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The primary prevention of child maltreatment in early life: Study on the effectiveness of VoorZorg

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1



General Introduction

General introduction

There are still families in developed countries that live under circumstances that negatively affect their own health and their children's health and development. These families are characterized by having problems on multiple domains in life (relationship, parenting, health e.g.) combined with a low socioeconomic status (SES). Low SES is strongly linked with negative health behaviour and poor (psycho-social) health[1]. This population of families requires special attention from health care professionals. In general, this population is difficult to reach by caregivers or already have an overload of help without any result in their functioning and/or health [2]. Especially children growing up in these families are affected and cannot fully develop under these circumstances: 1) their foetal development is more likely to be impaired, 2) they have increased risk of being victims of child maltreatment and domestic violence, and 3) their health during adulthood and future perspective is affected [3–6]. An additional risk factor is that these families mostly consist of a single parent that takes care of the child alone [7]. Due to that, the parent has limited resources. Additionally, these families have few or even no protective factors like a supportive social network. For their children, this means growing up with risk factors and no protective factors, which is strongly associated with social disadvantage, and an increased risk of health and developmental problems[8]. On the other hand, even when growing up in low SES family, protective factors can contribute to the resilience of a child and to a more positive future.

Impaired development

Low socio-economic status is known to be a great risk factor for negative health behaviour of the parents which can influence the foetal development of the child. Young parents with low SES are more likely to use drugs and/or alcohol, engage in violent behaviour, and to have a poor diet[8,9]. Furthermore, they are more likely to have psychosocial problems like stress, anger and depression[10]. Figure 1 shows that during pregnancy and the first years of life the child is susceptible to environmental risk factors. Parental risk behaviour like substance abuse during pregnancy can affect the development of the child. When the foetus is exposed to toxic substances like nicotine during the first two months of pregnancy, the foetus is at risk of major physical abnormalities and the risk of spontaneous abortion is increased [11,12]. In the subsequent period and the first years after birth, the child is more likely to have functional defects when exposed to environmental risk factors. For example, stress during pregnancy influences the cortisol level of the child and thereby affects his or her brain development. Those children more likely develop behavioural problems[13]. Several studies underpin this by showing that children growing up in low SES families are more likely to have an impaired neurodevelopment and lower academic achievement compared to children growing up in high SES families[5]. Stirling et al. describe that children who grow up with adversity have a brain adapted to survive in the negative (harmful) environment they live in. They are not able to function normally in society where there are no direct dangers. Also those children have an exaggerated (aggressive) response to normal daily stress, because they associate it with fear [14]. A child's behavioural problems can increase the risk of child maltreatment. Risk factors should therefore be addressed early in pregnancy to prevent health and developmental problems of the child.

Child maltreatment

Child maltreatment is a major risk factor for compromised development. Families with low SES have a five times higher risk to maltreat their children[15] and these children are more likely to witness intimate partner violence, (IPV) which is also a form of child maltreatment. Brown et al studied demographic and familial risk factors associated with child maltreatment[16]. Demographic risk factors for child abuse and/or neglect were low maternal education and welfare dependency. Family risk factors were maternal psychosocial problems and low father involvement. Furthermore, parental substance abuse and history of violence also increase the risk of child maltreatment[16]. Young age of the mother is also a risk factor for IPV: pregnant adolescents are approximately six times more likely to be victims of violence by a dating partner compared with their non-pregnant peers [9].

Child maltreatment is known to have consequences on the mental and physical health and development of the child lasting beyond childhood and even a lifetime. Therefore, great benefits result from preventing child maltreatment. Risk factors of child abuse should be addressed early in pregnancy to prevent child maltreatment and thereby prevent health and developmental problems of the child due to child maltreatment.

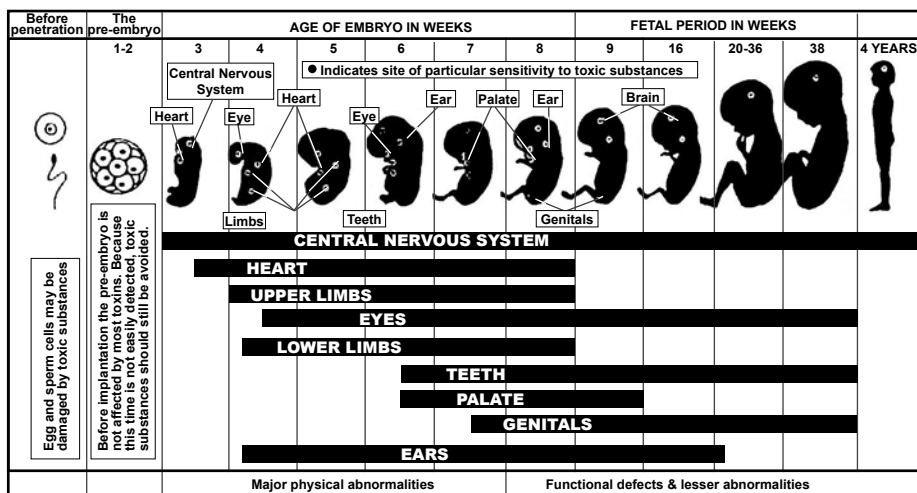


Figure 1. The development of the child is sensitive to toxic substances during pregnancy. Reprinted with permission of Elsevier [17]

