>Intervention delivery:</b> The groups usually consist of 5–10 caregivers attending eight weekly two-hour sessions. The groups were organized by ICDP educated staff at kindergartens and child health centers. Caregivers take an active role, participate in group discussions, role play the guidelines, and do home assignments.</p>	<p><b>Method of allocation:</b> A control group was recruited from child health centers and kindergartens in areas where the ICDP programme was not implemented.</p> <p><b>Participants:</b> A total of 426 caregivers participated. The intervention group consisted of 269 caregivers, and the control group of 157 caregivers. The children in the intervention group had an average age of 4.0 years (SD = 2.64) and the children in the control group had an average age of 3.3 years (SD = 1.83).</p> <p><b>Follow-up periods:</b> No follow-up</p> <p><b>Attrition:</b> 141 (52.4%) of the intervention group participants and 79 (50.3%) of the control group participants completed the second questionnaire.</p>	<p><b>Outcome measures:</b> <i>Parental measures:</i> Happiness with partner (Drawn from the Dyadic Adjustment Scale) <i>Child measures:</i> Children's strengths and difficulties (Strengths and Difficulties questionnaire, SDQ) <i>Parent-child interaction measures:</i> Parenting strategies Activities with the child (The Parent-Child Activity Scale) Child management Positive discipline (Conflict Tactics Scale) Engagement with the child</p> <p><b>Method of analysis:</b> Chi-squared tests and t-tests, mixed analysis of variance (ANOVA) and multivariate analyses of variance (MANOVA).</p>	<p><b>Key results:</b> <i>Parental outcomes:</i> Happiness with partner (0) <i>Child outcomes:</i> Children's strengths and difficulties, subscales: SDQ total impact (-) (0.51 to 0.24, <math>p = .018</math>) SDQ total difficulties (not reported) SDQ total prosocial (not reported) <i>Parent-child interaction outcomes:</i> Parenting strategy (+) (22.67 to 23.52, <math>p = .029</math>) Activities with the child (+) (101.86 to 101.92, <math>p = .006</math>) Child management (-) (1.91 to 1.79, <math>p = .020</math>) Positive discipline (0) Engagement with child, subscales: Emotional engagement (not reported) Strategic engagement (not reported) Multivariate results for the MANOVA tests for the SDQ subscales (SDQ total difficulties and SDQ prosocial) and the subscales of the engagement scale (emotional engagement and strategic engagement) showed non-significant Group Time interactions, respectively. The results of the univariate ANOVA tests for SDQ total difficulties, SDQ prosocial, emotional engagement and strategic engagement are therefore not reported. Parent's educational level, depressive symptoms, and satisfaction with social support affected the intervention impact.</p>	<p><b>Limitations:</b> Variation in children's ages; some significant differences between the intervention and control group at baseline; low attendance and large attrition from pre- to post-intervention, and loss to follow-up by approximately half of the participants; multiple F-tests conducted; self-reported measures; no randomization.</p> <p><b>Quality assessment score:</b> +</p>
<p><b>First author and year:</b> Tanninen et al. (2014) [48]</p> <p><b>Country of study:</b> Finland</p> <p><b>Aim of study:</b> To describe the cooperative relationship between parents and a family nurse and to evaluate the benefits of resource-enhancing family nursing discussion as an intervention carried out at home.</p>	<p><b>Setting:</b> The questionnaire was developed and tested during the <i>MLL Families with Children Project</i>, and the data were collected in 2004–2005. The participating families were clients of a family nurse in two small municipalities of southern Finland.</p> <p><b>Intervention:</b> The goal of the intervention is to help</p>	<p><b>Method of allocation:</b> NA</p> <p><b>Participants:</b> 26 families (25 mothers, and 3 fathers of 56 children). Children's mean age were 4.75 (SD = 3.7).</p> <p><b>Follow-up periods:</b> No follow-up</p> <p><b>Attrition:</b> NA</p>	<p><b>Outcome measures:</b> The questionnaire contained 12 structured questions, 7 open-ended questions, and two Likert-type questions. Open-ended questions asked about support needs, the benefits of family nursing and discussions with family nurse.</p> <p><b>Method of analysis:</b> Frequencies were calculated, expressed as</p>	<p><b>Key results:</b> <i>Families' assessments of the benefits of the family nursing intervention:</i> Coping with everyday life (100%) Increasing intra-interaction within family (96%) Parents' peace of mind (89%) Getting support to raise children and handle the task of parenting (85%) Provide tools for personal mental growth (85%) Planning of one's own life (73%) Parent's relationship as couple (73%) Daily rhythm of family (50%)</p>	<p><b>Limitations:</b> Small sample size; no randomization; the number of fathers was smaller than that of mothers among the participants and complicated the assessment of the overall family situation; relatively long-lasting cooperative relationship with the family nurse and the family nurses' characteristics and experiences may have affected the results.</p>

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## Appendix B (continued)

