The value of a family-centered approach in Preventive Child Healthcare

Monitoring the social-emotional development of infants

Margriet Hielkema

Colofon

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Margriet Hielkema

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Promotor
Prof. dr. S.A. Reijneveld

Copromotor
Dr. A.F. de Winter

Beoordelingscommissie
Prof. dr. H.W.E. Grietens
Prof. dr. C.J.M. Jansen
Prof. dr. H. Raat

Paranimfen

Karin Veldman

Leentje Willems-Keekstra

List of abbreviations:

PCH	Preventive Child Healthcare
SES	Socioeconomic Status
CBCL	Child Behavior Checklist
FCA	Family-centered approach
CAU	Care-as-usual

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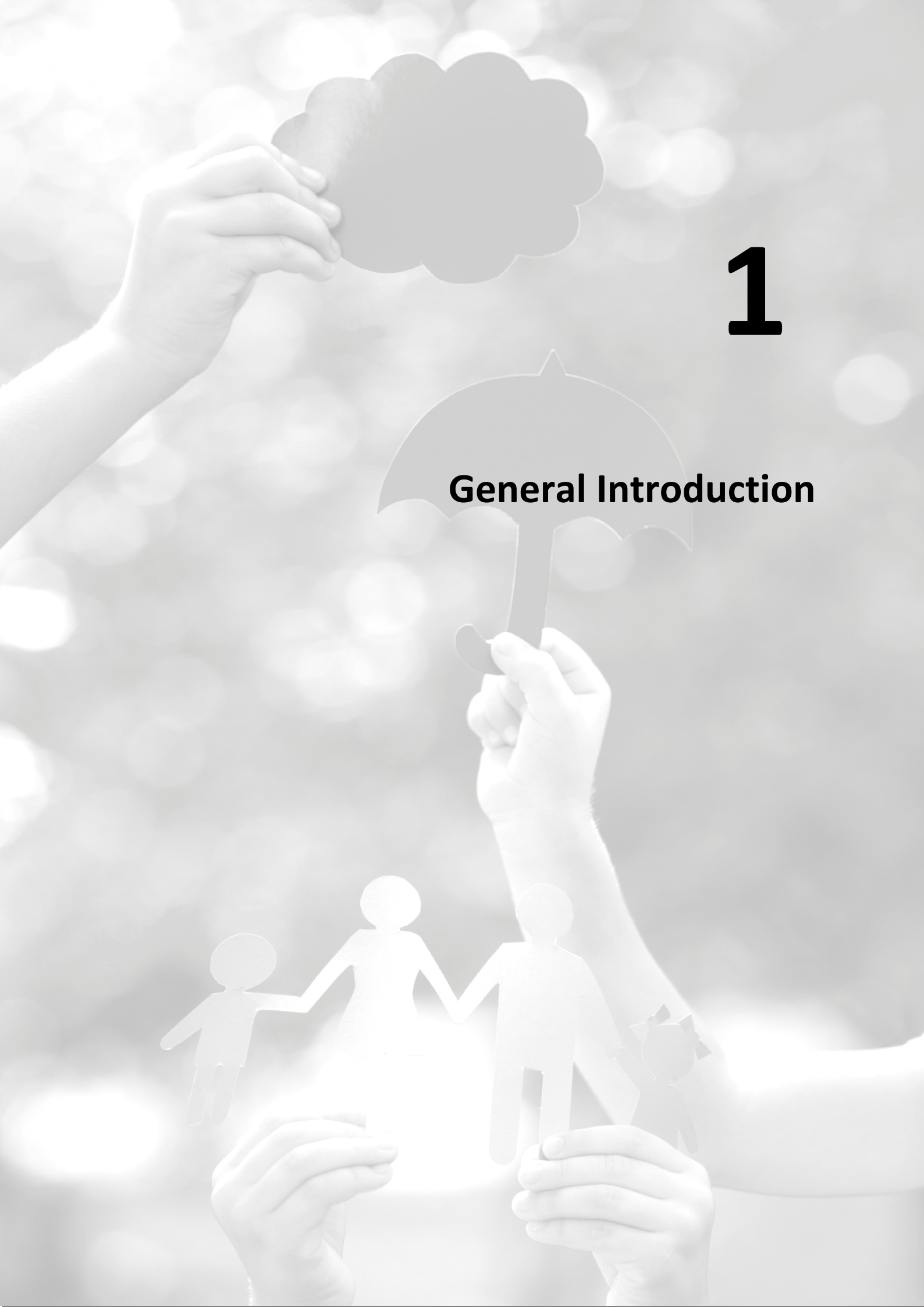

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General Introduction

Children deserve the best possible start in life. In this thesis, the effectiveness of a family-centered approach (in Dutch "DMO-protocol", further referred to as "the family-centered approach"), which was designed to support infants' social-emotional development in a Preventive Child Health (PCH) setting, is being assessed. The contribution of the family-centered approach to the early identification of (risks for) social-emotional problems and to children's psychosocial wellbeing is assessed, experiences of parents as well as PCH-professionals with the family-centered approach are described, and furthermore the validity of the family-centered approach is evaluated. In this first chapter, the study is positioned in a broader context by providing some background information and the outline of this thesis.

Preventive Child Healthcare

Preventive Child Healthcare (PCH, in Dutch Jeugdgezondheidszorg - JGZ) is a well-known and established initiative to contribute to a good start for children. PCH in the Netherlands was founded in the first half of the twentieth century to promote children's development by monitoring nutrition and hygiene and later on to give vaccinations to prevent diseases.[1] Nowadays, next to the medical orientation, also the importance of the social-emotional development is emphasized.

Dutch PCH is similar to community pediatrics in the USA, however in the Netherlands access is free of charge for all families, regardless of health insurance status, and more than 90% of all children regularly visit PCH.[2] Therefore PCH is in a unique position to monitor social-emotional development of children, and doing so is one of their mandatory tasks.[3] In a recent advisory report by Commission De Winter, the current standard tasks of PCH services (to monitor, screen, identify, vaccinate, and to evaluate the need for care) have been extended with giving preventive information, to normalize, to provide access to care and to assess new collective policies.[4]

In PCH, children are seen most frequently by PCH professionals, i.e. nurses and medical doctors, during the first months of life. From birth until the age of 18 months, children are seen 11 times by nurses and medical doctors alternately. However, some changes are taking place regarding the work out and number of these well-child visits. Some PCH organizations use a triage-based model, which means that all children are screened by using questionnaires and information from the medical file or by healthcare assistants or nurses who screen or do the routine well-child visits and indicate whether follow-up assessments by a medical doctor or nurse are indicated. A study at the same PCH organization as where we performed our study (Icare JGZ, providing PCH services for 0-4 year olds) showed that it is feasible for nurses to perform well-child visits from 2

months onwards, though also several recommendations for future implementation have been given.[5] Furthermore, two larger Dutch studies assessed the possibility of more flexibility regarding the number of well-child visits, as some children may need more visits than average, whereas others might need less. Results of these two studies show that some forms of flexibility are feasible in daily practice and that this flexibility still results in provision of adequate care.[6] However, another study that focused on the validity of triage-based working by using questionnaires and information from the medical records showed that improvement is needed before this form of triage can be further implemented.[7] Further research is needed on this topic.

At the beginning of 2015 changes took place in the care for youth and the responsibility for the caring system changed from the national government and provinces to local municipalities. This also influences PCH services even though municipalities already had the responsibility for PCH for a longer time. The transition means that municipalities have to organize their care system and have to decide what organizations should provide what kind of services, to be able to provide the right care to the right children. According to the advisory Commission De Winter, PCH should not be reduced to provide services for individual children, but, since PCH has such a high reach, it should provide services to children and their context from a social-medical, contextual perspective. Next to the identification of risks and problems at an early stage, the committee also sees as a task for PCH to empower families, and to normalize so that common problems do not receive specialized care.[4] This fits with the vision of the Dutch Center for Child Health (NCJ), which furthermore sees a role for PCH in providing extra care and as a link between several instances regarding the care for children.[8]

Social-emotional development: an interaction between nature and nurture

The development of children, also on a social-emotional level, depends on the influence of both genes and experience.[9-12] Before the third trimester of gestation, all neurons have formed within a child's brain. Connections between these neurons form for an important part after birth, through the interaction between genes and environmental factors. An analogy that is often used for the make-up of the brain is that of a computer; genes are responsible for the hardware of the brain, whereas the interaction between genes and environmental factors are responsible for the software. Experiences actually change neurobiological processes within, and therewith the structure of, the brain.[13]

The bioecological model of Bronfenbrenner clearly describes what contextual factors at different levels influence human development. The model describes that there are several levels that influence the development of individuals: The micro system reflects

the setting in which individuals live and act, like a child at home with parents or at daycare or school with peers. The mesosystem reflects the interactions or relation between different microsystems, like the relation between family and daycare or peers and the neighbourhood. The exosystem refers to environmental settings that indirectly affect the child, like parents' working places or the community context. The macrosystem describes the culture the child lives in. Finally, the chronosystem refers to environmental events and transitions over the life course, like parental divorce or a change of socio-economic status.[14,15] Bronfenbrenner thus sees the development of individuals to occur through the relation with their direct and indirect environment.

In the first few years, infants develop from a helpless human being into a mobile person with verbal, cognitive and social abilities to act in social situations. During these early years, the child's brain has a great capacity for growth, but unfortunately, also a vulnerability for harm. Several studies show that in case of severe deprivation during the early years (due to institutional rearing) a range of negative outcomes across several domains, like social and emotional, are found[16-18], though high quality caregiving may reduce negative effects. Severe deprivation due to institutional rearing is a very extreme example, and even in this extreme situation some children seem to develop more normal than others do.[19,20] Sheridan et al. suggest that sensitive periods and genetic variation may account for these differences of outcome between children.[16] On the other hand, there are also children growing up in optimal contexts, but who do have social-emotional problems, also here genetics can be used as an explanation, for example for children with autism or Attention Deficit Hyperactivity Disorder (ADHD).[21] Although there is never a one to one relationship between the child's social-emotional development and its developmental context, no one can deny that children deserve an optimal developmental context to be able to prosper.

Social-emotional problems in children

Behavioral, social and emotional problems, further referred to as social-emotional problems, are relatively common in childhood and may interfere severely with the everyday life of the child and its family. Prevalence rates differ between studies, assessment methods and informants. Prevalence rates for children under 3 years of age range from 6% to 24% (percentages are based on different sources like identification by professionals, professionals using diagnostic criteria and by questionnaires filled in by parents).[22-25] In our study, we included very young children; from birth until the age of 18 months. Social-emotional behavior one could think of during infancy could be for example

eye-contact, following with eyes, reaching for being held, imitating gestures and babbling, but also crying, anger and sleeping behavior.

In this thesis, the term "social-emotional" stands for social and/or emotional behavior that is adequate given the child's age and the situation the child is in, which fits with an internationally used definition.[26,27] From birth onwards, human beings show social behavior and emotions (like eye-contact, smiling and crying). This social-emotional behavior develops over time, and the behavioral repertoire of children becomes more and more fine-tuned and varied.

Despite our definition, social-emotional problems in infants remain hard to identify. First, we do not expect as much from infants in terms of social or emotional behavior as we do expect from older children (like playing with other children or comforting another child). Second, in infancy rapid developmental changes occur, along with behaviors which may seem deviant in older children but may be part of normal development at younger ages.[28,29] Third, as we mentioned before, the development of children is always embedded within a larger context, in which different factors constantly interact and influence each other, as reflected in the bio-ecological model of Bronfenbrenner.[14] Especially the development of young children is very much intertwined with their developmental context. The younger children are, the more they rely on their context for the regulation of emotions and behavior.[30] Since these factors are very much intertwined, they should always be taken into account together, which is done by the family-centered approach.

The family-centered approach (in Dutch "DMO-protocol")

Family-centered care in general has received increasing attention from the second half of the twentieth century onwards, and has been promoted in several healthcare settings.[31-38] Family-centered care can be defined as "placing the needs of the child, in the context of their family and community, at the centre of care and devising an individualized and dynamic model of care in collaboration with the child and family that will best meet these needs"[39] and has been related to several positive healthcare outcomes.[31,33,38] In Table 1 the core principles of family-centered care, according to the American Academy of Pediatrics, are shown.[38]

In Dutch PCH, the importance of good identification and subsequently the provision of adequate care has been stressed and an overview of the current evidence for several methods has been provided.[40] The family-centered approach (in Dutch "DMO-protocol") was mentioned as one of the promising instruments for universal screening. This family-centered approach is based on the idea that the child's developmental context

is important for children to develop optimally. The family-centered approach was designed by the University of Amsterdam in 2001[41] to enhance children's social-emotional development. First, children's social-emotional development is trying to be enhanced through empowerment of parents and their parenting skills, which may function as a primary form of prevention. The second aim of the family-centered approach is to identify concerns regarding children's social-emotional development at an early stage, which can be seen as secondary prevention. Through early identification there can be intervened in an appropriate way. These interventions can range from bringing subjects up for discussion with parents to actually providing additional care. The family-centered approach is used as a screening instrument for identifying needs of parents (regarding the child as well as its developmental context), to be able to provide care at its most effective point, not to label.

The family-centered approach emphasizes a universal, non-judgmental, empowering approach, attuned to each unique situation and needs of families. The family-centered approach shares several principles with the Structured Problem Analysis of Raising Kids (SPARK) in the Netherlands [42] and Healthy Steps [43,44] in the US. However, the family-centered approach differs from the before named methods mainly in that it can be used during every routine well-child visit (from birth onwards), whereas the SPARK for example takes 20-30 minutes and is not specifically empowerment oriented, and within the Healthy Steps program home visits by a professional with expertise on parenting and child development and parent support groups are included.

As stated before, the contents of the family-centered approach that we studied, are based on the bio-ecological model of Bronfenbrenner, taking into account both the child itself as well as its developmental context and the interaction between the two.[14] Influences from the child's developmental context can have a positive effect on children, like adequate parenting [45-47], but on the other hand, factors can also have a negative impact, like marital conflict, maternal depression, parental stress or poverty.[48-50] With the family-centered approach, both risk and protective factors regarding the child's social-emotional development are identified. During every well-child visit, possible parental concerns are first elicited, providing a starting point for further communication. During the well-child visit five domains are discussed with parents that are associated with the social-emotional development of children. These domains are: the Competence of the parent, the Role of the partner, Social support, Perceived barriers or life events within the care giving context and the Wellbeing of the child.[41] Every domain consist of several questions (see appendix 1 for all the questions) for which risk and protective factors can be registered and free text can be provided to give further explanation. Furthermore, based

on all domains, the PCH professional decides together with parents whether any additional activity from PCH is needed (for example a visit to discuss the situation in more detail).

Table 1

Core principles of family-centered care according to the American Academy of Pediatrics
1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

Professionals' adherence to new working methods

The success of new working methods like the family-centered approach highly depends on the adherence of professionals to it. There are several factors that influence professionals' adoption to innovations.[51] Factors that are often mentioned to influence professionals' adoption to new methods, like the family-centered approach, are its *perceived relative advantage*, its *compatibility* with professionals' values, experiences and needs, its *complexity* to understand and to use, its *trialability* (i.e. the degree to which an innovation may be experimented with), and the *observability* of results[51,52], though also other factors, like the extent to which individuals can adapt the innovation to their own needs, perceived risk, and support from the organizations play a role.[51] The *perceived relative advantage* seems an important predictor for the adoption of innovations. However, for preventive innovations, like the family-centered approach, the relative advantage may be rather low, compared to non-preventive innovations, since potential rewards may be delayed. This may hamper the adoption of and adherence to preventive innovations.[52]

In empirical studies several barriers have been described regarding adherence to guidelines[53,54], and specifically for adherence to providing family-centered care.[55-58] Insight in the beliefs of professionals and their adherence to the principles of the family-centered approach increases the credibility that results of our study can indeed be attributed to the family-centered approach. Furthermore, based on the information of professionals, barriers to adherence can be identified, which creates opportunities to further improve working with the family-centered approach.

Early interventions

Early interventions may help to optimize the environment of the child and in turn may promote the development of the child.[59-62] Whether concerns are identified in the child itself, in its developmental context or in both, and whatever the cause of social-emotional behavior may be, it seems to be in the best interest of the child that a possible downward spiral is trying to be prevented. Care could help to change communication, interaction patterns, self-esteem and beliefs of parents in order to reduce stress at an early stage, which in turn may have a positive effect on the child. Parenting behavior, and especially parent-child synchrony plays an important role in the (neurobehavioral) development of children.[63,64] With early identification of concerns and problems, stepped care can be provided attuned to each specific situation, according to what parents and the child wish and need.

Reasons for this study

As PCH is in such a unique position to monitor social-emotional development in an easy accessible way with a high percentage of parents visiting with their child (>90%), it is important to have a good working method to do so, and the family-centered approach provides a promising option for this. Important for a PCH setting is that a method can be used for all families, can be attuned to what families find important, fits with what professionals find important, can be used during routine well-child visits, and is effective. Measuring outcomes for more than one domain from more than one source is recommended in quality improvement studies.[65] Based on the before named requirements and recommendation, the following research questions, as mentioned under 'Research questions' were formulated.

Research questions

The aim of this study was to assess the effectiveness of a family-centered approach, designed to support infants' social-emotional development in Preventive Child Healthcare

(PCH). To get a broad overview the family-centered approach was studied from various perspectives. The following research questions were answered:

1. Does a family-centered approach contribute to better identification of (risks for) social-emotional problems in infants?
2. Does a family-centered approach contribute to the early identification of (risks for) social-emotional problems in infants?
3. Does a family-centered approach contribute to the social-emotional wellbeing of infants of 18 months of age?
4. What beliefs do PCH professionals have regarding the family-centered approach?
5. Is a family-centered approach associated with better attunement of care to parents' needs and wishes, compared to care as usual?
6. Is a family-centered approach associated with a higher willingness to disclose concerns of parents, compared to care as usual?
7. Is a family-centered approach a valid method for identifying risk and protective factors regarding the child and its developmental context?

Outline

In Chapter 2, we describe the design of the study. In Chapter 3 we discuss whether the family-centered approach contributes to the early identification of (risks for) children's social-emotional wellbeing and their psychosocial wellbeing at the age of 18 months (research questions 1 to 3). In Chapter 4, we describe what attitudes PCH-professionals have regarding the family-centered approach and how this influences their practice (research question 4). In chapter 5 we explore to what extent needs of parents are met with the family-centered approach and to what extent they feel free to disclose concerns, compared to care as usual (research questions 5 and 6). In chapter 6, we describe results of a validation study of the family-centered approach (research question 7). In Chapter 7, we discuss our findings and give recommendations for further research.

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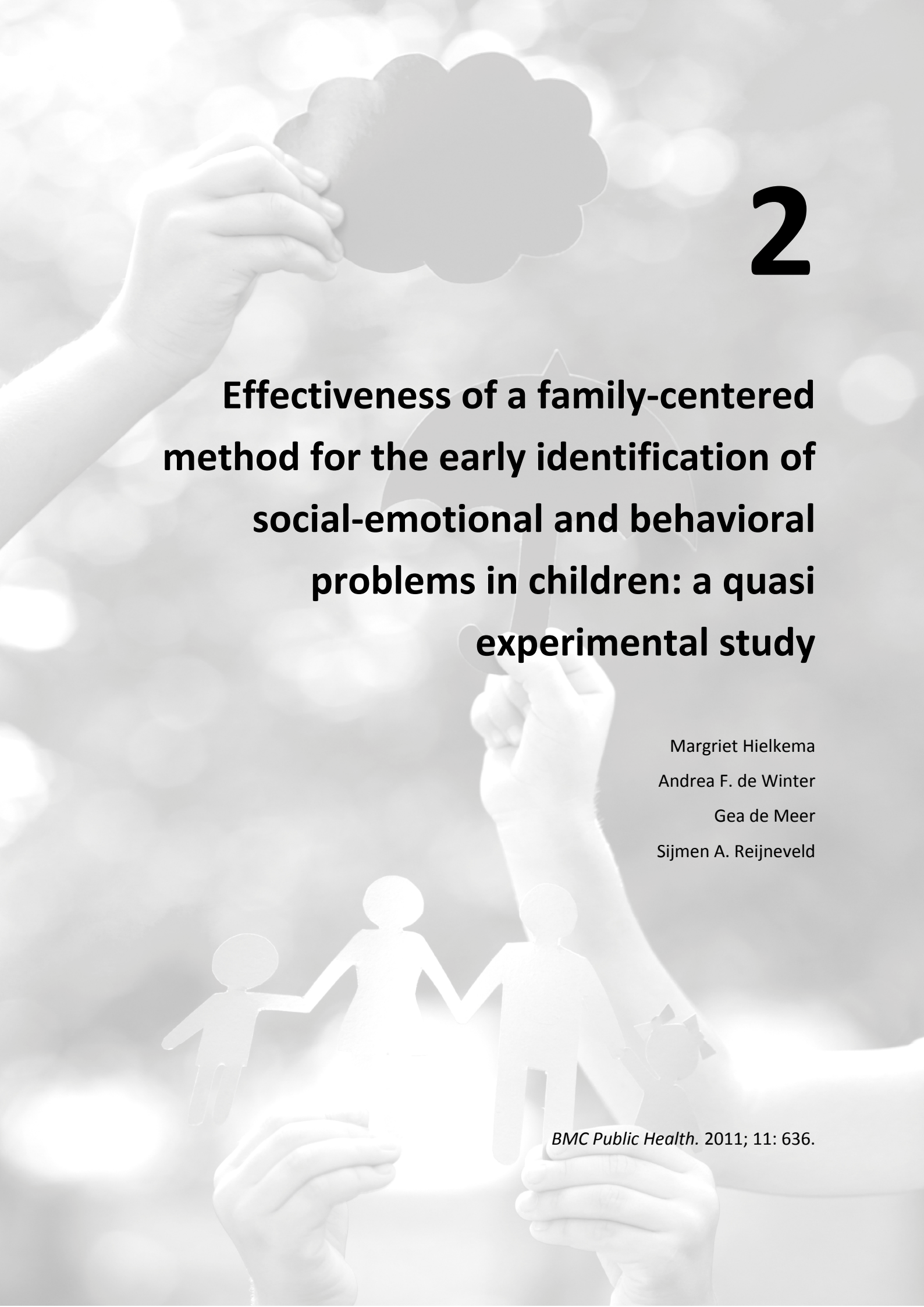

2

Effectiveness of a family-centered method for the early identification of social-emotional and behavioral problems in children: a quasi experimental study

Margriet Hielkema
Andrea F. de Winter
Gea de Meer
Sijmen A. Reijneveld

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Abstract

Background: Social-emotional and behavioral problems are common in childhood. Early identification of these is important as it can lead to interventions which may improve the child's prognosis. In Dutch Preventive Child Healthcare (PCH), a new family-centered method has been implemented to identify these problems in early childhood. Its main features are consideration of the child's developmental context and empowerment of parents to enhance the developmental context.

Methods/design: In a quasi-experimental study, embedded in routine PCH in the Netherlands, regions in which the family-centered method has been implemented (intervention condition) will be compared to "care as usual" regions (control condition). These regions are comparable in regard to socio-demographic characteristics. From more than 3,500 newborn babies, 18-month follow-up data on social-emotional and behavioral development will be obtained. PCH professionals will assess development during each routine well-child visit; participating parents will fill in standardized questionnaires. Primary outcomes in the study are the proportion of social-emotional and behavioral problems identified by PCH professionals in children aged 2-14 and 18 months in both conditions, and the proportion of agreement between the assessment of PCH professionals and parents. In addition, the added value of the family-centered approach will be assessed by comparing PCH findings with standardized questionnaires. The secondary outcomes are the degree to which the needs of parents are met and the degree to which they are willing to disclose concerns.

Discussion: The family-centered method seems promising for early identification of social-emotional and behavioral problems. The results of this study will contribute to evidence-based public health.

Background

Behavioral and social-emotional problems are common in childhood and may interfere severely with the everyday life of the child and his/her family [1,2]. Prevalence rates differ between studies and informants, with estimates ranging from 7% to 24% for children under 3 years of age [1,3-5]. For children aged 1 year, Briggs-Gowan et al. found that parents reported problems for approximately 6% of all children [1].

Early identification of social-emotional and behavioral problems, henceforth referred to as psychosocial problems, is important as it can lead to early intervention. Early intervention may help to optimize the environment of the child. This in turn may promote the development of the child [6-8], since the young brain is rapidly developing under the influence of both genes and experience [9-12].

Identification of psychosocial problems in young children is a difficult process, however. In infancy rapid developmental changes occur, along with behaviors which may seem deviant in older children but which can be part of normal development at younger ages [2]. Moreover, development of children is always embedded within a larger context, in which different factors such as, for example, characteristics of both parents and the child, constantly interact and influence each other, as reflected in the bio-ecological model of Bronfenbrenner [2,13]. Different factors may influence the development of children both in a positive or negative way, respectively labeled as protective factors; one example is adequate parenting, along with risk factors, such as lack of support. The influence of both risk and protective factors cannot be evaluated separately from each other; the balance between the burden experienced by parents, and the capacity and resources of the parents should always be evaluated.

The identification process is not only complex but also delicate. Ringing alarm bells too early can cause unnecessary stress, concern, and possible stigma for the parents. But when rung too late, parents may feel misunderstood, may lose trust in the care, their feelings of self-efficacy may decline, and problems may worsen [2]. To identify psychosocial problems or risk factors which may negatively influence psychosocial development, disclosure of any possible concerns by the parents is an important requisite[14-16]. Parental concerns have been described as being as accurate as quality screening instruments are [14]. Factors related to disclosure are: asking questions about psychosocial issues, expressions of support, and listening on the part of professionals [17].

Recently, a family-centered method, in which the above-mentioned difficulties, delicacies, and requisites are kept in mind, was introduced into Preventive Child Healthcare (PCH) in the Netherlands. PCH occupies a unique position in which to monitor psychosocial development closely, comparable to community pediatrics in the USA.

Monitoring health and identification of psychosocial problems are mandatory tasks of PCH. PCH is free of charge regardless of insurance situation, and more than 90% of all children are seen regularly during routine well-child visits offered by Child Health Professionals, that is, nurses and doctors, henceforth referred to as CHPs.

As its name implies, the new approach is family-centered, which can be described as "placing the needs of the child, in the context of their family and community, at the centre of care and devising an individualized and dynamic model of care in collaboration with the child and family that will best meet these needs" [18]. The contents of the family-centered approach are based on the bio-ecological model of Bronfenbrenner [13] which reflects different child and contextual characteristics, and the interaction between these, influencing the development of the child. The model has been described as a promising framework for providing support to children in a successful way that is integrated into community-based services [19]. In the family-centered approach, the bio-ecological model is reflected in five different domains which are to be discussed with parents during each routine well-child visit and which concern the broad developmental context of the child. In addition to its contents, the family-centered approach is aimed at building a trusting and supportive relationship with parents in order to stimulate disclosure by and empowerment of the parents, and thus to enhance the positive psychosocial development of the child.

The family-centered approach seems to be a promising method for accurately monitoring psychosocial development, and the context in which infants grow up, in a way that enhances psychosocial development and early intervention if needed. In earlier research by Tan [20], internal validity and reliability of the family-centered approach were rated satisfactory. Furthermore, it was assessed that some domains of the family-centered approach showed a medium-significant correlation with the stress experienced by parents and family needs. The predictive value of the family-centered approach for identification of (risks for) social-emotional problems, along with the external validity, of the five domains separately, were not studied by Tan, and is therefore still unknown.

The aim of this study is to assess the added value and the effectiveness of the family-centered approach in terms of how well it monitors psychosocial development and those factors which may influence psychosocial development, in infants of 0-18 months in a PCH setting. It is hypothesized that with the family-centered approach, CHPs will be able to identify psychosocial problems better, as compared to care as usual. Furthermore, it is hypothesized that, with the family-centered approach, the predictive values of the identification of psychosocial problems will be more accurate and that care will be better

attuned to parents' needs and wishes and that parents will be more willing to disclose concerns, as compared to care as usual.