The long-term consequences of low SES in children

Growing up in a low SES family means that the child is disadvantaged and has fewer opportunities in life and an increased risk of an impaired (mental) health. Felitti et. al have studied the effect of growing up in a high risk family. Children who grow up in low SES families are more likely to go through adverse childhood experiences (ACE). The researchers showed that the more ACEs a child has, the higher the risk of health problems and risk behavior in adulthood. As figure 2 shows, a child that experiences, for example, child maltreatment, has an impaired health throughout the life span[14]. These children, as discussed before, are more likely to be socially, cognitively or emo-

tionally impaired, leaving them with fewer opportunities in life. They usually do not have a job or work in poor conditions, and are more likely to engage in criminal activities [14]. Later in life, these children are more likely to have chronic diseases and psychosocial problems, have relatively more disease years and die earlier than adults without ACEs. These health risks are also transmitted to the next generation, creating a cycle of health problems[8]. There is a strong need for an effective intervention to prevent ACEs to contribute to better health for these disadvantaged children.

Societal consequences of low SES

The problems of growing up in a disadvantaged family have great societal consequences [18,19]. As was clarified in the former paragraph, children of disadvantaged families are more likely to have behavioural problems and lower cognitive functioning. This is why they have a greater need for special education, which costs relatively more than regular education[20]. Their poor (mental) health and engagement in risky health behaviour leads to relatively more health care costs[20]. In addition, the costs of treating the consequences of child maltreatment and intimate partner violence are enormous. These children are also more likely to involve themselves in criminal activities and anti-social behaviour, which lead not only to criminal justice costs but also to costs related to material and/or immaterial damage to their fellow citizens[19,20]. Furthermore, people with a low educational level make more use of the welfare system, invest less in the economy and participate less in society. With increasing poverty, these problems and related costs will also grow. These high societal costs are preventable by early intervention among high risk families.

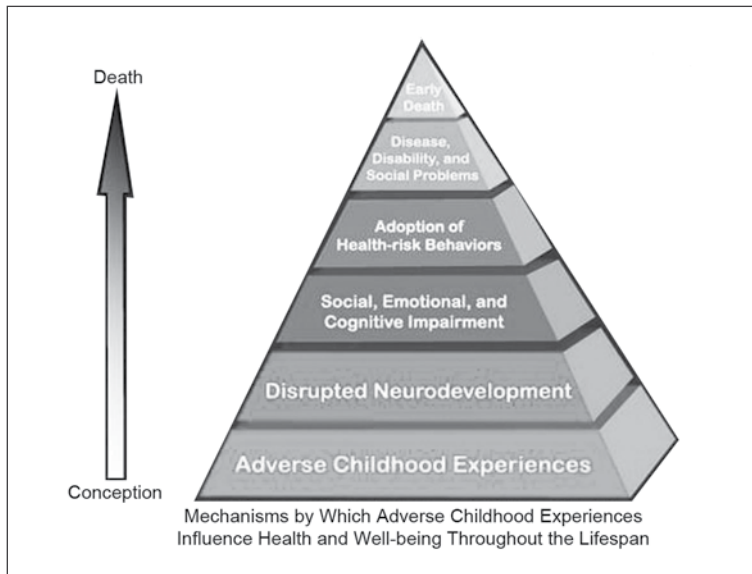


Figure 2. ACE pyramid illustrating the Conceptual Framework for the Adverse Childhood Experience (ACE) Study [21]

Protective factors

Studies have shown that protective factors in the environment can help the resilience of the child growing up in a high risk family [22]. Resilience is defined as a person's ability to cope with adversity. Even though the child is expected to have adverse health outcomes because of growing up in a disadvantaged family, protective factors can lead to a good physical and/or mental health and/or good academic achievements[22]. Heller et al. described many predictors of resilience, including personal characteristics, presence of spirituality, strong social network, (even if the parents are dysfunctional) and external support (e.g. a coach that supports the family)[22]. This information is valuable, because there is a way to cope with socio-economic disadvantages. And predictors known to contribute to resilience can be used in an intervention program for disadvantaged families.

