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HOME VISITATION IN FAMILIES AT RISK FOR CHILD MALTREATMENT: PROCESS-EVALUATION

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1 ABSTRACT

The extent of child maltreatment and the seriousness of its consequences emphasize the need for effective preventive interventions. Evaluations of these interventions have mostly focused on effect. The results of effect-evaluations can however be influenced by variability in both intervention and subjects. It is therefore important to determine the nature of this variability. This chapter addresses the implementation of a Dutch intervention program aimed at the prevention of child maltreatment, the realization of program objectives and parental satisfaction about the program. Both for implementation, realization and satisfaction differences in clients and home visitors are explored.

This program is aimed at families with an increased risk for child maltreatment. Based on home visitors reports the implementation (number, duration and dispersal of home visits) and objectives (the improvement of the social support system, of parental awareness and of the influence of the parental development) of the program are addressed. Parental satisfaction is explored regarding both protocol and content of the program. Regarding these parameters differences in clients are explored amongst socio-demographic family-characteristics such as level of education, number of stressors and immigrant status. Differences amongst home visitors are also researched.

We conclude that the program protocol has been implemented adequately, in most objectives significant improvement has been made and parents are highly satisfied. It needs to be reminded that our findings are all based on subjective information and may therefore be biased to some extent. Nevertheless the results of this study provide a direction for a differential analysis of the effects of this intervention.

2 INTRODUCTION

The problem of child maltreatment is an increasing focal point of attention in the Netherlands, both for policy-makers and healthcare workers. The number of children that is reported with a presumption of maltreatment to the *Advies- en Meldpunten Kindermishandeling (AMK)*, the Dutch child maltreatment reporting agency, increases every year. In 2003 28.569 contacts about presumed maltreatment were made with the AMK, an increase of 13% compared to the previous year and an increase of 34% since 2000. Verified reports of maltreatment have increased by 27.3% in the same period, from 5801 to 7976 reports ⁽²⁴⁾. Although these numbers can not be compared to the often cited estimate of 50.000 to 80.000 maltreated children per year ⁽²³⁾, they illustrate the growing concern for maltreated children in the Netherlands. Also these numbers emphasize the need for preventive measures.

In an attempt to fill this need a prevention program named Project OKé (an abbreviation of *Ouder- en Kindzorg extra*, meaning Parent and Childcare extra) was developed. This program, designed as a randomized controlled trial, aimed to provide families at risk for child maltreatment with parenting support by means of postnatal home visits, conducted by child health nurses. The objectives of this program are based on the theories of Belsky (1989), Newberger (1980) and Baartman (1996). The focal points of this program are the parental development, the improvement of the social support system of a family ^(2; 3) and of the level of parental awareness, including perception and expectations of the child, and sensitivity towards the child ^(1; 19).

In several other countries preventive programs, often using the method of home visitation, have been developed and evaluated over the past few decades ^(7; 17; 18). Program evaluation can serve to determine the effectiveness of an intervention (effect-evaluation), to clarify the processes taking place during the intervention in order to adjust or improve them (process-evaluation), or to establish the presence of change in clients (product-evaluation) ⁽¹⁰⁾. Depending on the manner of establishing effectiveness, product-evaluation might be very similar to effect-evaluation as change in clients may constitute the desired effect. In general, effect-evaluation is the most common type of evaluation used in prevention studies ^(see 7; 9; 17; 21). Other types of evaluation of prevention programs are harder to find. One of the

programs that have been evaluated in other ways is the Nurse Home-visitation Program developed by Olds (^{sec 4; 12; 13; 20}). Olds and Korfmacher (1998) point out two essential problems in prevention programs targeted at families at risk. First of all, “the concept of risk applies to groups, not individuals, [...thereby] implying heterogeneity in individual functioning” (^{20, p24}). Second, “the flexibility and individualization of services inherent in many preventive intervention programs [...] allow for a differential use of the program based upon needs and competencies of participants” (^{20 ibidem}). Thus, both in intervention and in subjects a certain degree of variability can be expected, possibly influencing the effects of the program. Hence it is important to explore this variability as preparation for effect-evaluation.

This chapter aims to determine whether the program protocol has been implemented as planned, whether the program objectives have been reached and what degree of client satisfaction has been obtained. As such this chapter concerns mainly process-evaluation. Furthermore, this chapter aims to chart the variability in implementation, objective-attainment and satisfaction and to examine factors that might influence this variability.

3 METHODS

The home visits in this program were conducted by a total of five nurses, working part time. Each nurse had a total caseload of around 45 families. They all had a minimum of five years of experience working as Well Baby Clinic (WBC) nurses. In addition they had several in-service trainings and extra-curricular courses on topics such as parenting, communication skills, special care and child maltreatment. For the purpose of this program special skills and attitudes were promoted through additional training. This training consisted of seven days of schooling accompanied by theoretical and practical articles to be studied on each subject. The subjects that were addressed are displayed in table 1.