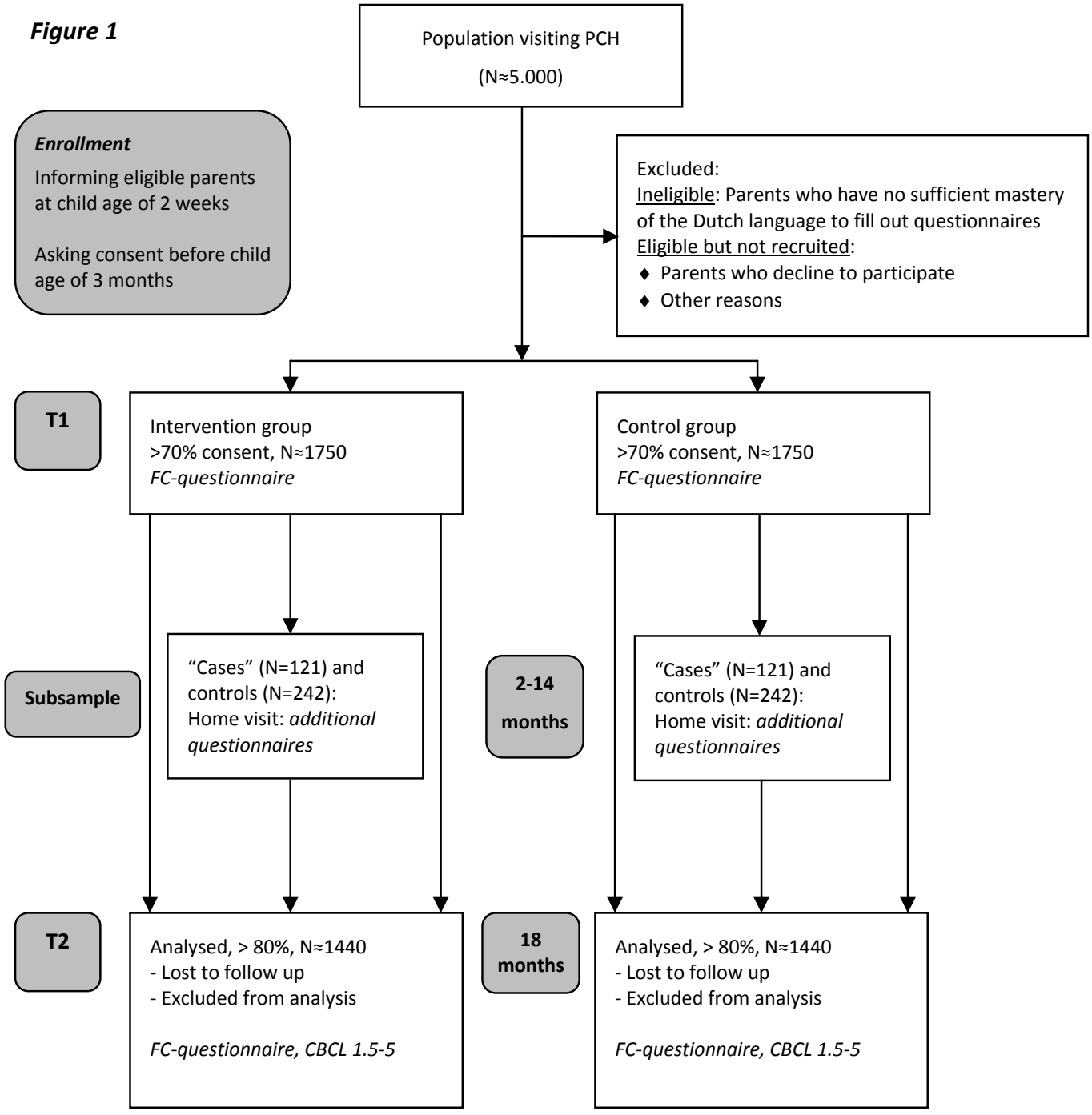
Methods/design

Design

In a quasi-experimental design, those regions in which the family-centered approach has already been implemented (intervention condition) will be compared to those regions where care as usual has been maintained (control condition). Overall, the regions in the family-centered care condition and the control condition are comparable for socio-demographic variables, including income, working participation, ethnicity, and percentage of single-parent households. In Figure 1 the design of the study is described schematically. Randomization per child/family is not possible in this setting as professionals provide care to all children in the region in which they work, in other words, contamination is inescapable in case of individual randomization. We will minimize the likelihood of contamination by prohibiting overlap between CHPs working in both the intervention and control conditions, and by informing CHPs about the activities to be undertaken for data collection in both conditions, separately. We chose a quasi-experimental design because full cluster-randomization was not possible due to implementation of the family-centered approach in a number of regions before the study started. To exclude those factors outside the intervention would affect the outcomes; no innovations regarding the psychosocial development of children aged 0-18 will be implemented in either the intervention or the control regions.

The study has been approved by the Medical Ethics Committee of the University Medical Center Groningen. Participation is voluntary and all participants will be asked to give their informed signed consent. The CONSORT statement has been followed in describing the study [21].

Figure 1



For all participating children from 0-18 months, CHPs will register within medical files whether there are any psychosocial problems during each regular well-child visit.

Consecutively, parents of all newborn babies, visiting a large Dutch PCH organization in a number of regions in the north of the Netherlands (parts of the provinces of Drenthe and of Overijssel), will be recruited for participation. Parents are eligible for participation if they visit a PCH center with their newborn before the child reaches 3 months of age and if they have sufficient mastery of the Dutch language to fill out the questionnaires used in the study.

Training

Before the study began, we trained all CHPs for half a day. In the training we provided background information on the study and focused on the inclusion procedure, data collection, and enrolling "cases" in the study. Separate training sessions were held for CHPs from the control and intervention regions.

Procedure

At the time of the routine PCH postnatal home visit, all trained CHPs will inform parents of children aged 2 weeks of their eligibility. The PCH nurse will provide an information package, including a letter, an information leaflet containing information about the study and its aims, and a small gift. CHPs will obtain informed consent from parents before the child reaches the age of 3 months and will subsequently send the consent form to the research institute. For parents who indicate that they do not want to participate, the CHP will ask whether the parent would agree to share some background characteristics (age, gender, country of birth, and employment status of the parents) and the assessment by the CHP of the psychosocial wellbeing of the child at 8 weeks of age. After the consent of the participants is received by the research institute, parents will receive a family-centered questionnaire by mail. At the end of the study, when a child is 18 months of age, parents will receive the family-centered questionnaire again and the Child Behavior Checklist (CBCL) 1.5-5 [22,23]. To enhance the filling out of the questionnaires by the parents, we will send reminders two weeks after sending out the questionnaires. Phone calls are planned one week after sending the reminder to those parents who have not yet returned the questionnaire.

During each routine well-child visit when the child is 2, 3, 4, 6, 9, 11, 14, and 18 months of age, CHPs will register in the medical records for all parents participating whether they have identified psychosocial problems or factors which might negatively influence psychosocial development. When an additional activity from the CHP is needed regarding psychosocial development (e.g., an additional appointment to assess the situation more in depth, an intervention, or a referral), that family (then referred to as a

"case") will be asked by the CHP to take part in an interview consisting of several standardized questionnaires concerning the family-centered approach domains. If parents agree to participate, a trained interviewer will visit the parents at home to enhance the participation of risk groups. For each "case," two families will be invited for whom no additional activity was performed (control families). Children will be matched by age, gender, and region (intervention or control). All the families who are interviewed together will form the subsample in our study.

To enhance the compliance of all CHPs, we will monitor all the results (such as inclusion percentages and filling in medical records) very closely from the start and will present these during team meetings. To minimize missing data from CHPs, data collection in the medical records will be closely monitored. When CHPs fail to fill in information for a participating child, they will receive an e-mail with the request to fill in the information in retrospect if possible. To minimize parental attrition, all participating children will be sent a birthday card for their first birthday. At the end of the study, when the child is 18 months of age, all participants will receive a small gift.

Intervention: family-centered approach

Before data collection started, all CHPs, that is, nurses and medical doctors (N=57), from the intervention region attended group training sessions lasting four days in total before working using the family-centered approach. Training sessions consisted of background information on the family-centered approach, work instructions, role-play sessions, and discussing practical cases. After the group training sessions, the CHPs practiced the family-centered approach during routine well-child visits. Within one month after the training sessions, CHPs were asked to videotape two well-child visits which they discussed with, and which were evaluated by, trainers using standardized guidelines [20]. This procedure was repeated until the trainer and CHP rated the performance of the CHP as adequate. After passing this assessment, intervision groups of CHPs with trainers were held every three months in order to monitor performance.

The family-centered approach covers five domains associated with psychosocial development which are discussed from the perspective of parents. Domains discussed are: Competence of the parent, Role of the partner, Social support, Perceived barriers or life events within the care-giving context, and Wellbeing of the child. For each domain, several questions regarding that specific domain are asked, intertwined in a conversation, by the CHP (see Additional File 1: Appendix 1). During the second well-child visit at age 8 weeks, the nurse is allotted 15 minutes extra (added to the routine 15 minutes, i.e., 30 minutes in total) to discuss the 5 domains exhaustively. During every routine well-child visit, any

possible parental concerns will first be elicited which will provide a starting point for further communication. For all the questions in the family-centered approach, CHPs will be able to register important information as not discussed, a protective factor, not known, or a risk factor. Furthermore, for each domain, the results of the conversation will be able to be summarized as not discussed, a protective factor, not known, or a risk factor, and subsequently an explanation will be able to be provided. Based on the information about the different domains, the parent and the CHP will jointly decide whether there are any concerns. If there are any, an additional activity (for example, an appointment to further clarify these or an intervention) will be planned. In communication with the parents, building a relationship of trust and empowerment of the parents are central features of the family-centered approach. Parents are regarded as experts on their child and in their own strengths, which may function as protective factors that can be enhanced to stimulate positive psychosocial development of the child.

Control condition: care as usual

The care as usual provided by CHPs (N=49) involves examining and monitoring the general health and psychosocial development of children during regular well-child visits of 15 minutes. During the well-child visit, CHPs follow the Guidelines of the Dutch National Centre for Preventive Child Healthcare [24]. This center provides, monitors, and improves on the national guidelines regarding monitoring developments in Dutch PCH (www.ncj.nl).

Outcome measurements

There will be several primary outcomes from this study. The first of these will be the proportion of psychosocial problems identified by the CHPs in both the intervention and control regions. When the child is aged 2 to 14 months, the focus will be on social-emotional development, for children of 18 months of age behavioral problems will be taken into account as well. A second primary outcome will be the predictive value of CHPs' identifying psychosocial problems when a child is between 2 and 14 months old, and later at 18 months, in both the intervention and control conditions. The last primary outcome will be the concordance between the risk and protective factors as assessed by CHPs using the family-centered approach domains (Competence of the primary caretaker, Role of the partner, Social support, Perceived barriers or life events within the care giving context of the child, and Wellbeing of the child) and the outcomes on standardized questionnaires filled in by the parents in the subsample regarding these domains.

The secondary outcomes in the study will be the degree to which the needs of the parents are met and their willingness to disclose their concerns.

Measurements

Social-emotional and behavioral development will be assessed by both the CHPs and the parents. CHPs will indicate during each routine well-child visit between the ages of 2 and 18 months whether psychosocial development is fine, not optimal (but no extra care is needed), or whether there is a problem, indicating that an additional activity is needed. The definition of an additional activity is used to assess whether risks for or actual psychosocial problems exist. From 2-14 months, parents in the subsample of the study will assess the social-emotional development of their children by filling in the Ages and Stages Questionnaire Social Emotional (ASQ-SE) [25,26], an internationally validated questionnaire containing 22 to 29 items for children aged 3 to 60 months. When the child is 18 months of age, all participating parents will fill in the Child Behavioral Checklist (CBCL) 1.5-5, an internationally validated instrument containing 100 items that assesses psychosocial problems [22,23].

The competence of the primary caretaker will be assessed by CHPs within the family-centered approach format by registering whether the competence is regarded as a protective factor, unknown, or a risk factor. Parents from the subsample will indicate their competence by answering 11 items in the Dutch Parental Stress Index (PSI) [27]. Furthermore, the Setting Self-efficacy subscale (14 items) of the Problem Setting and Behavior Checklist (PSBC), measuring the confidence of the primary caretaker in mastering problem situations [28], and the Parental Sense of Competence scale (PSOC), 16 items measuring the competence of the parent [29] will be used. With the SF-12, an abbreviated version of the 36-Item Short Form Health Survey [30,31], the health status (physical and mental) of the parent will be assessed.

The role of the partner will be assessed by CHPs by indicating whether the role can be seen as a protective, unknown, or risk factor. Parents in the subsample of the study will assess the relationship between the partners using the 12-item General Functioning (GF) subscale of the McMaster Family Assessment Device (FAD) that addresses the emotional relationships within families [32,33]. Furthermore, having a baby and the effect on the relationship between the partners will be assessed using the subscale “relationship” of the Dutch Parental Stress Index (5 items) [27].

Social support will be assessed by the CHPs by registering whether this can be perceived as a protective factor, unknown, or a risk factor. In the additional interview of the subsample, parents will indicate their social support by making use of a short version of the Social Support List (SSL, short version) [34], containing 12 items addressing the social support experienced. Furthermore, the Loneliness score, containing 11 items assessing feelings of overall, emotional, and social loneliness [35], will be used.

Perceived barriers or life events within the care-giving context of the child will be assessed by the CHPs by indicating in the family-centered approach format whether these can be seen as a protective factor, unknown, or a risk factor. Parents in the subsample will indicate the barriers they perceive within the care-giving context of the child by using a questionnaire measuring the relationship between basic requirements and potential deprivations for the child (e.g., nutrition) and the financial situation of parents [36]. Furthermore, a list with 17 items of life events which happened in the past year, derived from the Dutch Parental Stress Index [27], will be used.

The met and unmet needs of parents will be assessed using a family-centered questionnaire designed for this study, filled in by all participating parents when the child is 2 and 18 months of age, which assesses the needs and experiences of parents in terms of PCH.

Willingness to disclose will be measured by asking all parents to rate the following statement: "I feel free to discuss all kinds of worries with the PCH professionals" on a Likert scale from 1 (= not true at all) to 5 (=very true) when the child is 2 and 18 months of age.

Other outcome measurements will deal with the background characteristics assessed at baseline, including children's and parents' ages and genders, parental educational level, employment status, country of birth, and length of time living in the Netherlands. In the subsample, possible biological vulnerabilities within the family will also be assessed by asking participants whether there are any family members familiar with different kinds of psychopathology.

Sample size and power calculation

In a study regarding children aged 2-4 years, PCH identified psychosocial problems in 10-12% of all children, of these 22-23% were confirmed by clinical scores on the CBCL filled in by parents [37]. For the current study, an increase in the predictive value of 20% for the family-centered approach is considered to be relevant, resulting in an identification rate of 42%. With a power of 80% and a .05 alpha, 85 "cases" in both regions of the country will be needed to detect a change in predictive value of 20%.

Based on birth statistics in both the intervention and control regions, approximately 2,500 births are expected [38] within one year in both the intervention and control regions. With an expected participation rate of 70%, this would result in 1,750 participating families in both conditions within the inclusion period of one year. With an expected cumulative incidence of 10% of children with social-emotional problems between 2 and 14 months, this would result in 175 "cases" in both conditions. We

anticipate that 70% of “cases” will agree to participate, so that 121 “cases” and 242 matching control families can be invited for complementary interviews. For this group, we anticipate that for 70% of included “cases” a complete dataset will be collected.

Time frame

The aim is to have an inclusion period of one year. As it is uncertain whether an identification rate of psychosocial problems of 10% will be feasible when the child is between 2 and 14 months of age, the inclusion period can be spread over a period of 20 months. Consecutively, CHPs will then ask parents who visit the PCH center with their newborns to participate before the child reaches the age of 3 months. When the child reaches the age of 2-14 months, “cases” and matching control families will be enrolled in the subsample. The final measurement for all participating families will take place when the child is 18 months of age, and will be spread over a period equal to the length of inclusion.

Statistical analyses

To compare the baseline characteristics of the participants in the intervention and control regions, chi-squared tests for categorical variables and t-tests for continuous variables will be used. If the intervention and control regions differ regarding the background characteristics of the children, appropriate multivariable analyses will be done using standard and logistic regression analyses to adjust for these differences.

Regarding the primary outcomes of the study, the following analysis will be performed. First, we will compare the proportion of, and risks for psychosocial problems identified by the CHPs in both the intervention and control conditions when the child is between 2 and 14 months of age and when the child is 18 months of age, using chi-squared tests and logistic regression analysis to correct for potential differences between regions. Second, we will assess the sensitivity, specificity, and the positive and negative predictive values of social-emotional and psychosocial problems identified by CHPs in both conditions, using the ASQ-SE [25,26] for children aged 2-14 months from the subsample and using the CBCL for all participating children when the child is 18 months of age. Third, we will compare kappas as a measurement of agreement between the protective and risk factors assessed by the CHPs, and relevant reference questionnaires as filled in by the parents from the subgroup.

For the secondary outcomes of the study, we will compare met and unmet needs of the parents between conditions using independent t-tests and multivariate regression

analysis to correct for potential differences in background characteristics. The level of willingness to disclose concerns will be compared using ordinal regression analysis.

Data will be analyzed using SPSS 18.0. The significance level is set at .05.

Discussion

This paper presents the design of a quasi-experimental study whose aim is to assess the added value and effectiveness of a new family-centered method designed to monitor psychosocial development and those factors which may influence psychosocial development in early childhood. Daily practice needs an evidence-based method to monitor psychosocial development and identify psychosocial problems at an early age, since this may contribute to early intervention, when needed, and thus to the wellbeing of the child and his/her family [6-8,12].

Internationally, the importance of early identification of psychosocial problems is acknowledged [39], and different questionnaires regarding psychosocial development have been developed and studied such as, for example, the Child Behavior Checklist (CBCL) and the Ages and Stages Questionnaire Social Emotional (ASQ-SE) [2]. However, there are no evidence-based methods, aimed at both the psychosocial development of the child as well as at the contextual risk factors, which can be integrated into routine well-child care, although Bright Futures has been described as promising [40]. The theoretical basis of the family-centered approach represents a promising start in supporting children and families in integrating with community-based services successfully [19], and takes into account both the difficulties and delicacies found in the early identification process. If the family-centered approach proves to be effective, its feasibility in routine care will be high because it has already been implemented successfully in routine care in the intervention regions.

Strengths

We expect the findings of this large prospective quasi-experimental study into the daily practice of PCH to be very useful for practitioners and policymakers. Inclusion and exclusion criteria are set so as to highly resemble routine care in order to obtain generalizable findings. For the same reason, we will be investing a great deal in order to enhance the participation of all parents. For example, before the study started, we were able to focus media attention on the study in order to interest potential participants. Furthermore, in the information packet for parents, a small gift is provided to further spark the interest of the parents, and when we wrote the information flyer we made use of input from the CHPs so as to appeal to parents. For that part of the subsample in which

an additional activity is to be carried out by a CHP, the parents will be informed by their own CHP and thereafter will be contacted by an interviewer who will visit the families at home. Interviewers are all well trained and have very good communication skills which should enhance participation of families. To further facilitate the participation of parents, we trained all the CHPs before the study started, interactively informing them how to motivate parents adequately and, if necessary, to remove any barriers felt by parents.

Besides evidence regarding the effectiveness of identifying the risks for psychosocial development, our study will also provide insight into whether parents experience the family-centered approach as truly family-centered. This insight may be very useful for the design of further training sessions for the CHPs. Furthermore, the evidence about whether parents feel free to disclose possible concerns to their CHP may provide interesting and important information. Disclosure by parents seems a sine qua non for the early identification of, and risks for, psychosocial problems. Parental concerns have even been shown to be as accurate as other screening methods such as questionnaires [14].

This study will prospectively monitor the development of a large number of children. Therefore, it will provide a wealth of information about the early development of infants and about factors within the child or those contexts which may influence psychosocial development in the first 18 months of life. With this structured way of monitoring psychosocial development at such an early age, we should gain more insight into the normal developmental pathways of children during the first 18 months.

Potential limitations

This study also has some limitations. First of all, randomization will not be possible, since both the CHPs and parents are bound to their PCH regions. However, we will minimize contamination between regions, for example, through separate training sessions for the CHPs, by actively involving management of both the intervention and control regions, and by avoiding that CHPs work in regions of both the intervention and control condition.

Selection bias may also possibly influence the study's findings. To minimize this, we have taken several measures to promote the participation of all parents. As stated above, all the CHPs were instructed on how to pass information onto parents and how to use effective strategies to remove any barriers to participation, both in the overall study population and in the subsample of parents. For those parents who do not want to participate, the CHP will ask whether the parent would agree to share some background characteristics (age, gender, country of birth, and employment status of parents) and the assessment of the psychosocial wellbeing by the CHP when the child is 8 weeks of age. By

collecting this information, comparisons between groups can be made to provide insight in the presence of potential selection bias.

One challenge in this study concerns the large number of participating CHPs who all need to comply with the study protocol. However, this reflects daily practice very well, which highly contributes to the generalizability of our findings. Moreover, to enhance the compliance of all CHPs, from the outset we will monitor all results very closely in terms of inclusion percentages and filling in information in the medical records of participating children. Results will be presented during team meetings. With close monitoring, we should be able to provide interventional action at an early stage if needed.

In interpreting results in terms of the predictive value of the CHPs' identification of the psychosocial development of children, it is important to note that we will be using the ASQ-SE for children younger than 18 months and the CBCL 1.5-5 for children aged 18 months as the "gold standard." We should note, however, that this gold standard does not fully reflect the judgment of the CHPs, which is also based on clinical experience. In an ideal situation, we should also gather information from independent experts in order to have a possibly more objective and informative measurement of psychosocial development. This will not be part of our study due to the large numbers and the time-consuming method that would involve.

Conclusions

The family-centered approach seems to be a promising new method for monitoring and enhancing psychosocial development of young children in PCH centers. Our study is the first to assess the added value and effectiveness of the family-centered approach in a large sample. Using an innovative design, we will assess several dimensions of effectiveness in order to come up with a complete overview of the added value of the family-centered approach. In a broader sense, this study will contribute to evidence-based public health.

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Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker
- How do you like being a mother (of … children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as…

2. Role of the partner
- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
  (in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as…

3. Social support
- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

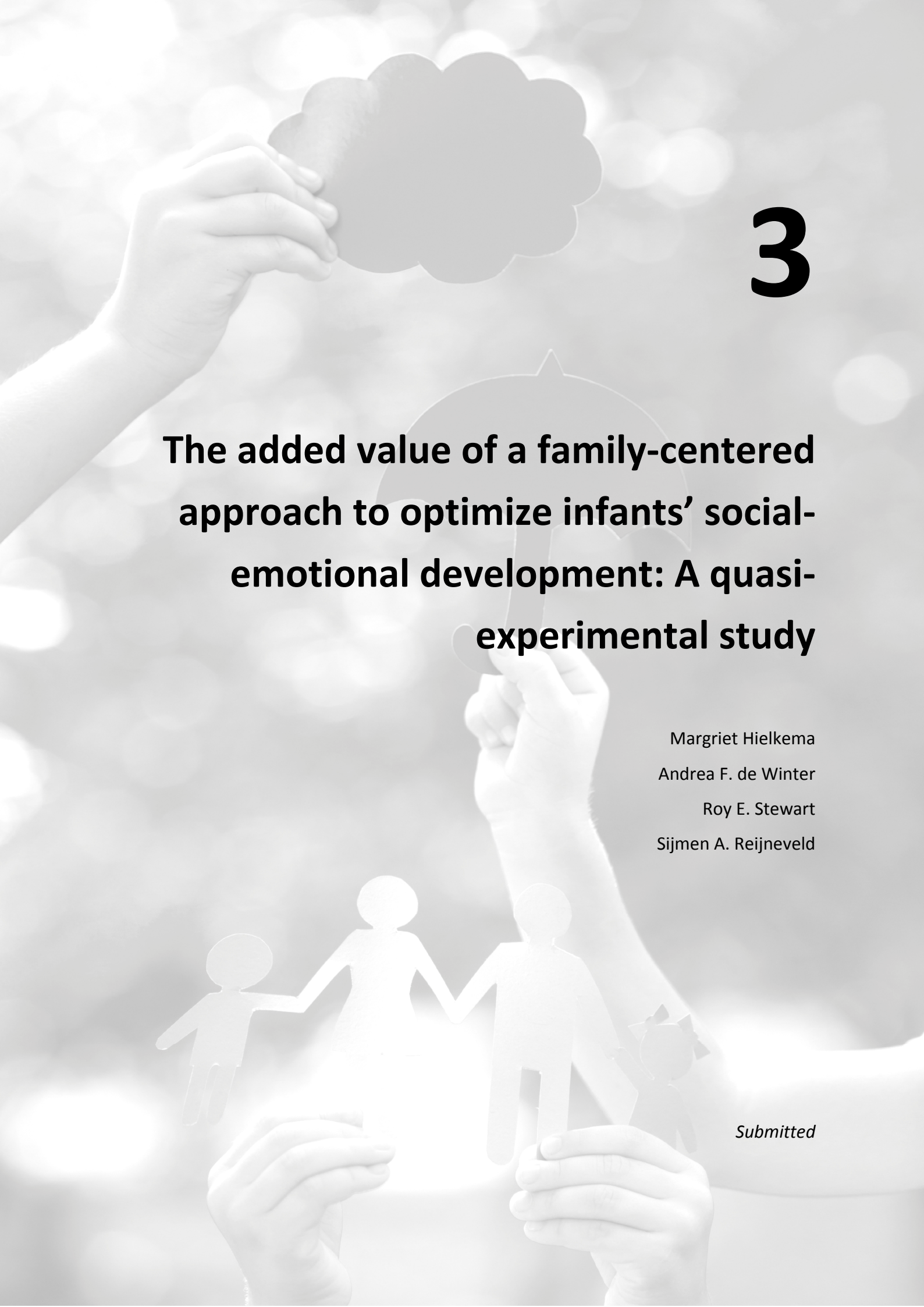
Summarizing: the social support can be concluded as…

4. Perceived barriers or life events within the care-giving context of the child
- Have there been any life events the past year?
  If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

Summarizing: the perceived barriers or life events can be concluded as…

5. Wellbeing of the child
- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as…



3

The added value of a family-centered approach to optimize infants' social-emotional development: A quasi-experimental study

Margriet Hielkema
Andrea F. de Winter
Roy E. Stewart
Sijmen A. Reijneveld

Submitted

Abstract:

Importance Family-centered care has been related to positive healthcare outcomes in pediatric care. It is unknown whether family-centered care also contributes to the identification of social-emotional problems and risks for developing these.

Objective: To assess whether a family-centered approach contributes to the early identification of social-emotional problems and risks for developing these.

Design: In a quasi-experimental study in Preventive Child Healthcare (PCH), we compared those regions in which a family-centered approach was implemented (FCA) to those regions with "care-as-usual" (CAU). In all regions, PCH professionals performed well-child visits (2-18 months) and assessed social-emotional problems, or risks developing these, by rating outcomes of assessments as "*not optimal*" or as "*a problem*." We compared FCA and CAU regarding the rates of newly identified (risks for) social-emotional problems, the pace of identification over time, and the child's psychosocial wellbeing at eighteen months as measured by the Child Behavior Checklist (CBCL). For participants that received extra care, we compared FCA and CAU regarding the severity of parent-reported problems.

Setting: Routine Preventive Child Healthcare (PCH) in the Netherlands.

Participants: 5658 parents (68%) agreed to participate in the study before their child was 3 months of age. 4358 parents (80%) filled in the CBCL.

Interventions: A family-centered approach that aims to enhance children's social-emotional development and to identify early any risks regarding social-emotional problems.

Main outcome measures: The rates of newly identified (risks for) social-emotional problems, the pace of identification over time, and CBCL scores at eighteen months. For participants who received additional care, the severity of parent-reported problems was compared.

Results: In the FCA group, risks were identified more frequently, though differences were small (24.7% versus 22.0%, *p*=.02, Cohen's W=.03). Risks were also identified earlier (p=.008), and additional care was provided to more severe cases than in CAU. CBCL scores did not differ between groups.

Conclusions and relevance: The family-centered approach contributes to more and earlier identification of risks for social-emotional problems and to the identification of families that need additional care, but not to fewer psychosocial problems for the child at 18 months of age.