Early intervention

"Interventions may be directed at one level, but may ultimately affect many (cascade effect)..." John Stirling

In the previous paragraphs we clarified the rationale of early interventions among high risk families. To find out which effective interventions are available to prevent child maltreatment we conducted a systematic review (chapter 6). In this review we found three effective interventions that are available for high risk families to prevent child maltreatment and impairment: *Triple P, Early Start and the Nurse-Family Partnership*. We will describe in short these programs below.

Triple P

Triple P (Positive Parenting Program) is a population-based intervention program developed by professor Sanders to support parents in parenting their children (0 to 12 years of age) by improving their knowledge, skills, and confidence[23]. This program aims at addressing severe behavioural, emotional, and developmental problems in children[23]. Triple P is a multilevel program (level 1 to 5) to meet the needs of different populations (from low to high risk). This program shows an effect on child maltreatment, child out-of-home placements and injuries due to child maltreatment[24]. After the intervention period there was an increase in child maltreatment in both conditions. However, the increase in the intervention group was lower compared to the control group and also lower than in the overall general population.

Early Start

The Early Start program is a home visiting program that starts after childbirth and aims at improving child health, reducing risk of child abuse, and improving parenting skills, with the aim of encouraging family and socioeconomic wellbeing[25]. The families will be provided with sources of assistance, support, empowerment, and advice to address issues relating to health, parenting, and related matters during the preschool years. This program is based on the social-learning model. The effect study on the Early Start intervention showed that families receiving the program had significantly fewer hospital visits due to childhood injuries and severe child maltreatment. However, no effect was found on the prevalence of Child Protecting Services reports [26].

The Nurse-Family Partnership

The Nurse-Family Partnership (NFP) is the most evaluated home visiting program and to the best of our knowledge it is the only effective intervention for the primary prevention of child maltreatment [27]. NFP is a nurse home visiting program for young high risk women with no previous live births. They are visited by trained nurses during pregnancy until the child's second birthday[28,29]. Figure 3 shows how the NFP affects three domains of risk and protective factors and how these eventually influence child functioning until adulthood. In this program the nurse acts as an external coach to contribute to the resilience of the mother and child. The ultimate goals of the NFP are:

- a. To improve outcomes of pregnancy by empowering women to improve their prenatal health
- b. To improve children's subsequent health and development by empowering parents to provide competent care to their children
- c. To improve women's economic self-sufficiency by empowering them to develop a vision for their future and make appropriate choices about completing their educations, finding work, and planning subsequent pregnancies.

Strengthening the mother's relationships with primary support people (including her partner), and linking the mother with other needed health and human services can accomplish the goals listed above.

Evaluation of the NFP

The NFP program is studied in several Randomized Controlled Trials in geographically diverse populations in the US (Elmira, New York, in 1977; in Memphis, Tennessee, in 1988; and in Denver, Colorado, in 1994). The effectiveness study showed many positive results.

Results found in at least two trials are: Improved predelivery health (mothers smoked fewer cigarettes during pregnancy), fewer subsequent pregnancies, increased maternal employment and improved school readiness, and fewer childhood injuries. Follow-up research showed, among others, that child maltreatment was prevented and that the mothers provided a better home environment. Even at the age of 15 of the child, positive effects are measured. The children reported significantly less serious antisocial behavior and substance use. Furthermore, nurse visited mothers received fewer months of welfare and had fewer arrests[30]. Even the third generation seemed to benefit from the NFP program[31]. Another important finding was that the effect of the program on child maltreatment was diminished if IPV was present. This result underpins the fact that IPV should be addressed for high risk pregnant women.

According to Olds et al. important key elements of the NFP are:

- The NFP is based on three theories: Bandura's Self Efficacy Theory, Bowlby's Attachment theory, Bronfenbrenner's ecological model (chapter 2).
- The client is visited one-to-one, one nurse home visitor to one first-time mother or family and visited in her home.
- The nurse home visitors and nurse supervisors are registered professional nurses, using professional knowledge, judgment, and skill, apply the NFP visit guidelines, individualizing them to the strengths and challenges of each family and apportioning time across defined program domains.
- The program is performed by well-trained and experienced nurses with a maximum caseload to qualitatively fulfill all domains in the home visits.