<p><b>Study design:</b> Research data were gathered from parents via a semi-structured questionnaire after the family nursing period had ended. The data were analyzed by using descriptive statistical methods.</p>	<p>families to use the resources of their individual members and to support the family as a unit. Three strategies were implemented in the process: identifying resources and providing feedback and developing and acquiring resources.</p> <p><b>Intervention delivery:</b> Depending on support needs, the family nurse, who was a public health nurse and a family therapist, visited the family 1–43 times (average 21 times, 35 h/ family), mainly in their homes. The families were involved in the intervention for 0–19 months (7.9 months on average). Goal- and future-oriented resource-enhancing discussions were carried out in all meetings (separately or together with all family members). Other methods included video guidance, constructing a family tree and parents' role map, network cooperation with close relatives of the family and authorities, mother-child group activity, and observation of family conditions.</p>	<p>percentages. The answers to open questions were calculated manually.</p>	<p>Employment situation (46%) Children's custody/visitation issues (31%) Education/schooling situation (23%) Domestic violence prevention (23%) Personal coping with caring for children (19%) Family's financial situation (12%) Parents' substance use (4%) Participants evaluated their life conditions (scale of 4–10). At the beginning of family nursing, the average score for families' living situations was 5.8 (variation 4–8.5), and at the end of family nursing, the average was 8.6 (variation 7–10). 14 families had previously received external support (12 had not). At the end of the intervention, 3 parents estimated that they continued to require outside support (13 evaluated that they might need external support in the future).</p>	<p><b>Quality assessment score:</b> +</p>	
<p><b>First author and year:</b> Thorell (2009) [54] <b>Country of study:</b> Sweden <b>Aim of study:</b> To conduct an evaluation of the COPE programme in Sweden, where the programme is extensively used. <b>Study design:</b> A randomized waiting-list control between-group design</p>	<p><b>Setting:</b> The present study evaluated both a clinical and nonclinical sample (the results from the clinical sample are excluded from this review). The nonclinical groups included parents who attended the COPE programme in ten different areas in Uppsala and Stockholm, Sweden. <b>Intervention:</b> COPE is a manual-based, large-group community-based parent education programme. It includes e.g., strategies for giving attention to positive behavior, balancing time and attention among siblings, ignoring minor disruptions, managing transitions, planning ahead and reward systems. <b>Intervention delivery:</b> An intervention group consisting of 25–30 parents (divided into subgroups of 5–7) meet weekly with one or two trained group leaders for</p>	<p><b>Method of allocation:</b> Parents in the nonclinical groups were randomly assigned to either the parental training group or to a waiting-list control group. Most of the waiting-list controls were however recruited from the area using a more general recruitment procedure. <b>Participants:</b> 133 families were included in the nonclinical groups. The children of the nonclinical groups were divided as follows: a nonclinical high symptom level group (n = 87), a nonclinical low-symptom level group (n = 50), and a nonclinical waiting-list control group (n = 57). Children's mean age was 7.0 in the high and low symptom level groups and 6.8 years in the waiting-list control group. <b>Follow-up periods:</b> No follow-up</p>	<p><b>Outcome measures:</b> <i>Parental measures:</i> Parent's stress (shortened version of the Swedish Parenthood Stress Questionnaire, SPSQ) Perceived parental control (one of the subscales from the Parental Locus of Control instrument, PLOC) <i>Child measures:</i> Children's externalizing problems (Diagnostic and Statistical Manual of Mental Disorders, DSM-IV) Children's social functioning (Strength and Difficulties Questionnaire, SDQ) <b>Method of analysis:</b> One-way Analyses of Variance (ANOVAs) were used. Cohen's effect size formula (<i>d</i>) with pooled standard deviations was thereafter used to study effect sizes.</p>	<p><b>Key results:</b> <i>Parental outcomes:</i> Parental stress, subscales: Social isolation: High symptom level group (–) (2.58 to 2.46) Effect size: 0.02 Low symptom level group (–) (2.40 to 2.02) Effect size: 0.85 <i>F</i>-value 6.86, <i>p</i> &lt; .001 Incompetence: High symptom level group (–) (3.28 to 2.94) Effect size: 0.02 Low symptom level group (–) (2.96 to 2.56) Effect size: 0.53 <i>F</i>-value 3.57, <i>p</i> &lt; .05 Role restriction: High symptom level group (–) (3.46 to 3.19) Effect size: 0.17 Low symptom level group (–) (3.14 to 3.01) Effect size: 0.46 <i>F</i>-value 2.62, <i>p</i> &lt; .10 Lack of perceived control: High symptom level group (–) (3.47 to 2.82) Effect size: 0.74 Low symptom level group (–) (2.78 to 2.40) Effect size: 0.61 <i>F</i>-value 7.03, <i>p</i> &lt; .001 <i>Child outcomes:</i> Children's strengths and difficulties, subscales: Conduct problems: High symptom level group (–) (1.82 to 1.15) Effect size: 0.94 Low symptom level group (–) (0.94 to 0.69)</p>	<p><b>Limitations:</b> Sole reliance on maternal ratings; lack of measures of maternal psychopathology; lack of follow-up data. <b>Quality assessment score:</b> +</p>