Introduction

The importance of children's social-emotional wellbeing for later life has been widely recognized.[1-3] As a consequence, multiple studies have focused on the identification of social-emotional problems in children.[4-6] If social-emotional problems do exist, children and their families may benefit from early intervention.[7-9] However, the identification of social-emotional problems in children, and subsequently providing care, remains sub-optimal.[4,5,10]

Family-centered care may help to optimize the early identification process. The key elements of family-centered care according to the American Academy of Pediatrics are described in Table 1.[11] This care may optimize the early identification process by a number of characteristics. First it takes into account the expert view of parents about their child.[12,13] This may stimulate parents to express their view concerning the child's development, and thus to disclose their concerns easier, which can be beneficial for identification.[14] Second, family-centered care may optimize early identification by taking into account the child within his/her context. This can be beneficial since, in addition to their genetic and biological make-up, children's development depends on the context they grow up in.[15] Furthermore, family-centered care may also promote children's social-emotional wellbeing generally through empowerment of the parents, which can enhance parents' confidence and parenting skills. This in turn optimizes the child's developmental context, which subsequently may contribute to the child's social-emotional wellbeing.[16]

Family-centered care has been adopted as pivotal for quality of care by preventive pediatrics, as reflected in guidelines like *Bright Futures* of the American Academy of Pediatrics.[17,18] In the Netherlands, a family-centered approach (FCA) has been implemented in Preventive Child Healthcare (PCH). PCH is similar to well-child visits in the US, but is free of charge for all families and has a wide reach (>90%). The implemented FCA consists of a family-centered way of communicating with parents (as further detailed in the Methods section), in combination with a checklist of questions regarding the child's social-emotional wellbeing and developmental context. However, it is unknown whether the FCA contributes to the early identification of (risks for) social-emotional problems and to children's social-emotional wellbeing in general. Therefore, in this study our aim was first to assess whether the FCA leads to more and earlier identification of (risks for) social-emotional problems, i.e. social-emotional problems and risks for developing these, as compared to care-as-usual (CAU). For participants that received extra care, we compared FCA and CAU regarding the severity of parent-reported problems. Second, we assessed whether the FCA is associated with children's social-emotional wellbeing at the age of 18 months.

Table 1

Core principles of family-centered care according to the American Academy of Pediatrics
1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

Methods

Design and setting

We conducted a non-blinded quasi-experimental within a Dutch PCH organization, which implemented a family-centered approach in some parts, but not in others. This led to an intervention region (FCA) and a care-as-usual (CAU) region. Randomization was not possible since professionals worked only in one of both regions and also children were bound to the region in which they lived. The Medical Ethics Committee of the University Medical Center Groningen approved our study and all participants provided written informed consent. Further details are described elsewhere.[19]

Participants

Parents were eligible if they had sufficient mastery of the Dutch language and visited PCH in the regions concerned (parts of the Dutch provinces of Drenthe and Overijssel) with their newborn child. Between October 2009 and June 2011, before the well-child visit at the child age of 3 months, PCH professionals, i.e. nurses and medical doctors, asked 8280 (84%) of all eligible parents to participate. Of those asked, 5658 (68%) agreed to participate. No large differences were found in either group between parents who were or were not invited to participate, or between participants and non-participants regarding

background characteristics and the child's social-emotional status (Cramer's V = .05 to .13). At 18 months, 5478 families (97%) were still participating.

Intervention group

The FCA aims to enhance children's social-emotional wellbeing in PCH. It was used during all routine well-child visits (from 2 until 18 months). The FCA strongly focuses on building rapport with parents. PCH professionals attune their care where possible to the unique needs and wishes of each family by taking their point-of-view as basis for the well-child visit, and treat them as equal partners and experts on their child. Through empowering communication, PCH professionals try to enhance parents' confidence and parenting skills, and, with that, the child's developmental context. Furthermore, the FCA provides a guideline for conversation with parents on five domains associated with children's social-emotional development (see Appendix 1). For each domain, professionals can register in the child's medical record *not discussed, protective, indistinct*, or a *risk*, and additional free text. After assessment of all domains, PCH professionals jointly decide with parents to rate the situation as "*fine,*" "*not optimal*" indicating that no additional care is needed currently, or "*a problem*" i.e. an additional activity needs to be provided by PCH. For the well-child visit at eight weeks, 15 minutes extra were allotted (30 minutes in total).

Before using the FCA, PCH professionals participated in four days of training. After this, they had to videotape two well-child visits which needed to be certified as sufficient by a trainer using standardized guidelines.[20] This procedure was repeated until performance was rated as adequate. PCH professionals attended supervisory sessions every three months.

Care-as-usual group

In the CAU group, PCH professionals monitored children's general health and social-emotional development during routine well-child visits according to the guidelines of the National Center for Child Health.[21] These guidelines mention PCH professionals' communication skills and children's development context as generally important, but in the CAU group, professionals were not trained in these family-centered care elements.

Procedures

PCH professionals in both groups assessed whether they identified new social-emotional problems or risk factors for developing these. They did this during nine routine well-child visits (child ages 2, 3, 4, 6, 7.5, 9, 11, 14, and 18 months) by rating the situation as "*fine*," "*not optimal*," or "*a problem*". If specific ratings were missing, these were substituted by

those of the subsequent visit. This was done only if that rating contained a note that nothing had changed since the previous visit.

Participants receiving additional care were asked to participate in an additional research-interview which comprised several questionnaires regarding the child's social-emotional development and developmental context (see Appendix 2). In the FCA group, 114 parents were asked to fill in the additional questionnaires (3.8% of total) and 87 (76% of those asked) agreed to this. Of these, three families were seen twice and two families were seen three times because additional care was provided more than once). In the CAU group, 71 parents were asked (2.6% of total) and 61 (86% of those asked) agreed to this (one family was seen twice and for two cases we could not verify whether an additional activity had taken place).

One week before the child reached the age of 18 months, we sent all participants a Child Behavior Checklist (CBCL) 1.5-5,[22,23] at their e-mail address (if provided and otherwise on paper), with the request to fill in the questionnaire after the routine well-child visit at 18 months. If parents did not return the questionnaire within two weeks, they received a reminder, and, after two weeks, parents were approached by phone. After three phone calls, they received a printed version. 4358 parents returned the questionnaire (response rate 80%), 42 of which were not used because of too much missing data. All participants received a small gift for their participation.

Measures

The identification of (risks for) psychosocial problems was the primary outcome. This was measured by the assessments of PCH professionals that were rated as "*not optimal*" or "*a problem"*, leading to a group in which both identified risks that needed additional care and risks that not needed additional care were represented.

The second primary outcome was the parent-assessed psychosocial development of their child by the Dutch version of the CBCL 1.5-5.[22,23] The CBCL 1.5-5 consists of 99 problem items which are scored as 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true), and can be used to compute an Internalizing, Externalizing, and Total problems score.

For the subsample of participants for whom PCH professionals provided additional care (N=148), we used several questionnaires (see Appendix 2) to assess the severity of the identifications.

We assessed the following background characteristics: *parental age*, *educational level*, *working participation*, and *country of birth*, and furthermore the *family composition*, having *one or more children*, *birth weight* and *weeks of gestation.* We obtained this

information from the child's medical record or, if data lacked, from the baseline questionnaire. Educational level represents the highest level obtained by one of the parents and was divided into low (primary school or less, lower vocational or lower general secondary education), medium (intermediate vocational education, intermediate or higher secondary education) and high (higher vocational education or university).

Analyses

First we described baseline characteristics per group, and assessed differences by using Chi-square tests. Second, we compared the FCA and CAU group regarding the rates of identified (risks for) social-emotional problems using logistic regression. We adjusted these analyses for potential confounders (as listed in Table 2). Third, we performed Kaplan-Meier survival analyses to compare both the FCA and CAU group regarding the chance for a child to have risks or problems identified over time, i.e. pace. Fourth, for those participants for whom PCH professionals provided additional care, we assessed the severity of the detected cases based on questionnaires covering the FCA domains (see Appendix 2). We compared groups using independent t-tests or, in case of skewed data, Mann-Whitney tests. Finally, we compared the FCA and CAU group regarding CBCL scores (total, externalizing and internalizing problems scores), crude and adjusted for potential confounders as listed in Table 2, using regression analyses. We repeated these analyses for children for whom PCH professionals had assessed the situation during any of the well-child visits from 2-18 months as being "*not optimal*" or "*a problem*" and next for those participants for whom PCH professionals had provided additional care.

Analyses were done using SPSS20, the cut-off for statistical significance was set at .05. Outcomes in analyses were restricted to first identifications.

Results

Background characteristics

Table 2 shows participants' baseline characteristics. In the FCA group, parents had a slightly lower educational level, and children lived somewhat less frequently with both parents, or with one parent and a partner, as compared to the CAU group. Differences were small (Cramer's V .12 and .03).

Table 2 Characteristics of participants in the Family-centered approach (FCA) and Care-as-usual (CAU) group

	Family-centered approach	Care-as-usual	*P* Value
Child's gender (male)	1466 (50.2%)	1382 (52.5%)	.084
Highest education level one of the parents			
Lower	125 (4.8%)	88 (3.6%)	<.001
Secondary	1138 (43.3%)	802 (32.9%)	
Higher	1366 (51.9%)	1547 (63.5%)	
Parental age			
Mother			
< 20	16 (0.6%)	15 (0.7%)	.801
20 – 40	2420 (96.8%)	2223 (97.1%)	
40 and over	63 (2.5%)	51 (2.2%)	
Father			
< 20	5 (0.2%)	6 (0.3%)	.356
20 – < 40	2151 (89.3%)	1987 (90.5%)	
40 and over	252 (10.5%)	202 (9.2%)	
Employment status parent (at least one parent works)	1247 (94.3%)	1430 (94.8%)	.557
Country of birth parent (at least one parent born in the Netherlands)	2534 (99.3%)	2423 (99.1%)	.542
Family composition (both biological parents, or biological parent and partner)	2100 (96.6%)	2020 (97.7%)	.042
Number of children (one child)	1253 (42.9%)	1084 (41.2%)	.198
Birth weight (<2500 grams)	103 (3.9%)	78 (3.5%)	.440
Gestational age (<37 weeks)	150 (6.0%)	110 (5.2%)	.258

Rates of identified risks for social-emotional problems and pace of identification

The rates of identified risks for social-emotional problems differed significantly between the FCA and CAU group (24.7% and 22.0% for the FCA and CAU group respectively, *p*=.02), though the effect was small (Phi .03). The effect became slightly larger when adjusted for potential confounders. Figure 1 shows the outcomes of the Kaplan-Meier survival analysis; in the FCA group (risks for) social-emotional problems were assessed at an earlier stage compared to the CAU group (Tarone-Ware test *p*=.008). Table 3 illustrates the earliest assessment per child rated as "*not optimal*" or "*a problem*" per well-child visit.

Figure 1 The likelihood of identification of (risks for) social-emotional problems over time, for children receiving family-centered care or care-as-usual

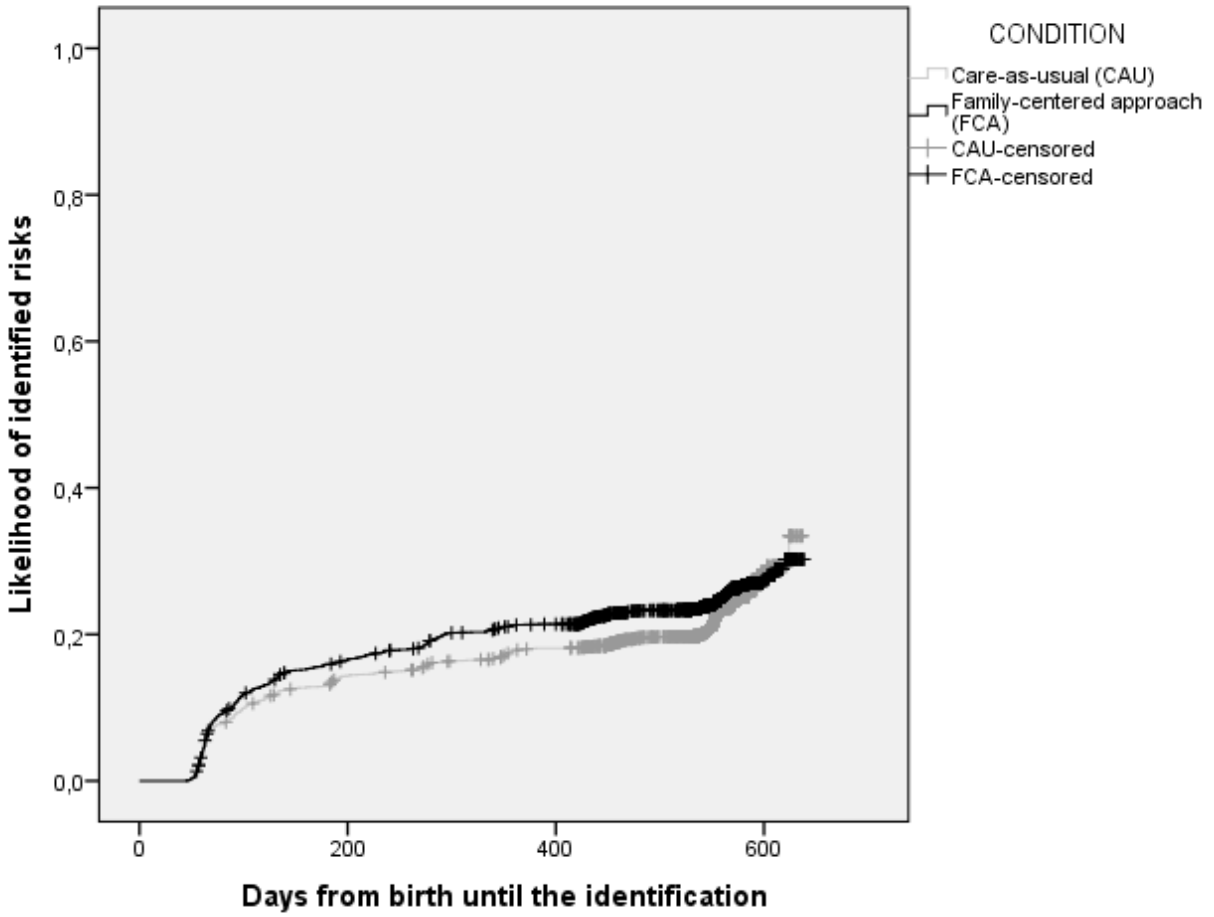


Table 3 Overview of the earliest assessment rated as "*not optimal*" or "*a problem*" per child in the Family-centered approach (FCA) and Care-as-usual (CAU) group

Earliest assessment rated as "*not optimal*" or "*a problem*"	Family-centered approach	Care-as-usual
2 months	284 (9.6%)	211 (7.9%)
3 months	93 (3.1%)	76 (2.8%)
4 months	70 (2.4%)	59 (2.2%)
6 months	53 (1.8%)	43 (1.6%)
7.5 months	35 (1.2%)	17 (0.6%)
9 months	66 (2.2%)	39 (1.5%)
11 months	32 (1.1%)	41 (1.5%)
14 months	55 (1.9%)	41 (1.5%)
18 months	46 (1.6%)	65 (2.4%)

Severity of identified (risks for) social-emotional problems in those cases for which PCH undertook additional activities

In the analyses concerning participants for whom PCH professionals had provided additional care, we found that in the FCA group PCH professionals identified more severe cases compared to in the CAU group. Significantly higher scores (i.e., worse outcomes) were found for 6 of the 15 outcomes (see Appendix 2). Effect sizes *r* ranged from .17 to .22. Cases from the FCA group were significantly older compared to cases from the CAU group (median 6 versus 2 months old, $p<.001$), but did not significantly differ on any other background characteristics.

Psychosocial wellbeing at age 18 months measured by the Child Behavior Checklist

The psychosocial wellbeing of children did not differ between groups; the mean CBCL Total Problems score was 21.4 in the FCA group (N=2208) and 20.8 in the CAU group (N=2108), $p=.20$, nor did we find statistical differences for the Internalizing and Externalizing scores, crude and adjusted. We also did not find differences between groups for comparing children that were identified by PCH professionals as having risks for social-emotional problems by rating assessments as "*not optimal*" or "*a problem*", or for participants for whom PCH professionals provided additional care.

Discussion

To our knowledge this is the first study that has assessed the effectiveness of a family-centered approach aiming to improve the identification of social-emotional problems and

risks for developing them. We found that a family-centered approach (FCA) contributed to more and earlier identification of risks for social-emotional problems, and to a better identification of families that needed additional care.

The FCA contributed to the identification of more risks and at a faster pace than care-as-usual. A somewhat similar study compared trained to non-trained PCH professionals regarding the identification of psychosocial problems.[24] Results showed that trained professionals, who used a structured method to assess psychosocial problems, identified moderate and severe problems more accurately as compared to non-trained professionals.[24] However, the children were older (5-6 years) than in our study, making results hard to compare. The most likely explanation for our finding of more risks at a faster pace concerns the structural attention that is given to all potential risks.

The finding that in the FCA group additional care was provided to families with at average more problems (on 6 of the 15 measured outcomes) as compared to the CAU group, indicates that the identifications were also appropriate: interventions seem to be provided to families that actually needed it. The identification of more severe cases in the FCA group may be due to the extensive training of professionals in working with the FCA. Another explanation is that in the FCA group only the more severe cases were asked to fill in the additional questionnaires or that in the CAU group children with more severe risks did not participate in our study, i.e. that selection bias occurred. Non-response analyses do not provide support for the latter, though. A final explanation may be that the FCA empowers parents in such a way that they can handle problems themselves, causing only the more severe cases to still require additional care. This would also explain our finding that the FCA was associated with earlier identification, but that the additional care was provided somewhat later than in the CAU group (as the children from the FCA group who received additional care were significantly older than those in the CAU group).

At 18 months of age, we found no differences between the FCA and CAU group regarding children's psychosocial wellbeing (as measured by the CBCL 1.5-5). We had expected that the FCA would lead to lower CBCL scores for the children with assessments rated as "*not optimal*" or "*a problem*", since earlier identification should diminish child problems. A reason may be that positive effects are simply not yet visible at this age, or that the CBCL is not sufficiently sensitive to detect them. This certainly deserves additional study.

Strengths and limitations

Major strengths of our study are the inclusion of a large group of children with a rather long follow-up in routine PCH care and a small loss to follow up, in a quasi-experimental

design. However, our study also has some limitations. First, background characteristics of the two groups differed somewhat, but differences were small, and were adjusted for in the analyses, making any significant impact unlikely. Second, we had no golden standards for the appropriateness of identifications, but we used the best available valid proxies for this. Third, PCH professionals in the CAU group may have had some knowledge about family-centered care, for example through the Internet. If so, this may have led to an underestimation of the effectiveness of the FCA, but effects are probably small as we avoided any publicity on this project.

Conclusion

The results of this study can contribute to children's social-emotional wellbeing as it provides some important insights in the early identification of risks for this. The family-centered approach seems to contribute to the identification of more risks at an earlier age. Effects were relatively small, but they apply to all children, thus making potential population effects rather large. Furthermore, the family-centered approach also seems to be associated with a better identification of risks and problems that need additional care. Further research is needed on whether this indeed improves child health outcomes on the long-term.

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Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker
- How do you like being a mother (of … children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as…

2. Role of the partner
- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
  (in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as…

3. Social support
- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

Summarizing: the social support can be concluded as…

4. Perceived barriers or life events within the care-giving context of the child
- Have there been any life events the past year?
  If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

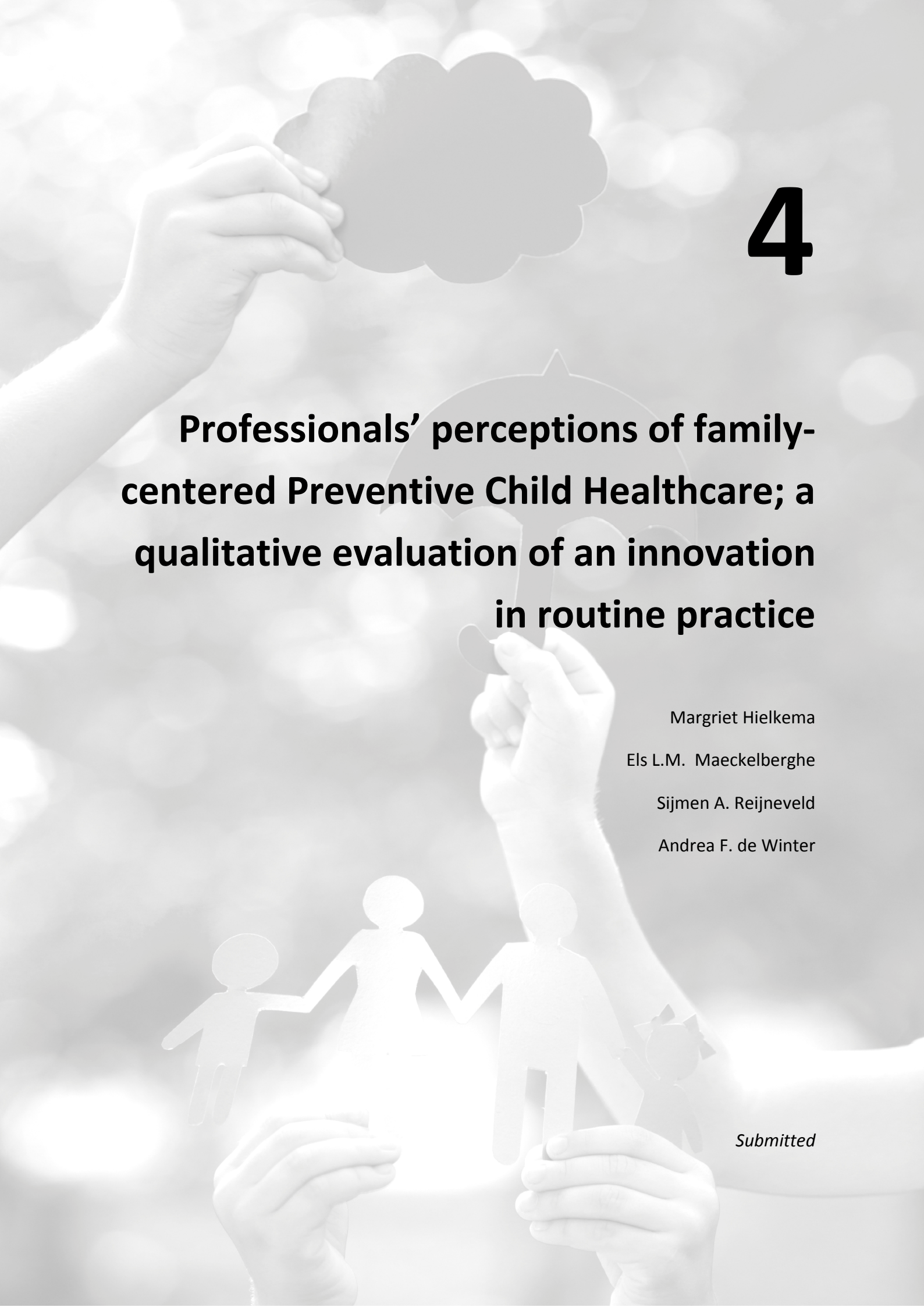
Summarizing: the perceived barriers or life events can be concluded as…

5. Wellbeing of the child
- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as…

Appendix 2: Questionnaires regarding the various domains of the family-centered care approach

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Cronbach's alpha	References
Wellbeing of the child	Ages and Stages Questionnaire Social Emotional (*ASQ-SE*) (versions 6, 12, and 18 months)	22-29	Social-emotional development of the child	0.59-0.78	26
Competence of the parent	Dutch Parenting Stress Index (*PSI*) (4 subscales)	11	Parental competence and attachment	0.83	27
	Parenting Tasks Checklist or Problem Setting and Behavior Checklist *(PSBC)(Setting Self-Efficacy subscale)*	14	Perceived ability of the primary caretaker in mastering problem situations	0.87	28
	Parental Sense of Competence scale (*PSOC*)	16	Competence of the parent	0.85	29-31
	SF-12 Health Survey *SF-12 mental* *SF-12 physical*	12	Health status (physical and mental) of the parent	 0.68 0.70	32-34
Role of the partner	McMaster Family Assessment Device (*FAD*) (General Functioning subscale)	12	Emotional relationships within families	0.94	35,36
	Dutch Parental Stress Index (*PSI*) (subscale partner)	5	Having a child and its effect on the relationship between partners	0.68	27
Social support	Social Support List, short version (*SSL*) *Received* *Shortage*	12	Social support	 0.73 0.79	37
	Loneliness score Social Emotional	11	Overall feelings of emotional and social loneliness	 0.84 0.85	38
Perceived barriers or life events within the care giving context of the child	Questionnaire on the material or social deprivation of a child due to lack of money (*deprivation questionnaire)*	15	The material or social deprivation of a child due to shortage of money	0.69	39
	Dutch Parental Stress Index (*PSI*)(subscale life events)	17	Life events that happened in the past year	not applicable	27



4

Professionals' perceptions of family-centered Preventive Child Healthcare; a qualitative evaluation of an innovation in routine practice

Margriet Hielkema

Els L.M. Maeckelberghe

Sijmen A. Reijneveld

Andrea F. de Winter

Submitted

Abstract

Background. Professionals' adherence to guidelines is a prerequisite for improving quality of care. In Dutch Preventive Child Healthcare (PCH), a family-centered approach has been implemented to enhance infants' social-emotional development. The approach consists of empowering communication combined with a checklist of questions for discussing the child's broad developmental context. Professionals' adherence to the approach may be influenced by their perceptions regarding its value. Therefore, we aimed to assess professionals' perceptions regarding this approach.

Methods. Potential barriers to professional adherence were discussed in two focus groups, one with nurses and one with medical doctors Dialogues were transcribed verbatim and coded according to an existing checklist.

Results. All PCH professionals valued the family-centered approach for enabling empowering communication skills and believed this to improve care. However, the attitude towards the checklist with questions was mixed; Nurses felt more optimistic than doctors in that it provided them relevant information, but all professionals presumed that it could lead to feelings of interrogation if the professional's communication skills were insufficient. Furthermore, all professionals reported practical barriers, like a lack of time. As a consequence most medical doctors did not or only partially fill in the checklist. This was not related to ethical barriers.

Conclusions. The family-centered approach was appreciated for enabling empowering communication skills, whereas the checklist with questions provided several barriers. Implementation of the family-centered approach could be improved by accounting for these barriers. In general, focus groups can reveal insight in barriers to adherence, which ultimately can be used to improve guideline implementation.

Background

Family-centered care (FCC) has been related to improvements in the quality of pediatric care[1,2], and this innovative approach seems also of use regarding the preventive components of this type of care.[3] FCC can be defined as "placing the needs of the child, in the context of their family and community, at the centre of care and devising an individualized and dynamic model of care in collaboration with the child and family that will best meet these needs".[4]

Professionals' adherence to providing family-centered care is an important prerequisite for improving the quality of care. However, this adherence is not necessarily high[5-7] and several barriers for this have been described.[7-10] The adherence to a preventive family-centered approach may even be lower compared to non-preventive family-centered care, because of a relatively low perceived advantage of preventive innovations due to the time lag between prevention and its potential rewards.[11]

Recently, several Dutch Preventive Child Healthcare (PCH) organizations have implemented a family-centered approach in their routine well-baby care. The approach has been associated with care better attuned to parents' needs and wishes.[3] The core objective of this family-centered approach is to enhance children's social-emotional development and to prevent (worsening of) problems regarding the social-emotional development whenever possible.[12] First, it supports communication to build a trusting and supportive relationship with parents and to empower their parenting skills, in order to enhance children's developmental context. Second, the approach aims to identify (risks for) social-emotional problems at an early stage by using a checklist with questions to monitor children's social-emotional development. This checklist is based on the bio-ecological model of Bronfenbrenner[13,14] and regards the child and its broad developmental context.[12] The principles of the family-centered approach are comparable with those of the Structured Problem Analysis of Raising Kids (SPARK) in the Netherlands [15] and Healthy Steps [16] in the US.

During a practice-based effectiveness study regarding this family-centered approach, we observed some objections from PCH professionals regarding the family-centered approach and also observed rather frequent gaps in the information on the outcomes of the checklist during our monitoring of the quality of data. Next to the preventive character of the family-centered approach which might impede adherence, we hypothesized that PCH professionals might have ethical reasons, like fear of stigma, for not filling the format of questions within children's medical files. Such barriers have been described for developmental screening initiatives in children, that somewhat resemble the checklist of questions of the family-centered approach. Examples are the worry for over

referral or the idea that screening may cause parental anxiety.[17,18] Furthermore, ethical barriers may be the professional's response on recent developments in which Dutch parents seem to increasingly perceive PCH as a controlling institution instead of a provider of support.[19] Those changes in perception may be associated with the introduction of more restrictive legislation on the detection of child maltreatment.