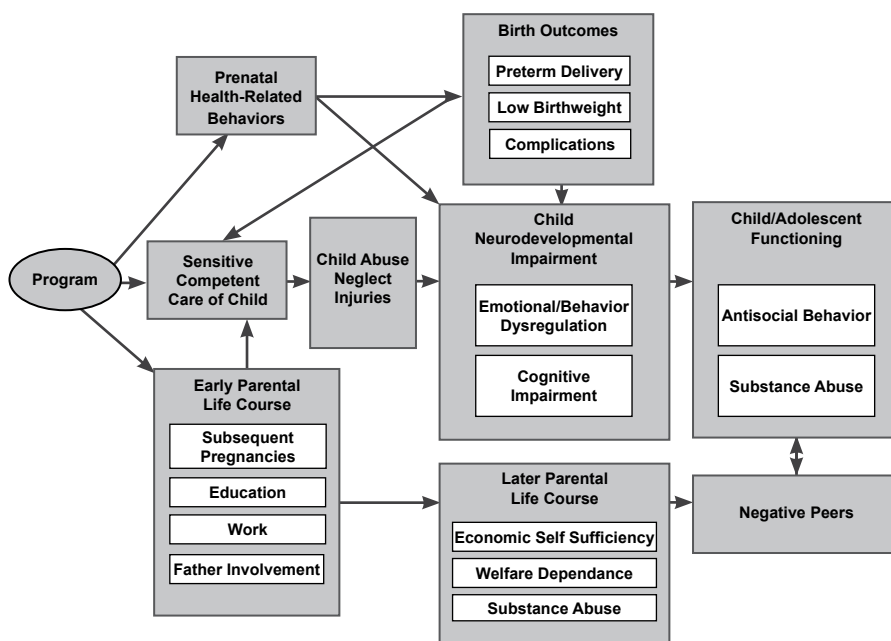


Figure 3. Conceptual model of program influences on maternal and child health and development[29]

VoorZorg, the Dutch NFP

Although NFP has been proven to be an evidence-based intervention for the primary prevention of child maltreatment, the program has not yet been examined outside the US. If the effectiveness of NFP in reducing child maltreatment could be proved in independent studies outside the US, it would significantly support the validity of the program.

As far as we know there is no evidence-based prevention program on the primary prevention of child abuse in the Netherlands. Also, there are no programs in the Netherlands that start during pregnancy and are proven to be effective in reducing risk behavior among women and improving the health-outcomes of both the child and the mother. The available interventions that start after childbirth focus on the needs of the mother rather than placing the focus on the needs of the developing child by systematically addressing the risk factors for the child.

Because of the lack of effective interventions in the Netherlands and because the NFP needed to be validated outside the US, we translated and culturally adapted this program into VoorZorg, which means “precaution” in Dutch. The translation and cultural adaptation of NFP is described in the study protocol of VoorZorg (chapter 2).

In short, VoorZorg is adapted to accommodate the needs of Dutch pregnant women, to address risk factors operating in the Dutch population and to fit in the Dutch Health Care system. Before implementation of VoorZorg in the Netherlands can take place, this program should be proved to be effective in a Randomized controlled trial (RCT) among high risk pregnant women in the Netherlands. The results of this RCT on addressing risk factors that compromise health and development of the child will be described in this thesis.

Panel

At the beginning of 2014 VoorZorg is implemented in 30 municipalities in the Netherlands, where approximately 50 trained VoorZorg nurses are active. These nurses are experienced Youth Health Care nurses currently working in a Youth Care Health organization. The Netherlands Youth Institute (NJI) is responsible for the training and support of the VoorZorg nurses, for the development of the material and monitoring of the practical side of the program.

Aims and outline of the thesis

The aim of this thesis is twofold. The first part describes the design of the VoorZorg program and the evaluation of the two-stage selection procedure to recruit high risk women for this program. The second part describes the results of the effect study of VoorZorg on: cigarette smoking, pregnancy outcomes, breastfeeding, intimate partner violence (perpetration and victimization), child maltreatment, home environment and child’s externalizing and internalizing behaviour.

Outline of the thesis

In **Chapter two** the translation, culturally adaptation of VoorZorg and the design of the Randomized Controlled Trial to study the effectiveness of VoorZorg are described.

Chapter three describes whether the two-stage selection procedure designed in this study is adequate in identifying high-risk pregnant women. In this chapter we also report how many risk factors for child maltreatment these women have during pregnancy.

Chapter 4 describes the short-term effects of VoorZorg. We analysed (adverse) pregnancy outcomes, cigarette smoking during pregnancy and after birth and breastfeeding duration. In **Chapter 5** we describe the effectiveness of VoorZorg in reducing Intimate Partner Violence during 32 weeks of pregnancy and two years after birth. In **Chapter 6** we elaborate on whether VoorZorg was effective on child maltreatment and on the development of the child. In **Chapter 7** the main findings and implications for further research are discussed, followed by **Chapter 8**, a summary of this thesis.

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