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## Appendix B (continued)

	<p>2-h sessions over 10 weeks. The program is participant driven and the sessions consisted of parental education, discussions, and homework.</p>	<p><b>Attrition:</b> Only the families who filled out the questionnaires before and after the program were included in the study.</p>	<p>Effect size: 0.24 <i>F</i>-value 3.08, <i>p</i> &lt; .05 Hyperactivity/impulsivity: High symptom level group (-) (1.99 to 1.53) Effect size: 0.62 Low symptom level group (-) (0.91 to 0.79) Effect size: 0.16 <i>F</i>-value 7.98, <i>p</i> &lt; .001 Daily problems: High symptom level group (-) (3.02 to 2.24) Effect size: 0.58 Low symptom level group (-) (1.52 to 1.10) Effect size: 0.52 <i>F</i>-value 2.79, <i>p</i> &lt; .05 Inattention (0) Poor social competence (0) Peer problems (0) Post hoc comparison revealed that for the changes in hyperactivity/impulsivity, only the high symptom level group had changed significantly. For other outcomes both the low and high symptom level groups changed significantly compared to the control group. Changes in parental stress were modestly, although significantly, related to changes in symptoms of ODD and inattention, social competence, peer problems and daily problems. Changes in lack of parental control were significantly correlated with changes in all types of child behavior problems except for social competence deficits.</p>	
<p><b>First author and year:</b> Ulfsdotter et al. (2014) [55] <i>Study protocol:</i> Lindberg et al. (2013) [39] <b>Country of study:</b> Sweden <b>Aim of study:</b> To evaluate the effectiveness of the All Children in Focus (ABC) program, firstly by investigating the effectiveness of the program in promoting parental self-efficacy and child health and development, secondly by testing the impact of potential moderators on the outcomes. <b>Study design:</b> A randomized waitlist-controlled trial with pre, post, and follow-up measurements</p>	<p><b>Setting:</b> Parents with children aged 3–12 were recruited to the trial during February–March and September–October 2012. <b>Recruitment of parents and implementation of parent groups</b> were conducted locally in 11 municipalities and city districts in the County of Stockholm, Sweden. <b>Intervention:</b> The ABC program is a universal health-promoting parenting program and targets the parent-child relationship, as well as parental everyday experiences, and aims to promote children's development. Session components are positive attention and warmth, parent-child time and child-directed play, positive parenting strategies, and consistent parenting. <b>Intervention delivery:</b> The intervention consists of four 2.5-h structured sessions every other week, also a booster session is offered after a couple of months. The groups were run by two trained group leaders and consisted of 7 parents at average. Sessions consisted of discussions, short films, and role-play exercises.</p>	<p><b>Method of allocation:</b> Parents were randomized to either receive the ABC program directly or join a waitlist-control group receiving the intervention after approximately six months. <b>Participants:</b> 621 parents were recruited to the trial. 323 parents participated in the intervention group and 298 parents participated in the control group. Child mean age in the intervention group was 6.09 years (SD 2.6), and in the control group 6.26 years (SD 2.6) <b>Follow-up periods:</b> 2 weeks and 6 months after baseline <b>Attrition:</b> 572 (92%) parents completed the post-measurement, and 509 (82%) parents completed the follow-up measurement.</p>	<p><b>Outcome measures:</b> <i>Parental measures:</i> Parent's self-efficacy (Parental Self-Efficacy, PSE) Parent's mental health (General Health Questionnaire, GHQ) (moderator) <i>Child measures:</i> Parent's perception of their child's physical and mental health, emotional development, independence, family relations, and social competence (Child Health and Development, CHD) <b>Method of analysis:</b> Chi-square tests and <i>t</i>-tests; multilevel linear modeling (MLM) with a repeated-measures design (mixed models); a three-level model; time-related variables; quadratic time variable; effect sizes (<math>\eta^2</math>) adopting the guidelines of Cohen; several MLM analyses; intention-to-treat analyses were conducted. The alpha level was set to &lt; .05.</p>	<p><b>Key results:</b> <i>Parental outcomes:</i> Self-efficacy (+) (20.25 to 27.99, <i>p</i> ≤ .000) <i>Child outcomes:</i> Mental health and development (+) (5.32 to 8.10, <i>p</i> ≤ .000) Regarding the outcome variable of PSE, three-way interaction effects were found for parents' educational level, positive mental health, and number of children. Three-way interaction effects were found for children's age and parents' positive mental health.</p> <p><b>Limitations:</b> Sole reliance of parental ratings; difference between parents completing and not completing the follow-up measurements; fewer parents in the intervention group completed the post-measurement compared with parents in the control group; only about half of the intervention group participated in all four sessions; the lack of normative data concerning the outcome measures.</p> <p><b>Quality assessment score:</b> ++</p>