Next to the barriers mentioned above, other obstacles may play a role as well. Reviews of empirical studies have described several barriers regarding adherence to guidelines.[20,21] Flottorp et al. described in a recent review factors that prevent or enable improvements in healthcare. Seven domains were identified: guideline factors, individual health professional factors, patient factors, professional interactions, incentives and resources, capacity for organizational change, and social, political and legal factors.[22]

Objective

The aim of this study was to investigate PCH professionals' perceptions of the family-centered approach and their influence on how PCH professionals work with the family-centered approach. Insight in professional's perceptions can help to intervene, if needed, to further optimize the quality of working with the family-centered approach.

Methods

Design

The current study was embedded in a larger one on the effectiveness of the family-centered approach in Dutch PCH. Details have been described elsewhere.[3,23] Dutch PCH is similar to the US community pediatrics in that it offers well-child care, however, care is free of charge for all families. In the study all PCH professionals attended four days of training about working with the family-centered approach. The Medical Ethics Committee of the University Medical Center Groningen approved the study.

We performed focus groups to gain better insight in the possible complexity of PCH professionals' perceptions. Focus groups allow collecting data on different points-of-view and in-depth discussion with more participants in a limited amount of time.[24]

The family-centered approach

The family-centered approach aims to reinforce trust and empowerment of parents through *communication skills*, in order to promote children's social-emotional development. Furthermore the family-centered approach aims to early identify (risks for) social-emotional problems in children, by asking parents question regarding their child's broad developmental context. For this purpose the family-centered approach contains a

checklist with questions regarding five domains associated with children's social-emotional development that serve as a guideline for having a semi-structured conversation with parents (see Appendix 1). For all questions, PCH professionals can register information as either a protective factor, indistinct, as a risk factor, or as not discussed. Subsequently information can be provided in free text. During every well-child visit, possible parental concerns are first elicited, providing the onset for further communication.

Sample and procedure

We invited 21 PCH professionals from different teams by email, based on their comments (either positive or negative) during PCH team meetings, to make sure that different points-of-view were represented during focus groups. Of the 9 doctors approached, 8 agreed to participate. Of the 12 nurses approached, 11 agreed to participate. Two focus groups were held, one for medical doctors and one for nurses. Due to practical reasons, like lack of time, 5 medical doctors and 6 nurses participated in the scheduled meeting.

Focus groups were planned for one-and-a-half hours, but the point of saturation was reached after about 75 minutes in both groups. Participants were all female (mean age 52.9 years, 20.7 years of experience) and most knew each other. The focus group leader was researcher and academic teacher who had chaired several focus groups before. He was informed about the study, but did not know the participants of the focus groups in order to exclude bias based on knowledge of participants' perceptions. The first author, MH, attended, made notes and recorded all dialogues. Focus groups were held at a central PCH workplace. Participants were informed that data would be collected until a point of saturation. In case of no saturation participants would be asked to participate in individual interviews. All PCH professionals gave consent to audiotape the dialogues. Results were transcribed verbatim and sent to the PCH professionals for further comments.

Structure of the focus groups interviews

The focus group leader shortly introduced himself and started both focus groups with the open question what PCH professionals thought of the family-centered approach. The dialogue was conducted as a natural discussion. However, to be sure that several potential barriers were discussed, we provided one or two propositions for each barrier like '*enquiries about the broad developmental context fit with the responsibilities of PCH'*, and *'working with the family-centered approach leads to distrust of parents'* (see Appendix 2 for all propositions). These were only used if its topic was not covered in the spontaneous discussion.

Analysis

We used the checklist developed by Flottorp et al., to categorize our findings into one of the seven domains that the authors described: *guideline factors, individual health professional factors, patient factors, professional interactions, incentives and resources, capacity for organizational change, and social, political and legal factors*.[22] First, 10% of the transcribed focus group dialogues were independently analyzed by MH, ELM and AFdW and afterwards discussed. Categorizations were similar and, in case of differences, authors discussed these and agreed on solutions. Next, the transcriptions of both group meetings were analyzed and categorized by MH, using the categorization framework. The results of this categorization were checked by ELM and AFdW independently.

Results

Overall, whereas the family-centered approach incorporates both using new (empowering) *communication skills* and using the *checklist with questions,* both medical doctors and nurses clearly distinguished between these two aspects. Below, results of the focus groups are described per theme according to the domains defined by Flottorp et al.[22]

Guideline factors

Guideline factors refer to aspects related to the family-centered approach, like clarity, cultural appropriateness, and feasibility. All PCH professionals positively appreciated the core principles of the family-centered approach. Regarding the *checklist of questions* opinions differed. Some doctors experienced the *checklist with questions* as rigid and explained that even if they would have had enough time, they would not ask all the questions since that would disrupt a natural conversation. One doctor explained, “It feels as if you have to ask all these questions, and then I think well, I am not doing it”. Nurses viewed the *checklist with questions* more as a helpful tool that could provide useful information, instead of a stringent questionnaire. However, they explained that, due to the electronic medical file format, resembling a questionnaire, this might contribute to feelings of cross-examining.

All PCH professionals experienced the answer categories of the question in the *checklist* (protective, indistinct, or risk factor) as too rigid and not helpful. One nurse explained: “it is not black and it is not white. I have a lot of difficulty to write it down properly, and therefore I just don’t because there is a lot of nuance around it”.

Individual health professional factors

Individual health professional factors captured several factors, like agreement with a guideline, motivation to adhere to it and the expected outcome. All PCH professionals believed that the emphasis of the family-centered approach on empowering *communication* contributed to better attuned care, less paternalistic professional behavior and more satisfied parents. A doctor reported: "I have learned to leave things up to the parents, not immediately giving the solution, but first to take one step back. And I feel that with this approach I better connect with parents." Nurses reported that parents disclosed information earlier, mostly due to their empowering *communication skills*, but some also stressed the importance of asking the *questions* in this regard. All PCH professionals mentioned a trusting relationship with parents as a prerequisite for the family-centered approach. They felt that their *communication skills* played a crucial role in building a trusting relationship and getting information from parents, whereas only the *questions* might lead to an interrogation and loss of trust in case of insufficient *communication skills*; "It is all about attunement" and "That's why I'm always so tired after well-child visits, because I constantly have to verify what can I tell these people, how far I can go".

Some nurses, especially less-experienced ones, believed that interventions could be given sooner due to the *checklist with questions* because they received relevant information earlier. Most doctors were more critical and did not believe that they referred more children. Some doctors sometimes felt reluctant to ask parents questions about their financial situation or their relationship. They mentioned that these questions were not always necessary since they had no suitable intervention for it.

None of the PCH professionals believed that the family-centered approach as such would lead to stigma, as we hypothesized. Some agreed that recording risk factors might be stigmatizing, but all viewed it as part of their job to identify risk factors regarding the child and its context." Nurses explained that the family-centered approach could never be stigmatizing, because the information should reflect parents' own evaluation of situations.

Both doctors and nurses debated the extent to which positive care outcomes were due to the family-centered approach or to their own professionalism. Doctors did not reach consensus. Experienced nurses explained that they did not really change their work after implementation of the family-centered approach since they already worked according to its principles, whereas less experienced nurses did change their work approach. All nurses agreed that if using the *checklist with questions* of the family-centered approach, quality of care depended on the professional's attitude and communication skills.

Patient factors

Patient factors refer to factors such as patient preferences, perceptions, motivation and patient behavior that motivate or de-motivate adherence to a guideline. Whereas most PCH professionals believed that they asked more questions since the implementation of the family-centered approach, they also mentioned that parents were sometimes reluctant to share information. Parents might give socially desirable answers, or might even withdraw, possibly because of the *checklist with questions*. One doctor had the feeling that especially those parents who need most monitoring in the expert's eye might withdraw because of the *questions.* Another doctor guaranteed that, in general, parents were quite willing to answer the questions.

Professional interactions

Professional interactions refer to factors like communication between professionals, and other team processes that may influence adherence. Doctors agreed that the family-centered approach was especially helpful for nurses obtaining more information. Experienced nurses, however, reported that they already asked similar questions before the family-centered approach was implemented. All doctors and nurses found the *checklist with questions* especially helpful for inexperienced colleagues. Some doctors explained that they benefitted from the information the nurses added in the *checklist with questions*, but often did not have the time to fill it in themselves.

Incentives and resources

Incentives and resources refer to factors like the availability of necessary resources, and assistance for professionals to assure quality. All professionals found the integration of the *checklist with questions* in the electronic medical records not practical. It took too much time to open and to fill in, and the integration in the medical record was poor. All of them mentioned a lack of time. Doctors explained that the medical examination takes a lot of their time. As a consequence, doctors either did not fill in the *checklist with questions*, or only partially. One doctor explained that asking questions might lead to disclosure of personal information, and it would not be appropriate to cut parents' stories short. Despite a lack of time, most nurses tried to fill in the *checklist with questions*, but only for children who were included in the study. They stated that in the well-child visit for which they got extra time (at child age 8 weeks) they could work with the approach in the way it was intended: "actually, we start really well, and afterwards we have to, well, afterwards we do not really have sufficient time".

Capacity for organizational change

The *capacity for organizational change* refers to the authority for making changes, regulations and policies and priority of changes. All nurses valued the formalization of asking questions about the broad developmental context through the implementation of the family-centered approach by the PCH organization. The introduction of our effectiveness study combined with the introduction of the electronic medical file within the PCH organization was considered to be de-motivating by both doctors and nurses because of the accumulative time investment.

Social, political and legal factors

In the checklist of Flottorp et al., examples of *social, political and legal factors* are the health care budget, corruption and political stability.[22] We used this domain to describe the broader social context in which our study took place. Some doctors and nurses mentioned the negative role of the media regarding identification of risk factors. They mentioned a Dutch survey stating that parents experience PCH more and more as an institution of interference and for detecting child abuse[19], which has heightened the threshold for the easy accessibility of PCH for some parents. This might make parents suspicious about the *checklist of questions*. However, they did not find the family-centered approach stigmatizing, as we hypothesized, and viewed it as their duty to identify risk factors.

Discussion

In this study we assessed professionals' perceptions regarding an innovation in well-child care: a family-centered approach that aims to improve infants' social-emotional wellbeing. We found that all PCH professionals valued and practiced the *communication skills* of the family-centered approach and believed that this results in better care. Opinions differed regarding the *checklist with questions* of the approach. Nurses felt more optimistic than doctors in that it provided them relevant information, but all PCH professionals presumed that the *checklist with questions* could lead to an interrogation and loss of parents' trust if the professional's *communication skills* were insufficient. PCH professionals mentioned several barriers regarding working with the family-centered approach. The answer-categories impeded registration within the family-centered approach format. Furthermore, practical barriers like a lack of time and a flaw of integration within the electronic medical file resulted in not filling in the *checklist of questions* for most doctors.

The basic principles of the family-centered approach, empowering communication skills attuned to parents' needs, were positively valued and practiced by

all PCH professionals and were said to improve care, which would fit with an earlier study on the effect of this family-centered approach on the attunement of care to parents' preferences.[3] Professionals' views confirm a study among nurses in children units who mention that they positively value family-centered care and mention communication skills to enhance family-centered care.[5] However, Veldhuizen et al. found adherence of medical doctors to quite structured communication guidelines to be often low because these guidelines disturb daily practices and routines.[25] Our finding of good adherence might be explained by the flexibility of the communication aspect of the family-centered approach.

Medical doctors' adherence to asking the questions of the family-centered approach was quite low, partly due to a lack of time. Nurses, especially those who were not already familiar with these types of questions before the implementation of the family-centered approach, stressed the importance of asking all the questions to get valuable information from parents. In a study on the effect of the family-centered approach on attunement of care to parents' preferences and their willingness to disclose concerns, we found that parents valued questions about the broad developmental context as quite important, and that professionals who worked with the family-centered approach attuned to parents' preferences in this regard (more as compared to care-as-usual) according to parents.[3] In that same study there was no effect of the family-centered approach on parents' willingness to disclose concerns, but routinely asking sensitive questions seems to be auxiliary to disclosure of sensitive information by others.[26] Therefore it is important to emphasize the importance of asking all questions during trainings. Respect, non-judgment, trust, empowerment and equality are important prerequisites for the disclosure of valuable information[27], which are covered by the *communication aspect* of the family-centered approach. Most doctors felt that prioritizing a natural conversation above asking all the questions of the family-centered approach, was not in line with the principles of the family-centered approach. It therefore is important to train professionals in using the family-centered approach as a flexible method instead of a stringent questionnaire.

All PCH professionals mentioned practical barriers for the use of the family-centered approach, the most important ones being that the answer-categories were not informative, lack of time and the introduction of electronic medical files, which impeded the use of the family-centered approach. Lack of time has been mentioned before as a barrier to family-centered care[7,10], and also the introduction of electronic medical files can be a barrier in general.[28] Nurses asserted that from the well-child visit of 8 weeks onwards they actually had not sufficient time to work properly with the family-centered approach,

which forms a threat for the monitoring aspect of the family-centered approach. The challenge for professionals is to get the most out of a well-child visit in limited time.

Whereas we hypothesized that PCH professionals might not fill in the *checklist with questions* because of ethical reasons like the fear of stigma, this was not the case. This is of major importance, since fundamental ethical barriers would require very different solutions than practical barriers do. Because all professionals experienced some added value of the family-centered approach, it seems valuable to overcome practical barriers whenever possible. As a result, PCH professionals might use the approach more intensively, which may contribute to a higher quality of care.[3]

We found that PCH professionals debated on whether positive care outcomes were due to the family-centered approach or to their own professional quality. This might be linked to the concept of tacit knowledge which can be defined as "knowledge-in-practice developed from direct experience and action; highly pragmatic and situation specific; subconsciously understood and applied; difficult to articulate; usually shared through interactive conversation and shared experience."[29] It may be that some PCH professionals already captured the principles of the family-centered approach within their tacit knowledge. This could also explain why experienced nurses did not really change their way of working due to the implementation of the family-centered approach, and why PCH professionals found the *checklist with questions* especially of use for new, inexperienced colleagues. In general, during trainings it may be valuable to assess professional's tacit knowledge to help to prevent de-motivation regarding new methods.

Strengths and weaknesses

Strength of this study is that we selected a heterogeneous group of professionals and chose an open interview in which participants could decide what topics to bring in. We also made sure that the topics derived from the literature were discussed by making use of statements to be able to compare our results with other studies.

A weakness of this study, inherent to qualitative research, is that results are not necessarily valid in other settings. Furthermore, we cannot be fully certain that the relatively small sample of the focus group participants represented all professionals although we carefully selected a heterogeneous group of participants. The topics brought in or the point of saturation might possibly have been different in different compositions of the focus groups. However, chances are small that results would have been very different with other participants since participants also brought in opinions and experiences of colleagues. In both focus groups, a point of saturation was reached before

the scheduled time was over, and none of the professionals wanted to discuss other topics.

Conclusions

Our qualitative study shows that PCH professionals generally appreciate the family-centered approach, but that practical barriers, instead of ethical ones, hamper its full use. In general, qualitative research may help to optimize innovations for daily practice and thus to improve their implementation. Based on our study, it seems valuable to overcome practical barriers to optimize the use of the family-centered approach. For the registration in the electronic medical files, it would be good to agree on what information is essential to report in what way, so that a serviceable variant of the family-centered approach checklist with questions can be constructed.

Furthermore, it is pivotal to evaluate professional's guideline adaptation also after implementation, since sustainability of implemented guidelines is not self-evident.[30] This should best be done so before starting large effectiveness studies to be able to interpret results. Methods exist which can help to monitor possible barriers to research systematically so that solutions can be found where needed, to increase fidelity of results.[31] Ultimately, qualitative studies like ours may highly add to the use of guidelines, and thus to a better child health.

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Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker
- How do you like being a mother (of … children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as…

2. Role of the partner
- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
  (in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as…

3. Social support
- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

Summarizing: the social support can be concluded as…

4. Perceived barriers or life events within the care-giving context of the child
- Have there been any life events the past year?
  If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

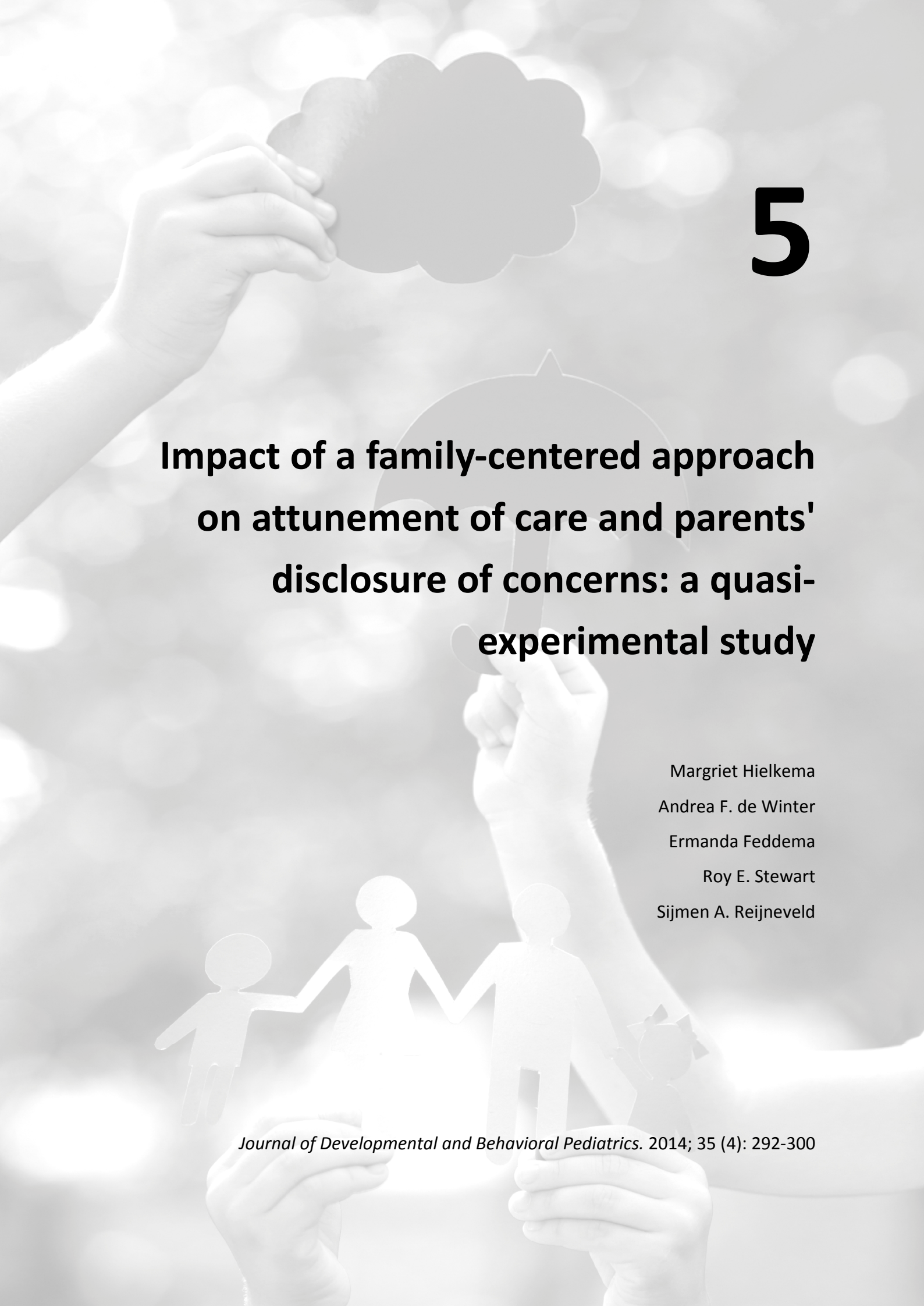
Summarizing: the perceived barriers or life events can be concluded as…

5. Wellbeing of the child
- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as…

Appendix 2: Statements used in the focus groups

- Early identification of (risks for) social-emotional problems with the family centered approach leads to better chances for all children
- Working with the family-centered approach leads to parental distrust instead of trust
- Strengthening parental competencies works well with the family-centered approach
- I can attune care easily to all families with the family-centered approach
- I find it hard to discuss all questions of the family-centered-approach with parents
- I find it hard to discuss risk-factors from the family-centered approach with parents
- Asking questions about the broad developmental context fits well within the responsibilities of PCH
- It is not of any added value that medical doctors work with the family-centered approach
- I benefit from the information my colleague writes down in the checklist with questions
- Because of the family-centered approach, more often specialized interventions are applied in families
- Early identification of (risks for) social-emotional problems with the family centered approach leads to parental concerns
- Early identification of (risks for) social-emotional problems with the family centered approach leads to stigma
- Even if I do not have a lot of time, I ask about the broad developmental context
- Too strong a focus on early identification of (risks for) social-emotional problems results in too little attention for empowerment of parents
- The family-centered approach's communication skills are more important than filling in the checklist of questions



5

Impact of a family-centered approach on attunement of care and parents' disclosure of concerns: a quasi-experimental study

Margriet Hielkema
Andrea F. de Winter
Ermanda Feddema
Roy E. Stewart
Sijmen A. Reijneveld

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Abstract

Objective: To assess the importance parents place on family-centered care aspects in Preventive Child Healthcare (PCH) and to evaluate whether a family-centered approach influences the attunement of care to these preferences and the willingness of parents to disclose concerns.

Method: Parents of infants (mean age 11.4 weeks) attending Dutch PCH participated in the quasi-experimental study. Parents of infants receiving family-centered care (intervention condition) and parents of infants receiving care-as-usual (control condition) filled in a questionnaire regarding the importance of PCH professionals' *attitude*, parents' *empowerment*, and monitoring the *broad developmental context*. They also assessed their experiences regarding these aspects of care. Furthermore, parents rated their willingness to disclose concerns. We compared the two conditions, adjusting for background characteristics, and assessed interactions by socioeconomic status and child's social-emotional status.

Results: Data was provided by a sample of 2542 parents of infants receiving family-centered care and 2328 parents of infants receiving care-as-usual (return rate of questionnaires 86%). Parents rated the PCH professionals' *attitude* as most important and monitoring the *broad developmental context* as least important. Scores were high in both conditions. Compared to care-as-usual, parents receiving family-centered care reported better attunement of care to their preferences (p<.001, effect sizes .10–.27). Parents' willingness to disclose concerns was similar in both conditions (p=.09). Effects were stable across socioeconomic status and child's social-emotional status groups.

Conclusion: The family-centered approach improves attunement of care to parents' preferences, but it does not increase their already high willingness to disclose concerns.

Introduction

Family-centered care has been increasingly promoted in past decades and has been associated with improved health care outcomes.[1-3] The core principles of family-centered care according to the American Academy of Pediatrics are described in Table 1.[3] Other authors also stress the consideration of psychosocial needs of all family members.[4-6] In child health care, family-centered care can be described as "placing the needs of the child, in the context of their family and community, at the center of care and devising an individualized and dynamic model of care in collaboration with the child and family that will best meet these needs."(page 75)[7] Attuning care to family-specific preferences and needs may be especially important for more vulnerable populations, such as families with low socioeconomic status (SES), since they might otherwise drop out of care services.[8]

Family-centered care has also been adopted as pivotal for the quality of care by preventive pediatrics, as reflected in guidelines like *Bright Futures* of the American Academy of Pediatrics,[9,10] and may also be useful in monitoring infants' social-emotional development. Based on this, a family-centered approach has been introduced in Dutch Preventive Child Healthcare (PCH).[11] Dutch PCH is similar to well-child care in the United States, but access is free of charge, regardless of insurance status. More than 90% of infants attend regularly. In addition to routine physical checks, a key activity during these visits is monitoring infants' social-emotional development.[12] Despite the fact that PCH is well-organized and has such a high reach, there has also been some criticism on the system for being too keen on identifying child maltreatment (with having the possible adverse side effects that parents would not visit anymore, or would not mention possible concerns).[13]

The family-centered approach may enhance monitoring the social-emotional development because some aspects of the approach, such as questions about psychosocial issues and expressions of support, have been related to disclosure of sensitive information by parents.[14] Disclosed information, in turn, seems to be a good starting point for early identification of problems.[15,16]

Table 1.

Core principles of family-centered care according to the American Academy of Pediatrics
1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

It is unknown to what extent the family-centered approach enhances attunement of care to parents' preferences and whether all parents are similar in this regard. Nor do we know whether the family-centered approach does facilitate monitoring infants' social-emotional development. Therefore, we undertook a study with the following aims. First, we assessed the value parents place on three aspects of family-centered care (the attitude of the PCH professional, asking about the broad developmental context of the child and an empowering approach by the PCH professional, see Figure 1 for a detailed overview of the specific outcome measures). Second, we assessed the impact of the family-centered approach on the actual attunement of care to parents' preferences, as a measure of the quality of (family-centered) care.[17,18] Third, we explored whether the family-centered approach is associated with greater willingness of parents to disclose concerns, compared to care-as-usual. Finally, we evaluated whether results differed according to parents' SES and child's social-emotional status. Because attunement is central in the family-centered approach, we expected its effects to apply to all parents, regardless of SES or child's social-emotional status.

Methods

Design

We conducted a non-blinded quasi-experimental study on regional units of a PCH organization in the northern Netherlands. We chose a quasi-experimental cluster design as full cluster-randomization was not possible because the organization had implemented the family-centered approach in some units but not yet in others. The reasons of inception were not dependent on the drive of units, but just on accidental reasons, in particular the vicinity to each other. This led to an intervention condition, in which all PCH professionals (57 in total) had been trained in working with the family-centered approach, and a control condition, in which all PCH professionals (49 in total) offered care-as-usual. All units worked within their own catchment area. Randomization per child/family was not possible as professionals served an entire region so that contamination would be inescapable in case of individual randomization. There were no differences between PCH professionals from both conditions regarding gender, age, and years of experience. The study was approved by the Medical Ethical Board of the University Medical Center Groningen. Further details are provided elsewhere.[19]

We minimized the likelihood of contamination by a number a measures. First, we prevented any professional to work in both the intervention and control condition. Second, we informed PCH professionals about the study separately per condition. Finally, no innovations regarding the social-emotional development of children aged 0-18 months were implemented in either the intervention or the control condition, during the study period.

Procedures and participants

Between October 2009 and June 2011, participating PCH professionals (i.e., nurses and doctors) asked parents of 8280 newborns to participate in the study (83% of all eligible parents). Eligible parents were those with sufficient mastery of the Dutch language. No important differences were found in either condition between parents who were and were not invited to participate (Cramer's V = .06 to .13).

During the first or second well-child visit (at 4 or 8 weeks of age), PCH professionals registered consent within the medical records of 5761 infants (total response of 70%; 69% in the family-centered care condition and 70% in the control condition). Participants and non-participants in both conditions were similar in background characteristics and child's social-emotional status (Cramer's V = .05 to .13). Participants gave consent to use information from their child's medical record or to use their address to mail them a questionnaire around the child age of 8 weeks and a follow-

up questionnaire around the child age of 18 months. Participants received a small gift (a children's book) for their participation after the follow-up questionnaire when the child was 18 months of age. The current study focuses on the results of the first questionnaire around the child age of 8 weeks. We sent the 5658 participating parents a questionnaire by mail; from the remaining 103 we did not receive informed consent. A reminder followed if it was not returned within two weeks and a telephone call after another two weeks. Of all participating parents, a total of 4870 parents returned the questionnaire (86%).

Intervention condition

A main aim of the family-centered approach is to foster trust and to empower parents in their strengths to enhance children's developmental context and subsequently their social-emotional development. Parents are regarded as experts on their child and partnership with parents is a central feature of the approach.

During each well-child visit, PCH professionals prompt parents to express possible concerns, providing a starting point for further communication. The family-centered approach format addresses five domains associated with children's social-emotional development: *competence of the parent* (e.g., **"**Do you feel uncertain or do you have any difficulties with certain aspects of care?"), *role of the partner* (e.g., "To what extent are you satisfied with the contribution of your partner?"), *social support* (e.g., "To what extent do you manage with the support you receive?), *perceived barriers and life events within the caregiving context* (e.g., "Have there been any life events in the past year? If so: To what extent does this influence your contact with your child?"), and *wellbeing of the child* (e.g., "How does <<name>> respond to his/her environment?"). During the second well-child visit, when the infant is about 8 weeks of age, children are seen by a nurse, who has 15 minutes extra to discuss the five domains exhaustively (30 minutes in total).[11] Based on the appraisal of all domains, parents and the PCH professional jointly decided whether there were any concerns, resulting in the conclusion as *fine*, *not optimal* or a *problem*. In case of any concerns, an additional activity is planned aimed at the social-emotional development of the child (like an additional appointment to assess the situation more in depth or an intervention).

PCH professionals in the intervention condition received 32 hours of training in total, divided over four days). Training consisted of giving background information on the family-centered approach, work instructions, role-play sessions, and discussing case-vignettes. Within one month after training, PCH professionals had to videotape two well-child visits which were evaluated by trainers using standardized guidelines (with questions

like whether all parts of the family-centered approach were discussed and whether PCH-professionals used empowering communication skills). This procedure was repeated until the performance was rated as adequate. Most PCH professionals needed the evaluation of three recordings to be able to pass. Follow-up supervision meetings were held every three months. In the supervision session a recording of a well-child visit was discussed with again attention to the aforementioned questions. Sessions lasted two hours and were planned with four to six PCH professionals.

Control condition

Within the control condition, PCH professionals monitored children's general health and social-emotional development during routine 15-minute well-child visits following the guidelines of the National Centre for Child Health.[12]

Measures

The first primary outcome was the extent to which PCH professionals (i.e. the nurses and medical doctors with whom parents had with until they filled in the questionnaire) met parents' preferences. Therefore, parents filled in a questionnaire covering three aspects of family-centered care: (1) the PCH professional's *attitude* (7 items, Cronbach's α = .81), (2) parental *empowerment* (8 items, Cronbach's α = .81), and (3) monitoring the *broad developmental context* (4 items, Cronbach's α = .79). The items that made up the *attitude* scale were based on a questionnaire measuring the quality of PCH.[20] Items were designed according to the concept of QUOTE questionnaires (Quality of Care Through the Patients' Eyes),[18] measuring both the importance (*how important is it to you that…*) of items on a Likert scale (1=unimportant, 2=fairly important, 3=important, 4=very important) and then also the actual experience (*to what extent was this the case?*), again on a Likert scale (1=never, 2=sometimes, 3=usually, 4=always, or "not applicable"). The questionnaire was piloted with a sample of 18 parents outside the scope of this study, with no problems of comprehensibility found. Figure 1 lists all the items. The items were categorized into the three afore mentioned aspects in consultation with several experts on the family-centered approach.

To obtain a meaningful set of Quality Impact Indices (QIIs), we transformed importance scores (1=0, 2=3, 3=6, 4=10) and experience scores (1=1, 2=0.67, 3=0.33, 4=0), based on the procedure followed in other studies using QUOTE questionnaires.[21,22] After transformation, we applied the formula [10 – (importance score * experience score)], derived from other QUOTE studies[22,23], resulting in QIIs ranging from 0 to 10. The higher QIIs represent better attunement of care to parents' preferences. An exception to the

formula was made for items rated as “unimportant” combined with experience scores of “sometimes”, “usually” or “always” as these combinations do not necessarily reflect perfect attunement. In these cases QIIs were similar to the QIIs that were computed for the “very important” dimension (so for example the QII of “not important” combined with “always”, was equal to the combination of “very important” combined with “never”). We computed QIIs per participant. Scores for each care aspect were summed and divided by the number of questions covering that aspect.

The second primary outcome was the *level of willingness to disclose concerns*, which was measured with the statement “I feel free to discuss all kinds of worries at the PCH center,” again using a Likert scale (1=not true at all, 2=mostly untrue, 3=sometimes true, 4=mostly true, 5=always true).

In addition, we assessed the following background characteristics of parents: *age, educational level, employment status* and *country of birth* and furthermore the *family composition* and having *one or more children*. Educational level was classified in three categories: “low” (primary school or less, lower vocational or lower general secondary education), “medium” (intermediate vocational education, intermediate or higher secondary education), and “high” (higher vocational education or university). The highest educational level attained by a parent provided the indicator of SES. Furthermore, PCH professionals recorded for all children whether they anticipated any risk of social-emotional problems, resulting in an assessment as *fine, not optimal* or *problematic.*

Analysis

Missing values (ranging from 0.7% to 2.1% per item) were imputed using SAS.9.2, assuming that missingness was random. Items designated as not applicable were not taken into account.

First, we compared the characteristics of children and their families in both conditions. The statistical significance of differences was assessed using chi-square tests, and Cramer’s V was used to assess the size of the differences. Second, we computed mean QIIs per item and compared QIIs on the three aspects of family-centered care (*attitude*, *empowerment*, and *broad developmental context*) for both conditions using independent *t* tests or Mann-Whitney tests in case of skewed data. We repeated our analyses without making an exception to the formula for the items rated as “unimportant”. Next we repeated comparisons, using regression analyses adjusting for background variables. Finally, we assessed whether differences between the conditions varied by parental SES and child’s social-emotional status. This was done by adding interactions of these variables with condition.

Using logistic regression, we performed the same analytical steps for willingness to disclose concerns. Based on the content and distribution of the disclosure question, the answer categories were dichotomized into "low" willingness to disclose (answer categories 1 to 3, *not true at all* to *sometimes true*) and "high" willingness to disclose (answer categories 4 and 5, *mostly true* and *always true*).

To rule out possible clustering of the data (parents nested within teams), we also performed multilevel analyses. Statistical analyses were performed in SPPS 20.0 with significance levels set at .05.

Results

Statistically significant differences between participants in the conditions were observed only for parental education, which was slightly higher in the control condition (Cramer's V = .12) and the child's social-emotional status for which within the intervention condition we found few more assessments of "not optimal" (Cramer's V = .05).

Importance scores per item

Figure 1 shows the mean importance scores for all items. Items on *attitude* were rated as most important overall, whereas items on monitoring the *broad developmental context* were rated as least important.

Differences in QIIs on aspects of family-centered care

Figure 2 shows the QII scores per item. For all items, scores were significantly higher for the intervention condition than for the control condition. We found the largest differences for *broad developmental context*. Effect sizes ranged from very small to small (r = .04 to .23). Mean summed QIIs were significantly higher for parents receiving family-centered care (Table 2). This indicates that these parents perceived the care they received as better attuned to their preferences than parents receiving care-as-usual. For monitoring the *broad developmental context* a medium effect size was found. For *empowerment* and *attitude* of the PCH professional small effect sizes were found. Because of negatively skewed data, Mann-Whitney tests were also applied, generating the same p values. In the analyses without making the exception to the formula for the items rated as "unimportant" results remained similar (not shown).

Next, using regression analysis we adjusted for *parental educational level*, *employment status*, *country of birth*, *family composition*, *assessment of the child's social-emotional development*, *number of children*, and *child's age on completion of the questionnaire*. This yielded almost identical results (not shown).

Table 1 Characteristics of participants in the intervention and control condition

	Intervention condition N = 2542	**Control condition** N = 2328	***P* Value**
Child's gender			
Male	1291 (50.8%)	1216 (52.2%)	.32
Female	1250 (49.2%)	1112 (47.8%)	
Education parent			
Lower	73 (2.9%)	62 (2.7%)	< .001
Secondary	1083 (42.9%)	733 (31.8%)	
Higher	1371 (54.3%)	1513 (65.5%)	
Parental age			
Mother	16 (0.6%)	15 (0.6%)	.77
< 20	2452 (96.8%)	2245 (97.1%)	
20 – 40	65 (2.6%)	52 (2.2%)	
40 and over			
Father	5 (0.2%)	7 (0.3%)	.14
< 20	2149 (89.1%)	1969 (90.6%)	
20 – < 40	258 (10.7%)	197 (9.1%)	
40 and over			
Employment status parent			
At least one parent works	2468 (97.7%)	2244 (97.1%)	.19
Neither parent works	59 (2.3%)	68 (2.9%)	
Country of birth parent			
At least one parent born in the Netherlands	2505 (99.2%)	2276 (99.0%)	.44
Both parents born outside the Netherlands	20 (0.8%)	23 (1.0%)	
Family composition			
Both biological parents or biological parent and partner	2460 (97.3%)	2267 (97.8%)	.20
One biological parent	69 (2.7%)	50 (2.2%)	
Number of children			
One child (only this one)	1092 (43.2%)	976 (42.3%)	.53
More children	1433 (56.8%)	1329 (57.7%)	
Social-emotional status child			
Fine	2010 (89.1%)	1805 (91.8%)	.01
Not optimal	213 (9.4%)	135 (6.9%)	
Problem	32 (1.4%)	27 (1.4%)	

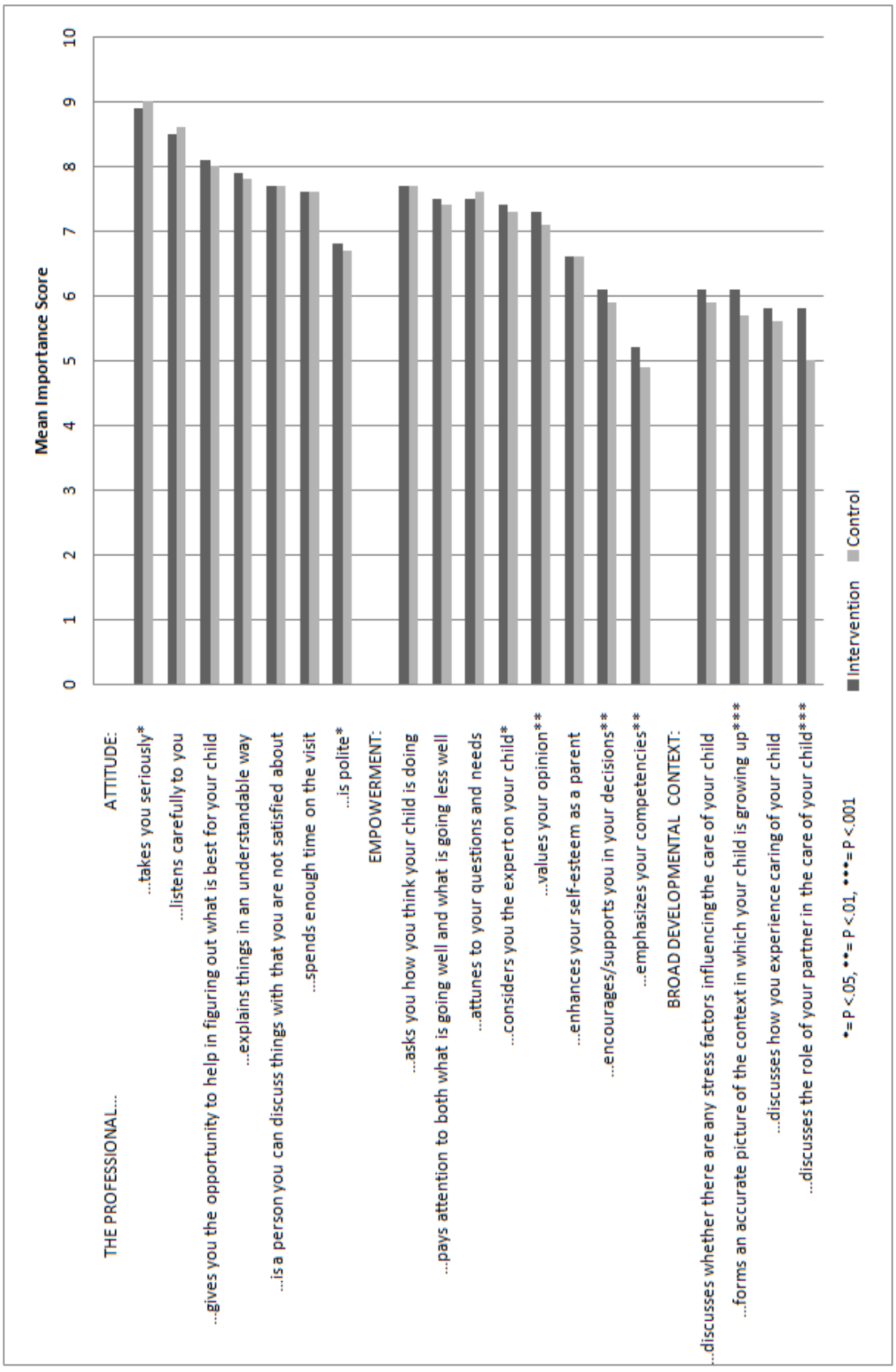

Figure 1. Parents' importance ratings on aspects of family-centered care. Meaning of importance scores: 0 = unimportant, 3 = fairly important, 6 = important, 10 = very important. *p < .05, **p < .01, ***p < .001.

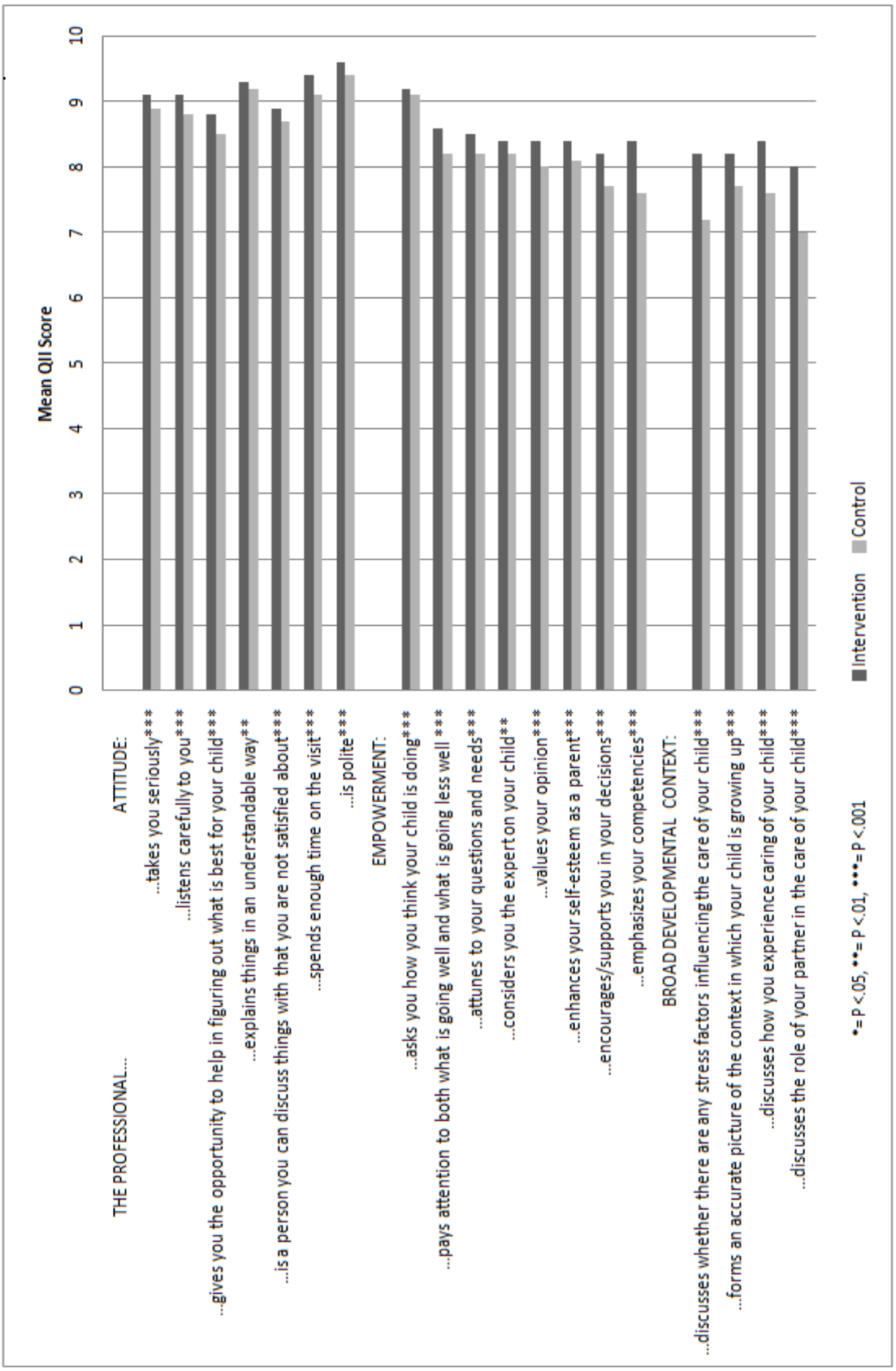

Figure 2. Mean quality impact index (QII) scores on each item. Higher QIIs represent better attunement of care to parents' preferences.
*p < .05, **p < .01, ***p < .001

Table 2 Mean QIIs for the intervention and control condition and their differences

	Intervention		Control		Difference (95% CI)	*P* Value	Effect Size (*r*)
	Mean (N)	**SD**	**Mean (N)**	**SD**			
Attitude of the PCH professional	9.1 (1606)	1.1	8.9 (1467)	1.1	0.22 (0.14 to 0.30)	< .001	.10
Empowerment	8.4 (1621)	1.3	8.1 (1379)	1.3	0.33 (0.24 to 0.42)	< .001	.13
Broad developmental context	8.2 (1720)	1.4	7.3 (1362)	1.6	0.88 (0.75 to 0.97)	< .001	.27

QIIs ranged from 1 to 10, with higher scores representing better attunement.
CI, Confidence Interval

Modification by socioeconomic status and child's social-emotional status

Finally, we assessed the interaction effects of parental SES and child's social-emotional status with condition. Overall, parents with low SES rated items as more important than parents with medium or high SES, especially concerning the *broad developmental context*, though differences, if significant, were small (Cramer's V = .04 to .10). No interaction effect was found between SES and condition.

Considering the child's social-emotional status, parents rated nearly all items as less important when the child's status was assessed as *fine*, compared to *not optimal* or *problematic*. Effects were small in all cases, however (Cramer's V = .04 to .05). We found no notable differences between the conditions. There was no interaction effect of child's social-emotional status with condition.

Willingness to disclose concerns

Logistic regression analysis showed no significant effect of the family-centered approach on parents' willingness to disclose; in the intervention condition 86.7% of parents reported a high willingness to disclose concerns, versus 84.9% of parents in the control condition (OR: 1.15, p = .09). After adjusting for background variables, results remained

similar (not shown). No significant interactions were found regarding parental SES or child's social-emotional status with condition.

Most parents with a low willingness to disclose concerns reported that they sometimes (answer category 3) felt free to discuss all kinds of worries at the PCH center (78.7% in the intervention condition versus 81.1% in the control condition). Differences between conditions across the answer categories were not significant.

Multilevel analysis led to the same conclusions on our primary outcomes.

Discussion

The results of this study indicate, first, that parents consider the PCH professional's *attitude* as the most important of the three aspects of family-centered care and monitoring the *broad developmental context* as least important. Second, the family-centered approach was associated with better attunement of care to parents' preferences, compared to care-as-usual, though the effects were small. Third, the two conditions were alike regarding parents' willingness to disclose. Furthermore, findings on both attunement and disclosure were similar across our categories of parental SES and child social-emotional status.

Our finding that parents found monitoring the *broad developmental context* to be least important of the aspects mentioned (though still rather important), is comparable to a previous finding that 65% of parents considered discussing "family stress and family problems" during well-child visits as important, compared to higher percentages on child-related topics like physical development.[24] Perhaps parents view PCH as mainly child-focused and therefore find enquiries about developmental context to be less relevant. For parents who see little need for enquiries on the broad developmental context, PCH professionals may need to provide additional explanation regarding their importance. If parents are unwilling to discuss the developmental context with PCH professionals, then these professionals will need to find a balance between respecting this preference and providing care in the child's best interest.

The higher attunement scores within the family-centered care condition are consistent with a core principle of family-centered care: a tailored approach.[3] That goal thus seems to be met. Measuring the quality of family-centered care by looking at parents' preferences as well as their actual experiences seems valid, since it provides insight into the extent to which care is tailored to needs. Within pediatric primary care, however, questionnaires used to assess family-centered care have focused only on experiences with care. Examples are the Consumer Assessment of Healthcare Providers and Systems[25] and the Promoting Healthy Development Survey.[26,27] It is interesting to note

that parents' attunement scores on the three aspects of family-centered care were high in both conditions. Thus, in the control condition too, parents rated care as quite family-centered. The differences we found between conditions might have been larger if parents in both conditions would have rated all aspects as equally important, since for aspects rated as very important, attunement scores more heavily rely on the PCH professionals behavior compared to aspects rated as less important. Further research is needed to assess whether attunement scores also relate to adherence/ compliance, imparting parental knowledge, and to influencing parental attitudes and changing their behaviors.

Parents' willingness to disclose concerns was alike in the two conditions The percentages that we found are in line with previous findings that, in general, parents are quite willing to discuss psychosocial concerns.[28,29] Kahn et al. describe that more than 85% of mothers would not mind to discuss maternal health needs in pediatric settings[28]. Furthermore, Horwitz et al. reported that 91.4% of parents of children aged 4-8 found it appropriate to discuss family problems with medical care providers in primary care.[29] However, reluctance stemming from mistrust and fear of judgment has also been described.[30] The latter apparently was not the case for the great majority of parents in our study. Whether parents are willing to disclose becomes most important when concerns actually exist, since parents may not always raise issues that concern them.[16,29]

Effects of family-centered care were stable across parental SES levels and child's social-emotional status. Thus the improvements brought about by the family-centered approach on attunement of care would also seem to apply to more vulnerable groups, like those with low SES. In other countries, low SES and poorer child health have been related to less participation in well-child care.[31,32] This is unfortunate, as especially these groups may benefit from well-child visits to provide preventive care in the child's best interest. Attunement of care may contribute to a positive attitude among parents toward care, prompting them to keep visiting.

Strengths and limitations

A strength of this study is the insight it offers into parents' preferences as well as their actual experiences with preventive care services for children and the extent that their preferences were met. This improves on previous questionnaires measuring family-centered care within pediatric primary care, which focused on the experiences only[25,26] and not on parent-reported importance. Another strength is the computation of individual QIIs, as most studies using QUOTE questionnaires compute QIIs per patient group.[17,18] The individual scores allowed us to incorporate background characteristics, like parental SES,

into the analyses. A last strength is our collection of data from a large sample with few exclusion criteria, therefore increasing the applicability of our findings.

Our study has limitations as well. First, we had a response of only 70%. However, response rates were nearly equal in both conditions, and the parents invited to participate were similar to those who were not, so we do not expect this to have influenced our results. Second, information bias might have played a role, since parents knew in which condition they were. It is unclear how this may have influenced results. Third, the effects found might be attributable to factors other than the family-centered approach, since we had no baseline information available before family-centered care was implemented. In particular, lengthening the well-child visit in the intervention condition when the infant was 8 weeks old may have influenced outcomes, as longer visits have been associated with higher family-centered care ratings.[33] Further research is needed to differentiate here. To disentangle the impact of time versus the family-centered approach, it would be interesting to compare the family-centered approach with care as usual to which also additional time had been given for the eight weeks' well-child visit. Fourth, contamination may have occurred, despite the effort we undertook to prevent this. If so, even though not highly likely, this would have led to our study underestimating the real effects of the family-centered approach.

Conclusion

The family-centered approach seems promising for raising the quality of preventive care services for children. Parents reported that the family-centered approach meets their expectations and preferences better than care-as-usual, in a PCH setting in which quality of care generally already was quite high. Moreover, it does so regardless of the parents' SES and the child's social-emotional status. Working with the family-centered approach therefore seems worthwhile. However, it would also be interesting to include other outcomes, like health care utilization and compliance with advices of PCH professionals. Furthermore, for organizations it would be good to consider both the benefits of the family-centered approach and its costs, to support a well-considered decision on possible implementation.

Our study may provide useful guidance for optimizing preventive care for children, since families' expectations and experiences are a critical determinant of the content of well-child visits.[34] Future research could point out whether findings are similar in groups with different cultural backgrounds and in different settings. Once organizations have insight in QIIs, like those presented in this study, it becomes clear which aspects are most in need of improvement[17,18] so that quality of care might further be enhanced.

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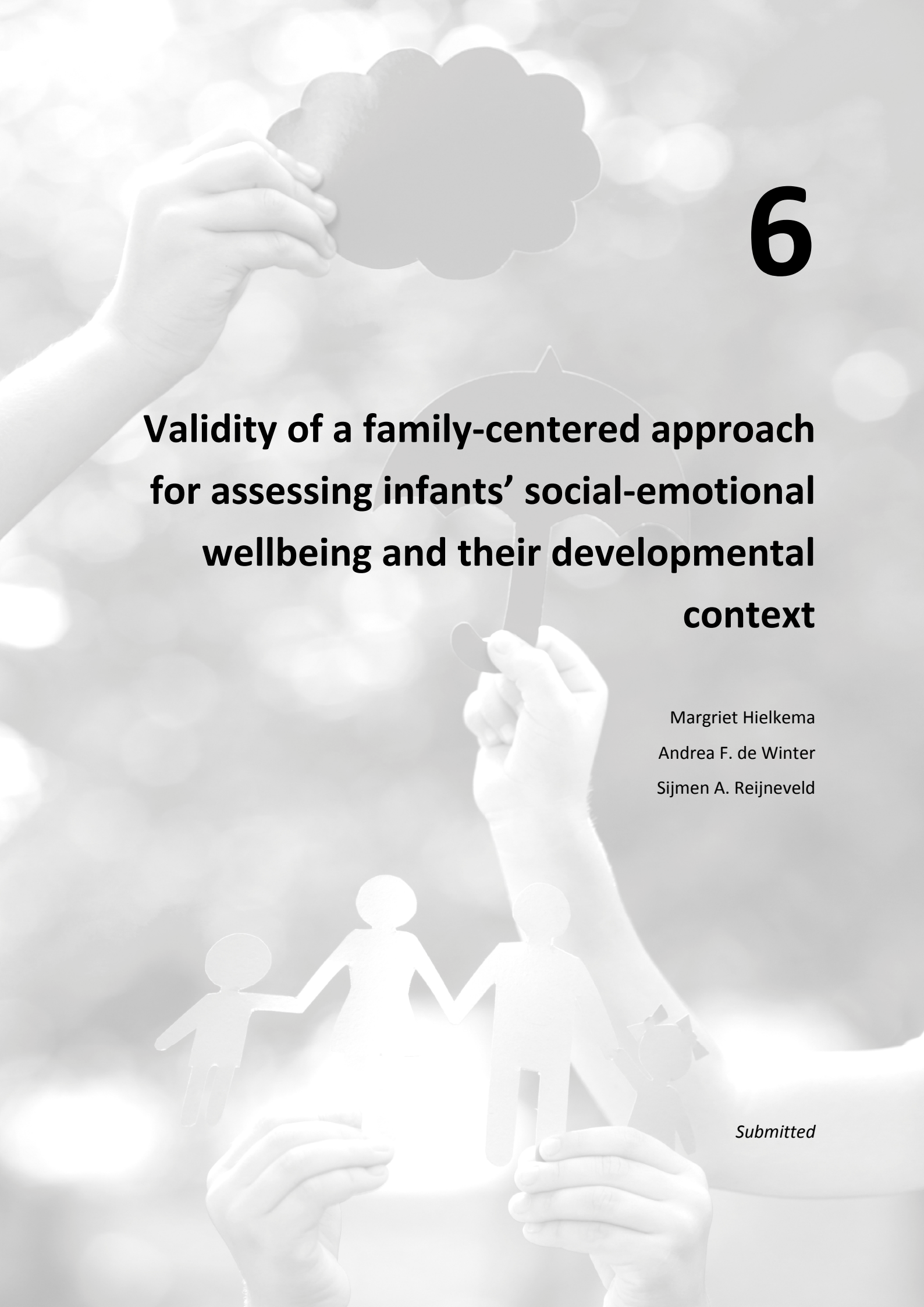

6

Validity of a family-centered approach for assessing infants' social-emotional wellbeing and their developmental context

Margriet Hielkema
Andrea F. de Winter
Sijmen A. Reijneveld

Submitted

ABSTRACT

Background: Family-centered care seems promising in preventive pediatrics, but evidence on whether this type of care can validly be used to identify risks regarding infants' social-emotional wellbeing lacks. We aimed to examine the validity of such a family-centered approach.

Methods: We conducted a prospective cohort study. During routine well-child visits (2-15 months), Preventive Child Healthcare (PCH) professionals used a family-centered approach and assessed domains on *parents' competence, role of the partner, social support, barriers within the care-giving context,* and *child's wellbeing* for 2,976 children as protective, indistinct or a risk. If an intervention was needed, based on the overall assessment (cases, N=94), parents filled in validated questionnaires covering the aforementioned domains. These questionnaires served as gold standards. For each case, two controls, matched by child-age and gender, did so too (N=184). We compared PCH professionals' assessments with the parent-reported gold standards. Moreover, we evaluated which domain mostly contributed to the overall assessment.

Results: Pearson's correlation coefficients between PCH professionals' assessments and gold standards were overall reasonable (Pearson's r 0.17 - 0.51) except for the domain *barriers within the care-giving context.* Scores on gold standards were significantly higher when PCH assessments were rated as "at risk" (overall and per domain).We found reasonable to excellent agreement regarding the absence of risk factors (negative agreement rate: 0.38 - 0.99), but lower agreement regarding the presence of risk factors (positive agreement rate: 0.00 - 0.68). An "at risk" assessment for the domain *role of the partner* contributed most to being overall at risk, i.e. a case, odds ratio 87.0, 95%-confidence interval: 20.2 - 375.0.

Conclusion: Findings partially support the convergent validity of a family-centered approach in well-child care to assess infants' social-emotional wellbeing and their developmental context. Agreement was reasonable to excellent regarding protective factors, but lower regarding risk factors.

Background

A child's development is influenced by the context in which it grows up, in addition to for example biological factors.[1] On the one hand, a positive and supportive context may optimize a child's development -within the possibilities of its genetic and biological make-up-. For example adequate parenting has been related to positive outcomes.[2,3] On the other hand, a less favorable context, like with marital conflict, maternal depression, or poverty, may negatively influence a child's development.[4,5] Especially the development of young children is intertwined with their developmental context. The younger children are, the more they rely on their developmental context for the regulation of emotions and behavior.[6]

Family-centered care may help to optimize a child's developmental context and in turn the child's social-emotional development[7] and has also been recognized as important for the quality of preventive pediatrics, as reflected by guidelines like Bright Futures of the American Academy of Pediatrics.[8] Box 1 presents the core principles of Family-centered care according to the American Academy of Pediatrics.[9] In the Netherlands, a family-centered approach, further referred to as the family-centered approach, has been introduced in Preventive Child Healthcare (PCH) to monitor children's social-emotional development and their developmental context.[10] PCH is equivalent to well-child care in other countries, concerning only preventive activities, and is offered free of charge to the total Dutch population. More than 90% of all families with children frequently visit PCH, and monitoring social-emotional development in children is one of the mandatory tasks of PCH.

The newly implemented family-centered approach aims to build a trustful and supportive relationship with parents and to empower parenting skills, in order to enhance children's developmental context. Furthermore, the family-centered approach incorporates a screening element as it aims to identify risk and protective factors for infants' social-emotional development by using a checklist with questions.[10] Contents of the checklist are based on the bio-ecological model of Bronfenbrenner, which describes what factors at different levels influence human development, taking into account both the child itself as well as its developmental context and the interaction between the two[11]. In the family-centered approach, this bio-ecological model is reflected by the following domains which are related to children's social-emotional wellbeing: *competence of the parent, role of the partner, social support, life events within the care giving context, and wellbeing of the child*. Based on all domains, PCH professionals come to an overall conclusion about the child's social-emotional wellbeing.

Box 1 Core principles of family-centered care according to the American Academy of Pediatrics

1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

The family-centered approach seems promising for preventive pediatrics. However, evidence lacks on whether with this family-centered approach, protective and risk factors regarding infants' social-emotional development can validly be assessed in well-child care. Therefore, the aim of this study was to examine the validity of this family-centered approach for monitoring infants' social-emotional development and their developmental context in Preventive Child Healthcare, and the agreement between PCH professional's assessments and validated questionnaires that were filled in by parents.

Methods

The current study was part of a large quasi-experimental study in which the family-centered approach was compared to care-as-usual in Dutch PCH. For the current study, we used only data of participants from the family-centered condition because we wanted to assess its performance in a population that was fully offered this approach. The study was approved by the Medical Ethics Committee of the University Medical Center Groningen. Below, we summarize its design; further details have been described in a separate design paper.[12]

Participants

We used data from a cohort of 2,976 participants from the family-centered condition that gave written informed consent at the start of the study, when their child was around 2 months old. At that same time parents were informed about the possibility that they would be asked to participate in an extra interview in case PCH professionals provided any extra care regarding the infants' social-emotional development. Of the 2,976 participants, 114 were asked by PCH professionals, i.e. nurses and medical doctors, to participate in such an interview because an additional activity regarding the child's social-emotional development was needed (e.g., an additional phone call, appointment or extra well-child visit to assess the situation more in depth, or an intervention like a referral to a child psychologist); 87 parents (76%) agreed on this. Three families were seen twice as a case and two families three times, since during the period from 2-18 months an additional activity from PCH was needed more than once. This led to 94 cases in total. For all cases, two families, matched by age and gender of the child, were invited for whom PCH performed no additional activity ("controls"). Of 4 of the 188 controls, data could not be used because data lacked in their medical records regarding the family-centered approach.

Intervention and procedures

The family-centered approach covers five domains associated with children's social-emotional development (see Appendix 1 for the domains and questions regarding these domains).[10] The questions for each domain form a guideline for PCH professionals for their conversation with parents. PCH professionals used the family-centered approach during each routine well-child visit at the child age of 2, 3, 4, 6, 9, 11, and 14 months. For each domain, PCH professionals registered information within the child's medical record as *not discussed, protective, indistinct*, or a *risk*. In this, *protective* reflected either a stable or enhancing situation, for both high- and low-risk children, i.e. conform the use of promotive factors as previously described by Sameroff[13], whereas *indistinct* reflected that a situation is not *protective* nor could be labeled as a *risk*. Subsequently an explanation in free text could be provided. Based on the appraisal of all the domains, the parent and the PCH professional jointly decided whether there were any concerns, resulting in the overall conclusion as *fine*, *not optimal* or a *problem*. If there were any concerns, an additional activity was planned aimed at the social-emotional development of the child, for example an additional appointment to assess the situation more in depth or an intervention like a referral to a child psychologist.

All PCH professionals attended 4 days of training before starting with the family-centered approach. Within one month after training they had to videotape two well-child visits in which they used the family-centered approach. The videos were discussed with trainers and had to be rated as sufficient by a trainer using standardized guidelines.[10] This procedure was repeated until the performance of the family-centered approach was rated as adequate. Furthermore, PCH professionals attended supervision every three months. Before our study started, we trained all PCH professionals for half a day providing practical as well as theoretical information on the study for example on how to include participants and how to provide cases for the study.

All cases and controls were contacted by a trained interviewer from the research institute for an interview at the parents' home, five families preferred filling in the questionnaire themselves and were mailed. Appointments were made within one week after the routine well-child visit, whenever feasible. 53% of the interviews took place within one week after the well-child visit, for intervals longer than one week, we checked possible changes with PCH professionals, since the situation might have changed during the time interval between the well-child visit and the interview.

Measures

PCH professionals registered outcomes of the family-centered approach with respect to separate domains as *not discussed, protective, indistinct*, or a *risk* and overall conclusions as *fine, not optimal* or *a problem*, as we described before under the heading of "Procedures". By means of an interview, parents filled out questionnaires with good construct and/or criterion validity. These questionnaires served as gold standard for each of the family-centered approach domains. These questionnaires are listed in Table 1.

If specific ratings were missing for controls, these were substituted by those of the subsequent visit. This was done only if that rating contained a note that nothing had changed since the previous visit.. Furthermore, for both controls and cases, in case of missing conclusions on domains, they were coded as *protective* if free text explicitly stated that everything was fine and as *indistinct* if free text stated that problems or barriers existed. For 44 controls and 15 cases we coded one or more domains according to the above stated procedure.

Moreover, we assessed the following background characteristics of parents: *age, educational level, working participation, country of birth* and furthermore the *family composition*, and having *one or more children.* We used this information from the child's medical record or, if records lacked data on this, from the parent reported questionnaire at the start of our study. Educational level reflected the highest obtained level for one of

both parents and was divided into low (primary school or less, lower vocational or lower general secondary education), medium (intermediate vocational education, intermediate or higher secondary education) and high (higher vocational education or university).

Analysis

Analyses were performed using the Statistical Package for Social Sciences (SPSS) version 20. The statistical significance level was set on .05. We first compared background characteristics of cases and controls by using Chi-square tests or Fisher's exact tests in case of more than 20% of cells with an expected count <5.

Second, we assessed the convergent validity by computing Pearson correlation coefficients between PCH professionals' assessments and gold standards regarding the domains of the family-centered approach. Correlation coefficients >.30 were interpreted as reasonable.[14] Additionally, we compared scores on the gold standards for cases versus controls, i.e. PCH-initiated intervention versus no intervention and per domain (assessed as at risk versus assessed as not at risk). For these comparisons we used independent t-tests or Mann-Whitney tests in case of skewed data and we calculated effect sizes. Effect sizes of 0.10-0.30 were interpreted as small, 0.30-0.50 as medium and >0.50 as large.[15]

Third, we assessed the agreement between PCH professionals' assessments and gold standards regarding the domains of the family-centered approach. We calculated percentages of agreement overall, and for cases and controls separately. Furthermore, we calculated both the positive agreement (Ppos), i.e. the agreement regarding the presence of risk factors, and negative agreement (Pneg), i.e. the agreement on the absence of risk factors, for a better understanding of our results.[16] For this purpose, we used the dichotomized scores of PCH professionals' assessments as *protective* versus *indistinct* or a *risk* per domain, and questionnaire scores into low and high scores. We based this latter dichotomization on the scores of controls; high scores were defined as more than two standard deviations higher than the mean, or, in case of skewed data, as higher than the 90th percentile. Whenever norm scores were available for a questionnaire, we also dichotomized our data based on these.

Finally, we assessed which domains mostly contributed to PCH professionals' overall assessments by calculating the percentages of risk assessments per domain for both cases and controls and performing logistic regression analysis.

Table 1 Parent-report questionnaires used as gold standards for the domains of the family-centered care approach

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Information on reliability and validity (*and Cronbach's alpha in our study*)	Cut-off scores	References
Wellbeing of the child	Ages and Stages Questionnaire Social Emotional (*ASQ-SE*) (versions 6, 12 and 18 months)	22-29	Social-emotional development of the child	Cronbach's alpha 0.82. Test-retest reliability 0.94. Sensitivity 0.75 - 0.89. Specificity 0.82 - 0.96. *(0.41-0.69)*	High > 2 sd	17
Competence of the parent	Dutch Parenting Stress Index (*PSI*) (4 subscales)	11	Parental competence and attachment	Cronbach's alpha 0.92-0.96. Good construct and criterion validity* *(0.82)*	High > 90th pct	18
	Parenting Tasks Checklist or Problem Setting and Behavior Checklist *(PSBC)(Setting Self-Efficacy subscale)*	14	Perceived ability of the primary caretaker in mastering problem situations	Cronbach's alpha 0.91 *(0.89)*	Low < 10th pct	19
	Parental Sense of Competence scale (*PSOC*)	16	Competence of the parent	Cronbach's alpha 0.70-0.88. Test-retest reliability 0.46- 0.82. Good construct validity. *(0.84)*	High: >2 sd	20
	SF-12 Health Survey *SF-12 mental* *SF-12 physical*	12	Health status (physical and mental) of the parent	Abbreviated version of the validated 36-Item Short Form Health Survey. Correlations betwee SF-36 and SF-12 are high , i.e.0.94–0.97 *(0.67-0.71)*	Low: <10th pct Low: <10th pct	21

Table 1 continued

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Information on reliability and validity (*and Cronbach's alpha in our study*)	Cut-off scores	References
Role of the partner	McMaster Family Assessment Device (*FAD*) (General Functioning)	12	Emotional relationships within families	Cronbach's alpha 0.66-0.81.Good construct validity. *(0.94)*	High: >90th pct	22
	Dutch Parental Stress Index (*PSI*) (subscale partner)	5	Having a child and its effect on the relationship between partners	Cronbach's alpha 0.92-0.96. Good construct and criterion validity* *(0.71)*	High: >90th pct	18
Social support	Social Support List, short version (*SSL*) *Received* *Shortage*	12	Social support	Cronbach's alpha 0.69-0.96, Construct and criterion validity sufficient* *(0.74-0.79)*	Low: <2 sd High: >90th pct	23
	Loneliness-score Social Emotional	11	Feelings of overall, emotional and social loneliness	Cronbach's alpha 0.80-0.90. sufficient content validity. *(0.80-0.85)*	High: >90th pct High: >90th pct High: >90th pct	24
Perceived barriers or life events within the care giving context of the child	Questionnaire on the material or social deprivation of a child due to shortage of money (*deprivation questionnaire)*	15	The material or social deprivation of a child due to shortage of money	Cronbach's alpha 0. 89. *(0.63)*	High: > 90th pct	25
	Dutch Parental Stress Index (*PSI*)(subscale life events)	17	Life events happened in the past year	Cronbach's alpha 0.92-0.96. Good construct and criterion validity*	High: >2 sd	18

Sd: standard deviation , Pct: percentile

Results

Background characteristics of both cases and controls are presented in Table 2. Regarding cases, mothers were more often below 20 years or over 40 years of age. Furthermore cases came more often from a one-parent household and parents had a lower educational level.

Table 2: Background characteristics of participants

	Cases (N= 87)	**Controls** (N=184)	**Total cohort*** (N=2835)	**P-value cases-controls/ cases-total cohort**
Gender				
Male	46 (52.9%)	94 (51.1%)	1420 (50.1%)	.78/
Female	41 (47.1%)	90 (48.9%)	1414 (49.9%)	.61
Highest educational level of either parent				
Lower	4 (4.8%)	4 (2.2%)	119 (4.7%)	.03/
Secondary	44 (57.9%)	80 (44.2%)	1099 (43.0%)	.03
Higher	28 (36.8%)	97 (53.6%)	1336 (52.3%)	
Parental age				
Mother				
Younger than 20	2 (2.3%)	1 (0.5%)	15 (0.6%)	.02ª/
20-40	81 (93.1%)	181 (98.9%)	2351 (96.6%)	.05ª
40 years and over	4 (4.6%)	1 (0.5%)	59 (2.4%)	
Father				
Younger than 20	1 (1.2%)	1 (0.6%)	5 (0.2%)	.47ª/
20-40	70 (81.4%)	152 (85.9%)	2092 (89.6%)	.03
40 years and over	15 (17.4%)	24 (13.6%)	239 (10.2%)	
Employment status parent				
One of both or both parents have	85 (97.7%)	179 (97.8%)	1206 (94.4%)	1.00ª/ .23ª
paid work	2 (2.3%)	4 (2.2%)	72 (5.6%)	
None of both parents has paid Work				
Country of birth parent				
One or both born in the Netherlands	86 (98.9%)	181 (100.0%)	2460 (99.3%)	.33ª/
Both born outside the Netherlands	1 (1.1%)	0 (0.0%)	86 (0.7%)	.48ª
Family composition				
Two parents household	79 (92.9%)	183 (99.5%)	2046 (96.9%)	.01ª/
One parent household	6 (7.1%)	1 (0.5%)	65 (3.1%)	.05ª
Number of children				
First child	36 (42.9%)	90 (48.9%)	1215 (42.9%)	.36/
More children	48 (57.1%)	94 (51.1%)	1620 (55.3%)	1.00

ªbased on Fisher's exact test, *participants for whom data was available, cases excluded

Convergent validity

Table 3 shows the Pearson correlations between domains rated as *protective* versus *indistinct* or *at risk* and scores on the related questionnaires. Correlations were all statistically significant (ranging from .17 to .51 with two third >.30) and highest for the domains that the questionnaire should cover, except for the PSBC, the Loneliness score Emotional and the Deprivation Questionnaire.

Scores on the parent-reported questionnaires were mostly higher for children for whom PCH professionals initiated an intervention (cases) than for children for whom they did not so (controls); see mean scores in Table 3). Effect sizes ranged from marginal to medium. We found similar effect sizes for the PCH professionals' conclusions per domain *protective* versus *indistinct* or *at risk*.

Agreement between PCH professionals and parents per domain

Table 4 shows findings regarding the agreement between PCH professionals and parents per domain, for cases and controls separately and combined. Overall, we found reasonable to excellent levels of agreement. For controls agreement was high (88%-96%), whereas for cases this was lower (26%-76%). The agreement on the absence of risk factors (Pneg), which in this study indicated the presence of protective factors (see "intervention and procedures"), was overall satisfactory, and was especially high for controls. The agreement on the presence of risk factors (Ppos) was low (lowest for controls). For cases, PCH professionals frequently identified a risk where parents scored low on the accompanying questionnaires whereas the discrepancy 'professional: protective'; 'parent: risk' occurred more frequently among controls.

Table 3: Comparison of scores on parent-reported questionnaires (i.e. gold standards) between cases and controls

	Cases (intervention based on overall assessment)			Controls (no intervention based on overall assessment)					
	N	**Mean**	**(sd)**	**N**	**Mean**	**(sd)**	**P-value**	**Effect size r**	**Pearson correlation coefficient**
Wellbeing of the child									
ASQ-SE	91	**0.44^**	(1.1)	176	**-0.23^**	(.83)	<.001	.30	-.403***
Competence of the parent									
PSI	93	**23.3**	(8.8)	181	**18.3**	(5.3)	<.001ª	.29ª	-.356***
PSOC	92	**36.3**	(10.6)	179	**30.2**	(7.0)	<.001	.33	-.310***
PSBCº	94	**8.8**	(1.0)	184	**9.1**	(0.8)	.004ª	.17ª	.200***ϕ
SF-12 mentalº	94	**44.3**	(10.9)	184	**53.0**	(7.8)	<.001ª	.43ª	.408***
SF-12 physicalº	94	**49.9**	(8.5)	184	**50.3**	(8.6)	.64ª	.03ª	.191***
Partner									
FAD	88	**21.3**	(10.0)	179	**15.4**	(3.6)	<.001ª	.37ª	-.508***
PSI (partner)	84	**9.7**	(3.1)	184	**7.6**	(2.3)	<.001ª	.32 ª	-.321***
Social support									
SSL receivedº	94	**15.3**	(3.1)	184	**15.7**	(2.7)	.19	.08	.240***
SSL shortage	93	**8.3**	(3.0)	184	**6.8**	(1.3)	<.001ª	.24ª	-.414***
Loneliness score	94	**2.7**	(3.0)	184	**1.0**	(1.9)	<.001ª	.36ª	-.457***
Social	94	**1.1**	(1.5)	184	**0.5**	(1.0)	.002 ª	.19ª	-.374***
Emotional	94	**1.7**	(1.8)	184	**0.5**	(1.2)	<.001ª	.40ª	-.441***ϕ
Barriers or life events within care-giving context									
Deprivation Questionnaire	93	**0.5**	(1.4)	183	**0.1**	(0.3)	.001ª	.20ª	-.282***ϕ
PSI (life events)	94	**1.5**	(1.0)	184	**1.3**	(1.0)	.15	.09	-.172**

ª Based on Mann-Whitney test , ^ Based on Z-scores, º Lower scores reflect worse outcomes, * Pearson correlation between questionnaire and the corresponding domain (rated as *at risk* versus *protective*) , ϕ Pearson correlation was higher between the questionnaire scores and one of the other domains than with the intended corresponding domain, ** *p*-value < .05, *** *p*-value <.01

Table 4: Agreement between assessments of PCH professionals and scores on parent-reported gold standards per domain

PCH-professional / parent	N	risk*/ risk	risk*/ protective	protective/ risk	protective/ protective	Agreement	Ppos	Pneg
Wellbeing of the child								
ASQ-SE	253	6	44	0	203	83%	.21	.90
Cases/ Controls	89/ 164	5/ 1	39/ 5	0/ 0	45/ 158	56%/ 97%	.20/ .29	.70/ .98
Competence of the parent								
PSI	269	23	37	21	188	78%	.44	.87
Cases/ Controls	91/ 178	20/ 3	33/ 4	9/ 12	29/ 159	54%/ 91%	.49/ .27	.58/ .95
PSOC	266	14	47	10	195	79%	.33	.87
Cases/ Controls	90/ 176	14/ 0	40/ 7	5/ 5	31/ 164	50%/ 93%	.38/ .00	.58/ .96
PSBC	273	15	46	23	189	75%	.30	.85
Cases/ Controls	92/ 181	13/ 2	41/ 5	8/ 15	30/ 159	47%/ 89%	.35/ .17	.55/ .94
SF-12 mental	273	25	36	24	188	78%	.45	.86
Cases/ Controls	92/ 181	21/ 4	33/ 3	11/ 13	27/ 161	52%/ 91%	.49/ .33	.55/ .95
SF-12 physical	273	9	52	18	194	74%	.20	.85
Cases/ Controls	92/ 181	7/ 2	47/ 5	2/ 16	36/ 158	47%/ 88%	.22/ .16	.60/ .94
Role of the partner								
FAD	221	26	15	23	157	83%	.57	.89
Cases/ Controls	77/ 144	26/ 0	13/ 2	11/ 12	27/ 130	69%/ 90%	.68/ .00	.69/ .95
PSI (partner)	222	18	19	27	158	79%	.44	.87
Cases/ Controls	73/149	17/ 1	18/ 1	14/ 13	24/ 134	56%/ 91%	.52/ .13	.60/ .95

Table 4 continued

PCH-professional / parent	N	risk*/ risk	risk*/ protective	protective/ risk	protective/ protective	Agreement	Ppos	Pneg
Social support								
SSL received	221	4	25	0	192	88%	.24	.94
Cases/ Controls	75/ 146	4/ 0	21/ 4	0/ 0	50/ 142	72%/ 97 %	28./ .00	83./ .99
SSL shortage	221	15	14	20	172	85%	.47	.91
Cases/ Controls	75/ 146	13/ 2	12/ 2	11/ 9	39/ 133	69%/ 92%	.53/ .27	.77/ .96
Loneliness score	221	15	14	14	178	87%	.52	.93
Cases/ Controls	75/ 146	13/ 2	12/ 2	6/ 8	44/ 134	76%/ 93%	.59/ .29	.83/ .96
Social	221	10	19	9	183	87%	.42	.93
Cases/ Controls	75/ 146	9/ 1	16/ 3	4/ 5	46/ 137	73%/ 95%	.47/ .20	.82/ .97
Emotional	221	15	14	17	175	86%	.49	.92
Cases/ Controls	75/ 146	13/ 2	12/ 2	8/ 9	42/ 133	73%/ 92%	.56/ .27	.81/ .96
Perceived barriers or life events within the care giving context								
Deprivation questionnaire	218	12	51	9	146	72%	.28	.83
Cases/ Controls	67/ 151	12/ 0	40/ 11	0/ 9	15/ 133	40%/ 88%	.38/ .00	.43/ .93
PSI (life events)	219	3	60	3	153	71%	.09	.83
Cases/ Controls	67/ 152	3/ 0	49/ 11	0/ 3	15/ 138	26%/ 91%	.11/ .00	.38/ .95

*Consists of domains assessed as a risk or indistinct
PCH: Preventive Child Healthcare
Ppos: positive agreement (on the presence of risk factors)
Pneg: negative agreement (on the absence of risk factors, in this study indicating the presence of protective factors)

Contribution of domains to the PCH professional's overall assessment

Table 5 shows the rates of at risk and protective factors per domain that PCH professionals assessed, for cases versus controls, and the results of the univariate logistic regression analysis. The domain *Role of the partner* contributed the most to the overall assessment; if this domain was assessed as at risk, participants had an odds of about 20 to 375 to be assessed as a case, compared to when this domain was assessed as protective. Furthermore, when participants had two or more risk factors, they had a higher odds of being assessed as a case (odds ratio: 91.5; 95% confidence interval: 31.1-269.3).

Table 5: Contribution of domains to the overall assessment of the child by the PCH professional

	Cases (intervention based on overall assessment)	**Controls** (no intervention based on overall assessment)	**Outcomes logistic regression analysis** **OR (95% CI)**
Wellbeing of the child			
Risk or indistinct	46 (50%)	6 (3.5%)	27.7 (11.1-68.8)
Protective	46 (50%)	166 (96.5%)	
Competence of the parent			
Risk or indistinct	54 (58.7%)	7 (3.9%)	35.3 (14.9-83.6)
Protective	38(41.3%)	174 (96.1%)	
Role of the partner			
Risk or indistinct	45 (54.2%)	2 (1.3%)	87.0 (20.2-375.0)
Protective	38 (45.8.%)	147 (98.7%)	
Social support			
Risk or indistinct	25 (33.3%)	4 (2.7%)	17.8 (5.9-53.5)
Protective	50 (66.7%)	142 (97.3%)	
Barriers or life events within the care giving context			
Risk or indistinct	52 (77.6%)	11 (7.2%)	44.4 (19.2-103.0)
Protective	15 (22.4%)	141 (92.8%)	

OR: odds ratio
CI: confidence interval

Discussion

In this study we examined the validity of a family-centered approach for the early identification of concerns regarding infants' social-emotional development, in well-child care. Results showed that PCH professionals' assessments of infants' social-emotional wellbeing and their developmental context, based on a family-centered approach, were

associated with scores on gold standards. The agreement between PCH and parents per domain was overall satisfactory to excellent for protective factors, but not for risk factors. The domain *Role of the partner* contributed most to the PCH professional's overall assessment of being at risk. This domain was among the most valid ones.

Our study was the first to assess the validity of a family-centered approach in this extensive way. Findings partially support its validity. This fits with previous findings on the validity of this specific approach[10],and with findings on a similar approach, i.e. the Structured Problem Analysis of Raising Kids (SPARK), which also showed only partial support for the validity.[26] However, our study covered more areas than only child development, family stress and family needs, making it hard to compare findings in full.

We found that the agreement on protective factors was satisfactory to very good, especially for controls, but this was not always the case for risk factors. This finding suggests that the family-centered approach does not fully facilitate PCH professionals to better assess risk factors. This is in line with previous findings of suboptimal identification by PCH of risk factors such as child abuse and psychosocial problems[27,28]. Reasons for a suboptimal identification of risk factors could be the limited amount of time during well-child visits,[29] or an insufficient training to detect social-emotional problems. Moreover, at infant age the identification of social-emotional problems may be more difficult.[30]

Alternatively, the lower agreement regarding risk factors compared to protective factors may also reflect the daily practice. First, PCH professionals frequently assessed risk factors, whereas parents did not (yet), which we found for cases. This may be the result of the preventive task of PCH and the family-centered approach, i.e. aiming to identify risks at an early stage to prevent (worsening of) problems whenever possible. The focus on risk factors may however entail the risk of stigmatization, and might interfere with the advocated empowering approach of the family-centered approach.[10]

Second, PCH professionals also registered protective factors in some instances where parents scored high on the accompanying questionnaires, especially for controls. This may be due to PCH taking into account both protective and risk factors, and having the knowledge that protective factors can counterbalance risk factors. Alternatively, it may also be that PCH professionals are reluctant to discuss certain topics with parents and rate domains too easily as protective, or that parents may be reluctant to discuss their worries or problems with PCH professionals. This issue evidently requires further study. If reluctance of parents to discuss is at stake, then more intense training in communication skills and more continuity of PCH professionals might contribute to parents' disclosure.[31]

The domain *Role of the partner* contributed the most to the PCH professionals' overall assessment of being at risk and was also among the most valid domains within our

study. Evidence shows the importance of a positive relationship between parents since marital conflict can be a risk for children's social-emotional development.[4] However, studies also show that not the type of risk factor, but the number of risk factors is most predictive for the outcome, e.g. regarding child behavior.[32] This fits with our findings, since we found that whenever for participants two or more risk factors were assessed, they were more likely to be rated as a case.

Strengths and limitations

Strengths of our study are its high response rates of cases and its embedding in routine care. Moreover, to optimize the coverage of all domains of the family-centered approach, we used a number of well evaluated questionnaires.

Some limitations of our study should be discussed too, however. First, no perfect 'gold standards' were available for the domains of the family-centered approach, which may decrease the validity as measured. Though the questionnaires seem valuable in representing the family-centered approach's domains, some questionnaires only covered a certain aspect of such a domain. Unfortunately, comparing specific questionnaires with specific questions of the family-centered approach was not feasible because data often lacked on these specific questions. Second, we based our findings on single parent-reported questionnaires instead of multi-informant and multi-method assessments. Third, we had to deal with missing values, however, the way we imputed these were in line with the principles of the family-centered approach.

Conclusions

Our findings partially support the validity of a family-centered approach in well-child care. The family-centered approach particularly seems useful to assess protective factors, but to a lesser degree risk factors for infants' social-emotional development. For daily practice, it seems valuable that the family-centered approach facilitates assessment of protective factors, since the importance of building on strengths is recognized in optimizing children's wellbeing.[33] This family-centered approach seems promising to support the development of young children.

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Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker
- How do you like being a mother (of … children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as…

2. Role of the partner
- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
  (in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as…

3. Social support
- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

Summarizing: the social support can be concluded as…

4. Perceived barriers or life events within the care-giving context of the child
- Have there been any life events the past year?
  If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

Summarizing: the perceived barriers or life events can be concluded as…

5. Wellbeing of the child
- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as…

7

General discussion

The aim of this study was to assess the effectiveness of a family-centered approach, designed to support infants' social-emotional development in Preventive Child Healthcare (PCH). To get a broad overview, a family-centered approach (in Dutch "DMO-protocol", further referred to as "the family-centered approach") was studied from various perspectives. In this general discussion the main findings are summarized and discussed. Furthermore, methodological issues and the implications for PCH practice, policy and future research will be addressed.

Research questions and main findings

Research question 1: *Does a family-centered approach contribute to better identification of (risks for) social-emotional problems in infants?*

We found that in the family-centered condition more (risks for) social-emotional problems were identified between ages 2 and 18 months compared to in the care-as-usual condition (24.7% versus 22.0%), but the effect was small. Furthermore, we found that the family-centered approach contributed to a better identification of families who need additional care, as reflected by higher problem scores in the family-centered condition on several questionnaires regarding the child and its broad developmental context.

Research question 2: *Does a family-centered approach contribute to the early identification of (risks for) social-emotional problems in infants?*

The family-centered approach seems to contribute to the early identification of (risks for) social-emotional problems in infants. With Kaplan-Meier analyses, we found that risks were identified earlier in the family-centered condition compared to in the care-as-usual condition for children between 2 and 18 months.

Research question 3: *Does a family-centered approach contribute to the psychosocial wellbeing of infants of 18 months of age?*

No differences were found between the family-centered and care-as-usual condition for the total group of children regarding the scores on the Child Behaviour Checklist (CBCL) 1.5-5 as filled in by parents. This indicates that the family-centered approach does not contribute to the psychosocial wellbeing of infants of 18 months at age. Further research is needed on long term effects.

Research question 4: *What beliefs do PCH professionals have regarding the family-centered approach?*

We assessed PCH professionals' beliefs regarding the family-centered approach during focus groups with nurses and medical doctors. All PCH professionals, nurses as well as medical doctors, appreciated the family-centered approach for enabling empowering communication skills, and also used these communication skills in daily practice. However, the opinion about the checklist with questions was mixed: Nurses were more positive than doctors in that the checklist provided them relevant information, but all PCH professionals presumed that it could lead to an interrogation and loss of trust if the professional's communication skills were insufficient. Furthermore, the checklist with questions yielded several, mostly practical, barriers, like a lack of time and a poor integration of the format of questions in the medical record.

Research question 5: *Is a family-centered approach associated with better attunement of care to parents' needs and wishes, compared to care-as-usual?*

We assessed the attunement of care to parents' needs and wishes by first asking parents (with children around 3 months of age) to rate their opinion on the importance of several aspects of family-centered care. This importance was assessed for the *attitude* of PCH professionals*, empowerment* through PCH professionals, and being asked about the *broad developmental context* by PCH professionals. On these same aspects, parents had to rate to what extent PCH professionals did perform these. Compared to care-as-usual, the family-centered approach was associated with a better attunement of care to parents' preferences on all three aspects that were assessed. Differences that we found were relatively small (effect sizes small to medium). Findings applied regardless of the child's social-emotional well-being and parents' socio-economic status (SES).

Research question 6: *Is a family-centered approach associated with a higher willingness to disclose concerns of parents, compared to care-as-usual?*

Parents' willingness to disclose concerns was assessed by asking parents to rate how free they felt to discuss all kinds of concerns with PCH professionals. The willingness to disclose was similar in both the family-centered and care-as-usual group at the child age 3 months; in the family-centered condition 86.7% and in the care-as-usual condition 84.9% of the parents scored high on the willingness to disclose concerns, odds ratio: 6.06, *p*-value .08.

Research question 7: *Is a family-centered approach a valid method for identifying risk and protective factors regarding the child and its developmental context?*

Findings partially support the convergent validity of a family-centered approach in well-child care to assess infants' social-emotional wellbeing and their developmental context. Pearson's correlation coefficients between PCH professionals' assessments and gold standards ranged from 0.17 to 0.51. Children who were assessed as at risk by PCH professionals using the family-centered approach had overall higher scores on questionnaires regarding the broad developmental context compared to children assessed as not at risk for social-emotional problems. Furthermore, we found reasonable to excellent agreement regarding the absence of risk factors (negative agreement rates: 0.38 - 0.99), but lower agreement regarding the presence of risk factors (positive agreement rates: 0.00 - 0.68). Regarding the disagreement on risk factors, we found children for whom PCH professionals registered a risk factor on one of the domains of the family-centered approach, but parent-reported questionnaires did not and vice versa, with rates of disagreement varying from 12 to 29%. The first (where the PCH professional registered a risk factor whereas parents scored low (i.e. protective) on questionnaires) occurred more frequently than the latter.

Discussion of the main findings

Monitoring children's social-emotional development is a core task of Dutch PCH. Several methods exist to assess children's social-emotional development and their developmental context, however, especially for children younger than 18 months evidence on these lacks.[5-7] Our study thus provides important knowledge about the value of using the family-centered approach as a screening tool in PCH.

To summarize, we found several positive outcomes related to the family-centered approach, (in Dutch the "DMO-protocol"). The approach seems to contribute to more and earlier identification of risks for social-emotional problems and to a better identification of families who need extra care. Next, both PCH professionals and parents positively valued the family-centered approach for various aspects. Finally, findings partially support its validity. We will discuss our findings subsequently in the following.

The effectiveness of the family-centered approach for the identification of (risks for) social-emotional problems and children's social-emotional wellbeing

We found that the family-centered approach was associated with more and earlier identification of (risks for) social-emotional problems and a better identification of children and/or families that needed extra care. As our study is, to our knowledge, the

first on the relationship between a family-centered approach and the early identification of (risks for) social-emotional problems, we cannot fully compare it to other studies, but some of the available evidence is related, e.g., some studies show that training regarding the identification of psychosocial problems is associated with an improved identification.[8,9]

Next to our finding of more and earlier identification, we found that with the family-centered approach, PCH professionals actually seemed to better identify which families needed extra care as compared to care-as-usual. They provided additional care to families with overall higher scores on several questionnaires (meaning worse outcomes), which might indicate that professionals in the family-centered condition actually more properly identified the families that needed extra care compared to those in the care-as-usual condition. This seems of major importance, as it provides a way to improve PCH care. Additional care was provided to somewhat older children and to more severe cases in the family-centered condition. An explanation may be that the family-centered approach can be seen as an intervention in itself and leads to empowerment of parents in such a way that most parents feel that they can handle noted risks or problems themselves and that only more severe cases still need additional care. This would fit with the duty of PCH services to 'normalize' (i.e. to counter unnecessary focus on common issues that are no problems that need specialized care or labeling[10]) as recently advised by commission De Winter on the future core tasks of PCH.[11] This would also provide economical benefits, as it implies that only families that actually need care do receive it. An alternative explanation could be that in the care-as-usual condition PCH professionals provided earlier, preventive, care to families with less severe problems to prevent worsening of problems. However, if this would have been the case, we would also expect an effect of this on the psychosocial wellbeing of children, which we did not find as we explain in the following.

We did not find an effect of the family-centered approach on children's overall psychosocial wellbeing at 18 months as measured by the CBCL. We had expected to find lower scores in the family-centered condition because of the earlier identification of risk factors that might contribute to children's social-emotional development, as PCH professionals were able to discuss these factors with parents and might intervene if needed. We did find an effect of the family-centered approach on the externalizing problems when we only took into account children for whom assessments were rated as "*a problem"* (not described in this thesis). It is unclear why this difference was not found between groups for children for whom assessments were rated as "*not optimal*" or "*a problem*". This issue remains unclear because we were not able to clearly differentiate

between the use of the definitions "*not optimal*" or "*a problem*". Apparently, further research is needed on this topic, e.g. with the use of more extensive assessments of psychosocial problems.

In this study we assessed the effectiveness of a family-centered approach that focuses on early identification of factors contributing to social-emotional problems. It should be noted that family-centered care is broader than only the family-centered approach that we studied as it is often applied in settings where actual care is provided because of problems (see [4,12,13] for examples). In such settings the emphasis of family-centered care also entails providing information on the problem or provision of care, shared-decision making based on this information, and respecting choices of families in this regard. It would be interesting for future research to also study such aspects in the population of families that actually received additional care.

The family-centered approach from the perspective of PCH professionals

Professionals' adherence to the family-centered approach is an important prerequisite for being able to study the possible added value of the family-centered approach. In Chapter 4, we described that PCH professionals did adhere to the basic principles of the family-centered approach; they did use the communication skills and often asked more questions regarding the child's broad developmental context than before. Based on our focus groups, it thus seems justified to relate outcomes of our effectiveness study indeed to the family-centered approach.

Adherence to guidelines in primary pediatric care is not always self-evident as has been illustrated by studies regarding the identification of overweight [14], the management of asthma[15], and the use of developmental screening tools.[16] Several studies have mentioned different barriers to using guidelines[17,18] and providing family-centered care.[19-22] In our study, we also found barriers regarding working with the family-centered approach, but overall the adherence to the basic principles of the family-centered approach was quite good, especially regarding the empowering communication skills. This may be due to the fact that professionals were involved in the development of the family-centered approach. Moreover, the basic principles seem to fit their working methods and aligns with needs of some professionals. Finally, it may indicate a rather successful implementation trajectory at the service concerned. Further research may help to disentangle the effects of these potentially contributing factors.

Initially, we hypothesized that PCH professionals might have ethical considerations, like fear of stigma, which hampered registration of information within the format of the family-centered approach, but our hypothesis was not confirmed. PCH

professionals mentioned several, mostly practical, barriers for using the approach to its full extent, especially for filling in the checklist with questions within the electronic medical file. All professionals mentioned lack of time as a barrier, which fits with findings of other studies on barriers for implementation[21,22]. Furthermore, the introduction of electronic medical files that we found has in literature also been described as a general source of resistance for physicians[23] These practical barriers are easier to solve than ethical barriers which would require a very different approach. In the PCH organization where our study took place, some practical barriers have already been solved, fitting with the demands of PCH professionals. However, to further improve PCH practice, it may be profitable to assess whether practical barriers still exist and can be overcome, since professionals have to continue working with the family-centered approach. This in particular concerns the overlap between items of the family-centered approach and regular items from the medical file and the answer categories. Consensus is for example needed on what information is essential to report in what way (e.g. are multiple choice answers needed, and if so, what categories are useful, or do professionals and/or children benefit more from free text). Furthermore, during trainings it should be stressed that the checklist with questions is meant as a guide, and not as a rigid questionnaire. However, the importance of asking the questions, also the more delicate ones, also needs ongoing attention.

The family-centered approach from the perspective of parents

We found that the family-centered approach contributed to a better attunement to parents' needs and wishes than care as usual. These higher attunement scores are consistent with a core principle of family-centered care: a tailored approach[1], which thus seems to be met. Measuring the quality of family-centered care by looking at parents' preferences as well as their actual experiences seems valid since only by taking into account both these aspects, one gains insight into the extent to which care is tailored to parents' preferences and needs. Insight in the extent of attunement seems important since good attunement might contribute to disclosure of concerns, adherence to recommendations by PCH professionals, and parents that keep visiting PCH services. Results of another study on meeting needs of parents in well-child care, though not specifically focused on family-centered care, showed that meeting needs of parents is not always self-evident, since 94% of parents reported unmet needs for parenting guidance, education and screening.[25] Results of our study might indicate that a family-centered approach may help to reduce the percentage of unmet needs.

We found small to medium positive effects of the family-centered approach on meeting parents' needs and wishes at the child age of 3 months, but we also found such effects at 18 months (findings on the latter are not shown in this thesis). The latter shows that the family-centered approach contributes to a better attunement of care over a longer age-period. The attunement of care was high in both groups and the effect sizes of the differences ranged from small to medium in both measurements at 3 and 18 months. However, within a care system like PCH in the Netherlands, finding large differences is unlikely since the quality of care is overall high. Small differences thus might already be meaningful. Moreover, the differences that we found applied to all children, regardless of the child's social-emotional wellbeing and parents' socio-economic status (SES). Attunement of care to more vulnerable groups is of major importance.[26] If these families gain trust in care providers and experience these as helpful, care providers may gain credits which may prevent these families from dropping out of care later on as well.

The family-centered approach did not contribute to parents' willingness to disclose concerns at the child age of 3 months (nor for children for which the PCH professional assessed that the social-emotional development was not optimal), and slightly contributed at child age of 18 months (findings on the latter have not been presented in this thesis. At 18 months, we found an effect size *r* of .04 for the total group of children, and for children for whom the PCH professional assessed that the social-emotional development was "*not optimal"* or *"a problem"* an effect size of .06.) The willingness to disclose concerns was high in both groups (around 85%), which is in line with other studies reporting a high willingness.[27,28] For daily PCH practice it is very important that the majority of parents is willing to disclose their concerns. This may also support PCH professionals in asking the questions of the family-centered approach to all parents, without major risks of causing parental anxiety. However, most important is that parents are not only willing to, but indeed do disclose concerns when these arise, since literature suggests that this is not always the case.[28,29]

To gain more specific insight in parents' willingness to disclose concerns, we asked parents to rate this on the five domains of the family-centered approach at the child age of 18 months (results were not described in this thesis). We found that for all domains, parents in the family-centered condition were significantly more willing to disclose concerns compared to parents from the care-as-usual condition, though effect sizes were small. This higher willingness to disclose concerns may also have contributed to a better identification of (risks for) social-emotional problems as we found.

The validity of the family-centered approach

Our findings partially supported the convergent validity of the family-centered approach to assess infants' social-emotional wellbeing and their developmental context. Furthermore we found that agreement between PCH professionals' assessments and parent-reported questionnaires was reasonable to excellent regarding protective factors, but poorer regarding risk factors as covered by this approach (i.e. regarding parents' competence, role of the partner, social support, life events and the child's wellbeing). Our study was the first to assess the validity of the family-centered approach in this way. Our results fit with previous findings on the validity of this approach[30], and with findings on a similar approach, i.e. the Structured Problem Analysis of Raising Kids (SPARK), which also showed only partial support for its validity.[31] Furthermore, our results fit with those studies on the identification of psychosocial problems in children, which indicate that this is not optimal.[32,33]

Actually, two types of discrepancy occurred in our study. On the one hand, we found that PCH professionals registered risk factors whereas parents scored protective on questionnaires. This may be due to the keenness of PCH professionals on identifying risk factors (which however incorporates the risk that the family-centered approach does not fully reflect parents' experience, but might be used by professionals to be able to monitor the situation properly.

On the other hand, we also found situations in which PCH professionals registered protective factors whereas parents scored as at risk on the accompanying questionnaires. An explanation for this may be that professionals did not ask the right questions, or that parents did not always disclose concerns, both would influence the agreement between PCH professionals and parents regarding risk factors. Or it may also be that the PCH professionals observed relatively strong protective factors which counterbalance the risk factors, which would fit with the empowerment oriented family-centered approach. A methodological explanation for the discrepancies is that some questionnaires only covered only partial a domain of the family-centered approach so that the comparison between the family-centered approach and the questionnaires could not always be made very specifically.

The family-centered approach in relation to other approaches to improve children's psychosocial wellbeing

Our results specifically concerned the family-centered approach, but this approach is not the only method or instrument that has been implemented and/or studied in Dutch PCH to improve children's psychosocial wellbeing. For example De Wolff et al. describe the

pros and cons of several questionnaires that can be used in PCH to improve the identification of psychosocial problems in children.[34] The family-centered approach differs from these questionnaires in that it also takes is into account the broad developmental context and in that it is a communication based instrument; questions are asked in a natural conversation with parents. This aspect was appreciated by PCH professionals and they reported several advantages of using it as compared to using questionnaires, like better attuned care and more satisfied parents.

Besides the family-centered approach that we studied, the Structured Problem Analysis of Raising Kids (SPARK) is also a communication based instrument to assess needs of parents on several domains regarding children's broad developmental context in PCH. Some positive results for the SPARK regarding the validity and added value according to PCH professionals have been reported.[30,31] Compared to the SPARK, an advantage of the family-centered approach that we studied is that it can be used during all routine well-child visits, whereas the SPARK is used at 18 months and takes 20-40 minutes to complete (during a home visit). Furthermore, the family-centered approach is empowerment oriented and builds on the strengths of parents, which can help them to solve possible problems within the developmental context if there are any (and if possible).

The family-centered approach provides an overall view of possible risks and problems. In addition, questionnaires can be used to further specify any problems, but also the SPARK home visit at 18 months might be a valuable addition to the family-centered approach as it provides an extra in depth analyses of the child and its developmental context. Both the use of questionnaires and the use of the SPARK in addition to the family-centered approach, would require more time for PCH professionals.

Methodological considerations

In this section, we will discuss methodological issues regarding the study *sample, the quality of obtained information,* and the *strength of inferences on effect.*

Sample

Our study had a high response rate (70%), with participants that were overall representative of the Dutch speaking parents who visit PCH, the return rates of questionnaires were high (both at the start and the end of the study; respectively 86% and 80%), and we had a low loss to follow-up (at 18 months 97% of parents were still participating).

The high response rate (70% of the parents that were asked to participate) may possibly be due to the effort we put in informing and motivating PCH professionals to ask

parents for their consent to participate. However, mostly due to time constraints and also novelty at the start of our study, only 84% of all eligible parents were asked. Small differences were found between parents that were and were not asked to participate on several background characteristics. Since differences were small, we do not think that these differences will have influenced our outcomes to a large extent. Differences between parents that gave and gave no consent for participation were also small, indicating that the participants were overall representative of the Dutch speaking parents visiting PCH. The parents that comprised the 70% that agreed to participate formed a culturally homogeneous group. Both the high return rate of questionnaires and the low loss to follow-up may also be due to the effort we put in motivating parents and getting questionnaires back from parents.

For the qualitative study, as described in Chapter 4, the focus groups were small, as is inherent to use of focus groups. As the focus groups consisted of a heterogeneous group of PCH professionals, based on their varying opinions regarding the family-centered approach, we do not think that this has influenced our results.

Quality of the information obtained

We had to deal with missing values regarding the data provided by PCH professionals in the medical files of children. Missing values in general can cause problems for the robustness of findings. However, we minimized the impact of missing values by tracing back a lot of information and by imputing missing values consistent with the principles of the family-centered approach. Therefore we think that it is unlikely that missing values will have influenced results to a large extent.

In our study, we intended to make a distinction between children and families that received additional care and children and families that did not. For the first group, we asked PCH professionals to rate assessment as '*a problem'* and as *'not optimal'* for the latter. However, in practice PCH professionals did not fully adhere to the definitions of '*not optimal'* and *'a problem*', which led us to combine both groups into one group of children for whom risks or problems had been identified This might have added error since we could not link PCH ratings in full to whether or not extra care was provided.

To measure attunement of care on several family-centered care aspects, we developed a new measure that was partly derived from existing questionnaires that are used in Dutch PCH (CQI-questionnaires) and partly from existing questionnaires on family-centered care. In addition, we took into account advice of trainers of the family-centered approach, professionals working with the family-centered approach and experts on the family-centered approach. In the questionnaire, we not only took into account parents'

experiences, but also their preferences, since insight in whether parents' preferences are met, is necessary to truly measure family-centered care. MacKean indirectly stresses the importance of doing so in measuring family-centered care by stating that "Family-centered care is beginning to sound like something that is being defined by experts and then carried out to families, which is ironic given that the concept of family-centered care emerged from a strong family advocacy movement." We might also have asked parents during the design of the questionnaire what items they would find important to further increase validity, and this certainly deserves additional attention. The role of parents could, or should, still be further broadened in a truly family-centered setting, as we will describe under 'implications'.

The questionnaires that were used in the validation study, as described in chapter 5, represented the domains of the family-centered approach as good as possible, but not fully as some questionnaires only covered a part of such a domain. This means that comparisons between the questionnaires and the family-centered approach could not be made very specific in all cases. This may have contributed to a lower agreement between parent-reported questionnaires and risk assessments based on the family-centered approach. Unfortunately, comparing specific questionnaires with specific questions of the family-centered approach domains was not feasible because data often lacked on these specific questions.

Strength of inferences on effect: the quasi experimental design

We used a quasi-experimental design, embedded in daily practice, which contributes to the external validity of results. A randomized controlled trial would have had the advantage of a higher certainty that effects were due to the family-centered approach but this was not feasible. It was not possible to randomize either PCH professionals or parents to the family-centered condition, since professionals were bound to the region in which they work. If we would have taken the alternative approach, randomization within a region, contamination would have been very likely. We therefore think that with the quasi-experimental design we chose the best possible design for the study.

We tried to minimize potential contamination by preventing that professionals would work in both the family-centered and care-as-usual condition. Furthermore, we informed PCH professionals about the study separately per group. Finally, no innovations regarding the social-emotional development of children aged 0-18 months were implemented in either the family-centered or the care-as-usual condition, during the study period. With these precautionary measures, contamination seems to have been minimized, but we cannot fully rule out any contamination. It may be for example that

PCH professionals within the care-as-usual condition also looked up information on the family-centered approach on the internet. However, the effect is likely to be minimal because those professionals lacked the extensive training and regular supervision meetings.

A disadvantage of our study was that we had no baseline information on regions. Differences beforehand between regions seem to be rather unlikely, but we can never be one hundred percent sure whether the effects that we found can truly be related to the family-centered approach. This uncertainty is somewhat larger in quasi-experimental designs compared to randomized controlled trials, since possible unknown confounders may not be randomly distributed over the two conditions.[35] As we accounted for some background characteristics of parents in our analyses, these measured background variables do not seem to have influenced outcomes (to a large extent). However, there is always a chance that some other, to us unknown, regional differences might have played a role.

Implications

In this section, the implications of this study are discussed regarding PCH practice and policy and further research.

Implications regarding PCH practice and policy

The family-centered approach seems to contribute to more, better, and quicker identification of risks regarding the social-emotional development of infants. Given the importance of the early development of children for later life, our results support further implementation of the family-centered approach. Several measures can be taken to facilitate implementation of the family-centered approach in PCH practice.

A first measure may be the removal of the practical barriers experienced by PCH professionals. These concern in particular the format of the checklist with questions, maybe in combination with the time that is available. Regarding the checklist of questions, some changes were already made in the PCH organization where the study took place, however, for wider implementation further removal of barriers is advisable, so that an even more serviceable variant of the checklist with questions can be constructed. The Dutch National Center for Child Health (NCJ) currently manages the family-centered approach and supports several other instruments for the early identification of psychosocial problems. This is likely to facilitate a further exchange of experiences and coordination of improvements to be made.

Further measures to be taken into account concern aspects like the costs and practical organization that are involved with working with the family-centered approach. These aspects deserve attention in policy and practice.

Implications for further research

Our findings of more, earlier and better identification need replication in other settings, preferably combined with an assessment of costs and benefits too. In such confirmative studies, some aspects that we encountered should be taken into account as well, like collecting baseline data, preventing missing values, and taking into account the concordance between subsets of similar questions with corresponding questionnaires, instead of the domain as a whole for the validation of the family-centered approach (if feasible).

An option for future research would be to study multiple outcomes of the family-centered approach in the longer term. Long-term positive effects of early interventions have been described in relation to, among other things, social and emotional development[36], but also in terms of cost-benefits.[37] Furthermore, outcomes like parental stress or parental competence would be interesting to measure in light of the empowerment-oriented approach of the family-centered approach.

To assess what the actual differences between the family-centered and care-as-usual condition are, qualitative research, like the analyses of videotapes of well-child visits, could be used to shed more light on the interaction between parents and PCH professionals during well-child visits. The differences between conditions may be subtle and might never be captured by quantitative research. Instead, videotapes would provide a wealth of information. Furthermore, future studies should point out whether the results that we found in our study are also generalizable to other populations (next to Dutch speaking parents with a relatively high educational level). Although a qualitative study by an expertise center for health differences (Pharos) showed that the family-centered approach is suitable for ethnic minorities as long as parents have sufficient mastery of the Dutch language[39], future research could further differentiate between ethnic minorities or people with low health literacy.

Future research could also assess other aspects of family-centered care, more related to the provision of care instead of only on the preventive aspects that we studied. When risks or problems are identified and care is needed, it could be assessed to what extent this is done in a family-centered way, also during well-child visits themselves, in terms of for example well-informed parents and shared decision making.

Finally, future research might assess the similarities and differences between methods that are family-centered or incorporate family-centered aspects. This enables progress towards a more unified method and prevents that for similar methods separately the wheel has to be reinvented in research as well as in daily practice.

Future perspectives

Investment in a universal method to support children's social-emotional wellbeing is warranted because the investment in the early years will pay out in later life. The family-centered approach is a promising method to support children's social-emotional wellbeing during these early years and can be used during routine care, for all children. Within the changed care system for children who have or are at risk for emotional and behavioral problems in the Netherlands, it seems wise to invest in such a universal method that takes into account both the child as well as its developmental context. Although it is not possible to prevent all problems and not everything in life is "engineerable", with the family-centered approach, one looks for those aspects that seem possible to improve, to contribute to children's wellbeing.

Conclusion

The family-centered approach seems to contribute to more, better, and earlier identification of identification of risks regarding the social-emotional development of infants. Given the importance of the early development of children for later life, results support further implementation of the family-centered approach. The effects that we found were relatively small, but concern all children, making the population effects rather big. Moreover, this study showed that the family-centered approach contributes to the quality of PCH.

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S

Summary

This thesis focuses on the effectiveness of a family-centered approach (in Dutch "DMO-protocol", further referred to as the family-centered approach), designed for monitoring and enhancing children's social-emotional development in Preventive Child Healthcare (PCH). The effectiveness study took place at a Dutch PCH organization (Icare JGZ). In a quasi-experimental design, regions in which the family-centered approach had already been implemented (northern and southeastern part of Drenthe) were compared to regions in which care-as-usual had been maintained (northern part of Overijssel). The aim was to assess the added value of the family-centered approach from different perspectives. Therefore several research questions were answered in analyses that are reported in different chapters of this thesis.

In the introduction of this thesis (Chapter 1), background information was given about the Dutch PCH system, the social-emotional development of young children, social-emotional problems in young children and factors that may influence children's social-emotional development. Furthermore, the importance of professionals' beliefs regarding the family-centered approach is explained. In Chapter 2 the design of the study is described, which concerned a quasi-experimental study in which 2978 (parents of) children received family-centered care and 2680 (parents of) children who received care-as-usual.

Research questions and main findings per chapter

CHAPTER 3

Research question 1: *Does a family-centered approach contribute to identification (risks for) social-emotional problems in infants?*

To assess whether the family-centered approach contributes to the rate of identified (risks for) social-emotional problems, we compared conditions regarding the rates of newly identified (risks for) social-emotional problems. In the family-centered condition risks were identified more frequently, though differences were small (24.7% versus 22.0%, p=.02, Cohen's W=.03). Furthermore, for participants for whom PCH professionals provided extra care, we compared the severity of parent reported problems. We found that families for whom PCH professionals provided additional care in the family-centered condition, scored significantly higher on several questionnaires regarding the child and its developmental context, compared to the care-as-usual condition.

Conclusion: with the family-centered approach more risks for social-emotional problems are identified, though the effect was small. Furthermore, the family-centered approach seems to contribute to the identification of families who need additional care.

Research question 2: *Does a family-centered approach contribute to the early identification of (risks for) social-emotional problems in infants?*

To assess whether the family-centered approach contributes to the early identification of (risks for) social-emotional problems, we compared conditions regarding the chance of having risks identified over time (2-18 months) with a Kaplan-Meier analysis. Family-centered care contributed to earlier identification of risks and problems as compared to care-as-usual (Tarone-Ware test *P*-value= .008).

Conclusion: the family-centered approach contributes to an earlier identification of (risks for) social-emotional problems.

Research question 3: *Does a family-centered approach contribute to the psychosocial wellbeing of infant of 18 months of age?*

To assess whether the family-centered approach contributes to children's psychosocial wellbeing, we compared the scores on the Child Behavior Checklist (CBCL) 1.5-5, filled in by parents, between groups receiving either family-centered care or care-as-usual. CBCL scores (total problems scores or Externalizing or Internalizing problems scores) did not differ significantly between conditions for the complete group of children.

Conclusion: the family-centered approach seems not to contribute to the psychosocial wellbeing of infants of 18 months old, further research is needed on its long-term effects.

CHAPTER 4

Research question 3: *What beliefs do PCH professionals have regarding the family-centered approach?*

In chapter 4 we studied professionals' beliefs regarding the family-centered approach since the success of the family-centered approach highly depends on these beliefs. We first identified barriers to guideline adherence in the literature. Subsequently, these were discussed within focus groups, one with 6 nurses and one with 5 medical doctors. We found that all PCH professionals appreciated the family-centered approach for enabling new, empowering, communication skills and all believed this to contribute to good care. However, the attitude towards the checklist with questions was mixed; nurses felt more optimistic than doctors in that it provided them relevant information, but all PCH professionals presumed that the *checklist with questions* could lead to feelings of an interrogation and loss of trust if the professional's *communication skills* were insufficient. Furthermore, all professionals reported practical barriers, like a lack of integration within

the medical file. As a consequence, most medical doctors filled in the checklist sub-optimal.

Conclusion: PCH professionals appreciate the family-centered approach for using empowerment oriented communication skills. However, they also encounter several, overall practical, barriers for working with the family-centered approach.

CHAPTER 5

Research question 5: *Is a family-centered approach associated with better attunement of care to parents' needs and wishes, compared to care as usual?*

From the perspective of parents, we studied whether the family-centered approach contributes to the attunement of care to parents' preferences and their willingness to disclose concerns. To assess this, we used data from 4870 questionnaires filled in by parents of infants around 3 months of age regarding the importance of PCH professionals' *attitude*, parents' *empowerment*, and monitoring the *broad developmental context* and their experiences regarding these aspects. Furthermore, parents rated their willingness to disclose concerns. Parents rated the PCH professionals' *attitude* as most important and monitoring the *broad developmental context* as least important. Scores were high in both conditions. Compared to care-as-usual, parents receiving family-centered care reported better attunement of care to their preferences for all three measured aspects (p<.001, effect sizes .10–.27). Effects applied regardless of the child's social-emotional status and parents' socioeconomic status.

Conclusion: The family-centered approach leads to a better attunement of care to parents' preferences regarding PCH professionals' *attitude*, parents' *empowerment*, and monitoring the *broad developmental context*.

Research question 6: *Is a family-centered approach associated with a higher willingness to disclose concerns of parents, compared to care as usual?*

In the same questionnaire as described above, parents were asked to rate their willingness to disclose concerns. Parents' willingness to disclose concerns was similar in both conditions; in the family-centered condition 86.7% and in the control condition 84.9% of the parents scored high on the willingness to disclose concerns, odds ratio: 6.06, p-value .08.

Conclusion: At the child age of 3 months, parents' willingness to disclosure tends to be higher, but not significantly higher, in the family-centered condition.

CHAPTER 6

Research question 7: *Is a family-centered approach a valid method for identifying risk and protective factors regarding the child and its developmental context?*

We assessed the validity of the family-centered approach based on data from 94 'cases', i.e. families for whom, based on the overall assessment of all domains, an intervention was needed. These families filled in several questionnaires regarding the domains of the family-centered approach. For each case, two controls, matched by child-age and gender, also filled in the same questionnaires (N=184). We compared PCH professionals' assessments, overall and per domain, with the outcomes on the questionnaires.

We found overall reasonable Pearson's correlation coefficients between PCH professionals' assessments and gold standards (range from 0.17 to 0.51.) Children who were assessed as at risk by PCH professionals using the family-centered approach had overall higher scores on questionnaires regarding the broad developmental context compared to children assessed as not at risk for social-emotional problems. Furthermore, we found reasonable to excellent agreement regarding the absence of risk factors (negative agreement rate: 0.38 - 0.99), but lower agreement regarding the presence of risk factors (positive agreement rate: 0.00 - 0.68).

Conclusion: Findings partially support the convergent validity of a family-centered approach in well-child care to assess infants' social-emotional wellbeing and their developmental context. The agreement between PCH professionals' assessments and parent-reported questionnaires was reasonable to excellent regarding protective factors, but lower regarding risk factors. Several reasons might account for the disagreement between parents and PCH professionals..

Discussion and implications

In Chapter 7 the findings are summarized and discussed, including methodological considerations and implications for practice and future research.

Our findings mostly support the use of the family-centered approach, to further enhance the quality of PCH services for young children and their families. The approach seems to contribute to the early identification of more (risks for) social-emotional problems and to the identification of families that need additional care. Furthermore, PCH professionals and parents were positive about (some aspects) of the family-centered approach. PCH professionals positively valued the approach for using new, empowering communication skills. Parents reported that care was better attuned to their needs and wishes and at the child age of 18 months the approach seemed to contribute to parents'

willingness to disclose concerns. Moreover, its validity was partially supported. The effects that we found were overall small, but one might not expect to find large differences in a health care system in which quality of care is generally high.

On the other hand, we found also room for improvement. This concerns for example the practical barriers that were mentioned by PCH professionals, mainly regarding the format of questions. It is important to assess to what extent barriers can further be overcome, since a prerequisite for working well with the approach is that it is serviceable. Within the PCH organization where we performed our study, some changes were made regarding the format of questions. It would be good to evaluate changes and to assess whether barriers remain that could be removed. Furthermore, it seems important to stress during trainings that the checklist with questions is not meant as a rigid questionnaire. However, it is also important to stress and explain the importance of asking the questions, also the more delicate ones as this may reveal important information.

The most important implications for further research that were mentioned in Chapter 7 were: First, to study multiple and long term outcomes, also in other settings, taking into account some aspects that we encountered as well, like collecting baseline data. Second, to gain more insight in what actually happens during well-child visits, and where the real differences lay between the family-centered and care-as-usual condition, to be able to extra stress and train possible specific effective elements of the family-centered approach. Third, further insight should be gained in the agreement between professionals and parents on assessments, to be able to improve agreement between both parties. Fourth, future research should assess the added value of the family-centered approach in various subgroups, e.g. immigrants or people with low health literacy. Overall, this study showed that the family-centered approach contributes to the quality of PCH. These results encourage the adoption and implementation of the family-centered approach in PCH.

S

Samenvatting

Dit proefschrift richt zich op de effectiviteit van een gezinsgerichte benadering (het DMO-gespreksprotocol, gebruikt binnen het programma Samen Starten) dat wordt gebruikt op consultatiebureaus ter ondersteuning van de social-emotionele ontwikkeling van jonge kinderen. Het onderzoek vond plaats bij Icare JGZ. In een quasi-experimentele opzet werden regio's waar het DMO-protocol was geïmplementeerd (noord en zuidoost Drenthe; verder te noemen de DMO-regio) vergeleken met een regio waar het DMO-protocol nog niet was geïmplementeerd (IJssel-Zwartewaterland; verder te noemen de controleregio). Het doel was om de mogelijke meerwaarde van het DMO-protocol vanuit verschillende gezichtspunten te onderzoeken. Hiertoe hebben we verschillende onderzoeksvragen beantwoord die worden beschreven in de voorgaande hoofdstukken van dit proefschrift.

In de introductie van dit proefschrift (Hoofdstuk 1) wordt achtergrondinformatie gegeven over de setting van de studie; de consultatiebureaus als onderdeel van de jeugdgezondheidszorg (JGZ). Daarnaast wordt informatie gegeven over de sociaal-emotionele ontwikkeling van kinderen, problematiek die zich voor kan doen en welke factoren hierbij een rol kunnen spelen. Ook wordt informatie gegeven over het belang van de opvattingen van professionals met betrekking tot (werken met) het DMO-protocol. In Hoofdstuk 2 wordt de opzet van de studie beschreven. Het betrof een quasi-experimentele studie waarin 2978 (ouders van) kinderen deelnamen in de DMO-regio en 2680 (ouders van) kinderen in de controleregio.

Onderzoeksvragen en de belangrijkste conclusies per hoofdstuk

HOOFDSTUK 3

Onderzoeksvraag 1: *Draagt het DMO-protocol bij aan de signalering van (risicofactoren voor) sociaal-emotionele problematiek?*

Om te onderzoeken of er in de DMO-regio meer (risico's voor) social-emotionele problematiek werd gesignaleerd, hebben we de DMO-regio met de controleregio vergeleken voor wat betreft de percentages van nieuwe signaleringen. In de DMO-regio bleken significant meer risico's of problemen te zijn gesignaleerd dan in de controleregio, hoewel het verschil klein was (24.7% versus 22.0%, p=.02, Cohen's W=.03).

Daarnaast hebben we, voor de gezinnen waarvoor professionals een extra actie/ extra zorg hadden ingezet met betrekking tot de sociaal-emotionele ontwikkeling van het kind (zogenaamde 'cases'), de zwaarte van de problematiek in kaart gebracht met behulp van vragenlijsten betreffende het kind en zijn of haar context. We vonden dat de cases in

de interventieregio significant hoger scoorden op een aantal vragenlijsten dan de cases in de controleregio.

Conclusie: met behulp van het DMO-protocol werden meer (risico's voor) sociaal-emotionele problemen gesignaleerd, hoewel het effect klein was. Daarnaast lijkt het DMO-protocol bij te dragen aan een betere identificatie van gezinnen die extra zorg nodig hebben.

Onderzoeksvraag 2: *Draagt het DMO-protocol bij aan eerdere signalering van (risicofactoren voor) sociaal-emotionele problematiek?*

Om te onderzoeken of het DMO-protocol bijdraagt aan een eerdere signalering van (risico's voor) problemen, hebben we beide regio's vergeleken voor wat betreft de kans die kinderen hebben om gesignaleerd te worden in de loop van de tijd (2 tot 18 maanden). In de DMO-regio werden risico's eerder gesignaleerd dan in de controleregio (Tarone-Ware test *P*-waarde= .008).

Conclusie: het DMO-protocol draagt bij aan een eerdere signalering van (risico's voor) sociaal-emotionele problematiek.

Onderzoeksvraag 3: *Draagt het DMO-protocol bij aan een beter psychosociaal welbevinden van kinderen op de leeftijd van 18 maanden?*

Om te onderzoeken of het DMO-protocol bijdraagt aan het psychosociaal welbevinden van kinderen van 18 maanden oud, hebben we de scores op de Child Behaviour Checklist 1.5-5 (CBCL) vergeleken die ouders in beide regio's hadden ingevuld wanneer hun kind ongeveer 18 maanden oud was. De totaalscores en subschaalscores verschilden niet significant van elkaar tussen de beide regio's voor de totale groep kinderen.

Conclusie: het DMO-protocol lijkt niet bij te dragen aan het psychosociaal welbevinden van kinderen van 18 maanden oud. Eventuele lange termijn effecten behoeven verder onderzoek.

HOOFDSTUK 4

Onderzoeksvraag 4: *Wat zijn de ideeën van professionals over (het werken met) het DMO-protocol?*

In hoofdstuk 4 hebben we de opvattingen en ideeën van professionals (artsen en verpleegkundigen) met betrekking tot het DMO-protocol in kaart gebracht, aangezien het succes van het DMO-protocol afhankelijk is van hoe professionals hier over denken en hier mee werken. Om een goed beeld te krijgen van de opvattingen, hebben we eerst op basis

van de literatuur verschillende belemmeringen met betrekking tot het gebruik van richtlijnen en methodes in het algemeen in kaart gebracht. Vervolgens werden deze aspecten besproken tijdens focusgroepen (een focusgroep met 6 verpleegkundigen en een focusgroep met 5 artsen). Uit deze focusgroepen bleek dat alle professionals het DMO-protocol waardeerden vanwege het empowerment- en oplossingsgerichte werken. Alle professionals hadden het idee dat deze aspecten leiden tot betere zorg. Over de checklist met vragen was men kritischer. Verpleegkundigen waren positiever dan artsen en gaven aan dat de vragen relevante informatie kan opleveren die anders mogelijk niet boven tafel zou komen, maar alle professionals gaven ook aan dat zonder de juiste gespreksvaardigheden de checklist met vragen zou kunnen leiden tot een gevoel van ondervraging en een afname van vertrouwen bij ouders. Daarnaast gaf men praktische belemmeringen aan voor het gebruik van de checklist, zoals een gebrek aan integratie binnen het digitale dossier en een geringe meerwaarde van de antwoordcategorieën. Hierdoor vulden de meeste artsen de checklist over het algemeen niet in.

Conclusie: professionals zijn enthousiast over de principes van het DMO-protocol (empowerment- en oplossingsgericht werken) en passen dit toe in de praktijk, maar er zijn verschillende, overwegend praktische, belemmeringen om goed te kunnen werken met het DMO-protocol.

HOOFDSTUK 5

Onderzoeksvraag 5: *Vinden ouders in de DMO-regio dat de zorg beter aansluit op hun wensen dan ouders in de controleregio?*

Vanuit het perspectief van ouders werd onderzocht of de zorg binnen de JGZ met het DMO-protocol bijdraagt aan een goede aansluiting van zorg bij wensen van ouders en de vrijheid die zij voelen om allerlei soorten zorgen te bespreken. Om dit te onderzoeken werden 4970 vragenlijsten van ouders gebruikt (ingevuld toen hun kind ongeveer drie maanden oud was) waarin ouders werd gevraagd om aan te geven hoe belangrijk zij verschillende zorgaspecten vonden (de *attitude* van de professional, een *empowerment* gerichte benadering en het monitoren van de *brede opvoedingscontext*) en tevens werd naar hun ervaring gevraagd voor elk van deze aspecten. Daarnaast gaven ouders aan in hoeverre zij zich vrij voelden om op het consultatiebureau verschillende soorten zorgen te bespreken.

Ouders gaven aan dat ze de *attitude* van de professional het belangrijkst en het monitoren van de *brede opvoedingscontext* het minst belangrijk vinden in de zorg van het consultatiebureau. Scores waren hoog in beide regio's. In de regio waar met het DMO-protocol werd gewerkt, scoorden ouders significant hoger op de aansluiting van zorg voor

alle drie de gemeten aspecten (*p*<.001, effect groottes .10–.27). De effecten golden ongeacht de socio-economische status van het gezin of de beoordeling van de sociaal-emotionele ontwikkeling van het kind.

Conclusie: Het DMO-protocol draagt bij aan een betere aansluiting van zorg bij wensen van ouders op verschillende zorgaspecten (de *attitude* van de professional, een *empowerment* gerichte benadering en het monitoren van de *brede opvoedingscontext*).

Onderzoeksvraag 6: *Voelen ouders in de DMO-regio zich vrijer om allerlei soorten zorgen te bespreken op het consultatiebureau dan ouders in de controleregio?*

In dezelfde vragenlijst als hierboven beschreven, werd aan ouders gevraagd in hoeverre zij zich vrij voelden allerlei soorten zorgen te bespreken op het consultatiebureau. De vrijheid die ouders voelden om zorgen te bespreken was in beide regio's vergelijkbaar; in de DMO-regio scoorde 86.7% hoog op de vraag in hoeverre ouders zich vrij voelden zorgen te bespreken en in de controleregio scoorde 84.9% van de ouders hoog op dezelfde vraag. Er was geen sprake van een significant verschil; OR: 6.06, *p*-waarde .08.

Conclusie: Op de kindleeftijd van 3 maanden lijken ouders in de DMO-regio zich enigszins vrijer te voelen om zorgen te bespreken om het consultatiebureau, maar dit verschil is niet significant.

HOOFDSTUK 6

Onderzoeksvraag 7: *Is het DMO-protocol geschikt om risico- en beschermende factoren met betrekking tot het kind en de brede opvoedingscontext valide in kaart te brengen*?

In het onderzoek werden in de DMO-regio 94 aangemelde 'cases' (i.e. gezinnen waarbij de professional een extra actie had ingezet ten behoeve van de sociaal-emotionele ontwikkeling van het kind) gezien voor aanvullend onderzoek. Deze gezinnen hebben verschillende vragenlijsten ingevuld die correspondeerden met de vijf domeinen van het DMO-protocol. Voor elk van deze 'cases' werden ook twee controlegezinnen gevraagd om dezelfde vragenlijsten in te vullen (184 gezinnen met bruikbare data). Gezinnen werden gematcht voor leeftijd en geslacht van het kind.

De correlaties (Pearson's r) tussen de inschatting van de professional op basis van het DMO-protocol en de scores van ouders op vragenlijsten waren over het algemeen redelijk (0.17 – 0.51). De scores op de vragenlijsten waren over het algemeen significant hoger voor cases dan voor controles. Bij het vergelijken van de inschatting van de professional per domein en de score op de bijbehorende vragenlijst(en), vonden we een goede overeenstemming met betrekking tot beschermende factoren, met name voor

controlegezinnen (overeenstemming varierend van 0.38 tot 0.99), maar een lagere overeenstemming met betrekking tot risicofactoren, met name voor controlegezinnen (overeenstemming varierend van 0.00 tot 0.68). Wanneer het domein 'Partner' als risico werd gescoord, droeg dit van alle domeinen het meest bij aan de conclusie van professionals om een situatie als risico te benoemen, odds ratio 87.0, 95%-betrouwbaarheidsinterval: 20.2-375.0.

Conclusie: Met het DMO-protocol kunnen beschermende- en risicofactoren van het kind en diens omgeving redelijk valide in kaart worden gebracht. De overeenstemming tussen professionals en ouders is met name hoog voor beschermende factoren en lager voor risicofactoren.

Discussie en implicaties

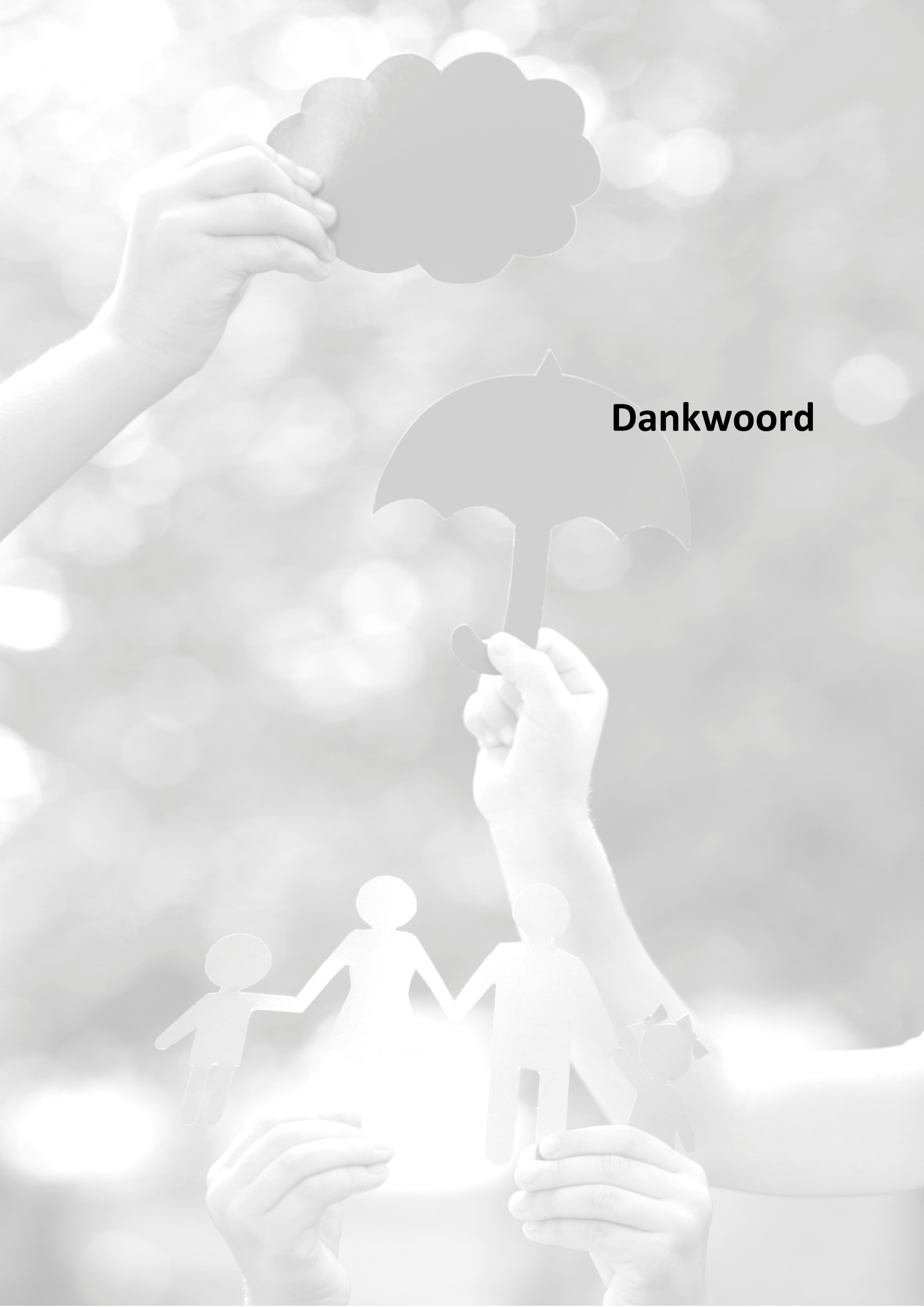
Binnen de studie werden verschillende positieve resultaten gevonden voor het werken met het DMO-protocol, die kunnen bijdragen aan de kwaliteit van de JGZ voor kinderen en hun families. Het DMO-protocol lijkt bij te dragen aan de vroege signalering van (risico's voor) social-emotionele problemen en gezinnen waar extra zorg nodig is. Daarnaast zijn professionals enthousiast over het empowerment- en oplossingsgerichte werken van het DMO-protocol en geven ouders aan dat de zorg beter aansluit bij hun wensen, en op de kindleeftijd van 18 maanden wordt ook een positief effect gevonden van op de vrijheid die ouders voelen om zorgen te bespreken. Verder vonden we gedeeltelijk bewijs voor de validiteit van het DMO-protocol. De effecten die werden gevonden zijn overwegend klein, maar binnen een setting waar de algehele kwaliteit al hoog is en gelden voor een grote groep kinderen, kunnen deze toch betekenisvol zijn. Naast de positieve resultaten echter, vonden we ook ruimte voor verbetering voor verschillende aspecten.

Wat betreft aanbevelingen voor de praktijk, zal ten eerste aandacht moeten worden besteed aan de praktische barrières die de artsen en verpleegkundigen ervaren in het werken met het DMO-protocol, aangezien een optimaal werkbare vorm noodzakelijk is om goed te kunnen werken met het DMO-protocol. Binnen Icare JGZ zijn een aantal aanpassingen al aangebracht, maar het zou goed zijn deze te evalueren en na te gaan in hoeverre er nog mogelijke barrières bestaan die kunnen worden opgelost. Daarnaast is het belangrijk om tijdens traingen aan te geven dat de checklist met vragen niet bedoeld is als vragenlijst en dat het natuurlijke gesprek met ouders altijd leidend is. Daarnaast is het echter wel belangrijk om het belang van de vragen aan te geven, ook de meer delicate vragen, aangezien dit relevante informatie kan opleveren.

In hoofdstuk 7 worden verschillende aanbevelingen voor verder onderzoek genoemd. De belangrijkste aanbevelingen voor vervolgonderzoek zijn: Ten eerste het

onderzoeken van meerdere uitkomsten (zoals ervaren stress en competentie van ouders) en lange termijn effecten, ook in andere settings. In vervolgonderzoek zal rekening moeten worden gehouden met een aantal tekortkomingen van ons onderzoek zoals het verzamelen van baseline data. Ten tweede is er onderzoek nodig om meer inzicht te krijgen in wat er zich precies afspeelt tijdens de verschillende contactmomenten. Hiermee wordt duidelijk waar de verschillen tussen werkwijzen precies liggen en kan aan deze elementen extra aandacht worden besteed tijdens trainingen. Ten derde zou het goed zijn om verder inzicht te krijgen in de overeenstemming tussen professionals en ouders met betrekking tot risicofactoren, om op deze manier de overeenstemming tussen beide te kunnen verbeteren. Ten vierde is het goed om in vervolgonderzoek de meerwaarde van het DMO-protocol te onderzoeken bij verschillende groepen.

Concluderend heeft deze studie laten zien dat het DMO-protocol bijdraagt aan de kwaliteit van zorg binnen de Jeugdgezondheidszorg. De resultaten zijn bemoedigend voor verdere implentatie van het DMO-protocol binnen de JGZ.



Dankwoord

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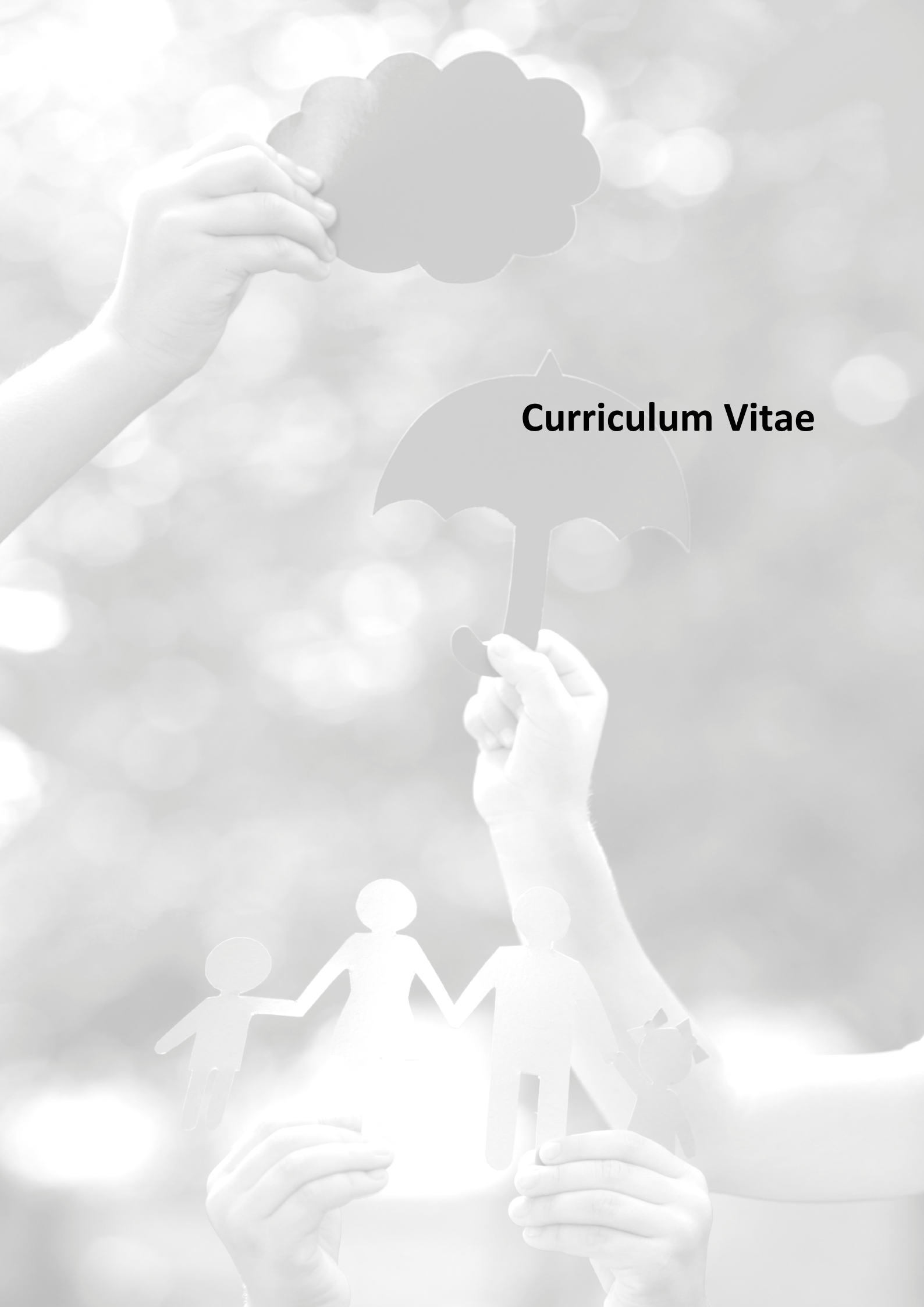

Curriculum Vitae

Margriet Hielkema werd geboren op 23 januari 1983 in Raard. In 2001 behaalde zij haar VWO-diploma aan het Dockinga College in Dokkum. Zij begon in 2002 met de studie Psychologie aan de Rijksuniversiteit Groningen en rondde deze in 2006 af met als afstudeerrichtingen de klinische en de ontwikkelingspsychologie. Haar Masterthese schreef zij over de identiteitsontwikkeling van Marokkaanse adolescenten in Nederland. Na haar studie werkte werkte ze als psycholoog bij een schoolbegeleidingsdienst (Cedin) en in de kinder- en jeugdpsychiatrie (Accare). In 2009 startte zij haar promotietraject bij de afdeling Gezondheidswetenschappen van het Universitair Medisch Centrum Groningen. Sinds september 2014 werkt zij als docent aan de Hanzehogeschool Groningen bij de Academie voor Sociale Studies. Hier verzorgt zij voornamelijk onderwijs op het gebied van onderzoek.

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