Table 1. Topics of training for home visiting nurses

Managing personal norms and values during home visits and consultations
Communication skills and models
Central issues in interventions for families with young children
Theory of attachment and sensitivity
Normal and deviant development in infants and toddlers
Possible treatments for crying babies
Cultural differences in parenting
Consequences of childhood experience of family violence in parents
Parents with substance dependence and consequences for children
Parents with psychiatric problems and consequences for children
Materials to be used during the intervention

3.1 Sample for home visitation

A total of 238 families with newborns were selected for participation in the OKé-program based on a questionnaire addressing risk factors for child maltreatment (see chapter 5). Risk factors were scored with either 1 or 0.5 points; a total score of 1 or more resulted in inclusion. Due to administrative errors 10 families were unjustly included in this study, hence the range displayed in table 2. Additional socio-demographic information about the family was obtained through a baseline measurement, along with scores on several instruments for effect-evaluation. One of these instruments, entitled *Kort Instrument voor Pedagogische en Psychologische Probleem Inventarisatie* (KIPPPPI), addressed, amongst other issues, the presence of stressors within the family^(15; 16) as well as the level of concern these stressors raised. In table 2 the characteristics of the sample selected for home visitation are displayed.

All stressors that parents considered (somewhat to severely) worrisome in the KIPPPI have been counted.

Table 2. Sample characteristics displayed as median (range) or percentage (N=238)

	Total
Median maternal age	32 (20-43)
Lower educated mother (Lower general secondary education)	16.2%
Higher educated mother (college/university)	34.8%
Immigrant mother (of non-western origin)	5.7%
Median no. of children	2 (1-5)
Percentage first child	47.7%
Single parent	10.5%
Median inclusion score	2 (0.5-8)
Median number of worrisome stressors	2 (0-11)

Sample characteristics did not differ amongst nurses with two exceptions. Nurse A visited significantly more parents with a higher education than did nurse E and nurse C visited families with a significantly higher inclusion score than did nurse E, as was determined through a one-way analysis of variance combined with a Bonferroni post-hoc test.

Families were assigned to a nurse based on their address and the caseload of each nurse. This means that each family was assigned to the nurse living closest to this particular family unless this nurse had too many starting families at the time of assignment. The home visiting nurse had no knowledge of the nature and number of risk factors identified in a family. Other characteristics as displayed in table 2 were known to the nurse, including the number of stressors.

3.2 Protocol and objectives for home visits

After a family was selected for the program, a baseline measurement form was returned and a family was randomly assigned to the intervention group, the first home visit should ideally take place six weeks after the birth of a child. Over the course of eighteen months a total of six home visits were to take place at the child's age of six weeks, three months, six months, nine months, twelve months and eighteen months. To bridge the six months between the fifth and sixth visit a consult by phone was planned at fifteen months. Home visits were to take 75 minutes per visit. A dossier was developed to serve both as a general manual for the visits and as a tool to register the progress of each visit. In this dossier a basic outline

for each visit was provided. Based on the paradigm chosen in this study the main focal points for each visit were the improvement of the influence of the parental ontogenic development (i.e. the parents' childhood experiences as described by Belsky (3)) upon parenting, the enhancement of the family social support system and the improvement of the child rearing conceptions of the parent. During each visit all of these issues were addressed.

The ontogenic development was discussed to explore and improve its influence on current parenting. This issue was particularly important in case of childhood experiences of maltreatment or violence. If necessary parents were referred to professional treatment. The present social support system in the family was assessed. Parents with low social support were encouraged to enlarge their network by taking up new activities or participating in special parenting activities. In case of conflicted or asymmetric relationships nurses assisted parents in finding ways to restore these relationships in order to increase their supporting quality and decrease their burdensome nature. At each visit parental expectations and perception of both the infant and the parental role were discussed. Information was provided on the child's developmental milestones along with the appropriate and most stimulating parental response to these milestones. Five domains concerning interaction, behavior and health of parents and child were assessed during each visit by means of an observation checklist.

In this checklist each domain contained several items. The domain of *nurture and care* addressed the items 'feeding', 'home environment provided', 'way of holding the child' and 'general care'. The domain of *child health and behavior* concerned 'sleeping', 'crying', 'physical tension' and 'general health'. The third domain, *parent-child interaction* contained three items, 'general interaction as observed by the nurse', 'comforting behavior' and 'communication'. In the domain *affectionate bond* the items 'parent-child attachment', 'parental sensitivity' and 'parental responsivity' are addressed. Finally the domain *involvement of spouse* concerned 'participation in child rearing' and 'amount of caretaking duties'. The nurse scored all items between 1 and 5 with 5 being the optimal score. All scores were based on the observation of the nurse except for the involvement of the spouse. For this domain mothers were asked to rate their partners. In case of low scores advice and

personal demonstrations were given to improve these issues. High scores provided the possibility to confirm parental competence and self-confidence.

Next to these outlined issues for each visit time was reserved for a more client-centered approach. This section of the visit was introduced with three questions. First, parents were asked to share what events in the previous period they had experienced as positive. Then parents were invited to elaborate on issues that troubled them. Finally they were asked to indicate the change they desired regarding these issues as well as the role they would like to see the nurse play in these changes. This way, parents were empowered to remain in control of their situation. However, since parents are not always able to formulate clear questions, the nurses' role was to help articulate parental requests for change.

3.3 Instruments for evaluation and statistical procedures

Both the nurses and the parents were asked to fill out an evaluation-form about the home visits twice during the intervention. The first form was filled out halfway the program at six months, the second at 18 months, after the program was completed. Parents who did not complete the program were also asked to fill out a brief questionnaire addressing their exit-reason(s). The intermediate evaluation-forms were meant to provide basic information about progression and satisfaction and were therefore kept simple. Both parents and nurses were asked some multiple-choice questions regarding the program protocol and some open questions about 'things they appreciated' and 'things they would like to change about the program'. The results of these evaluations were used to create a more standardized evaluation-form that was used at completion of the program. Parents were asked the same questions but more multiple-choice answers were provided. The nurses' questionnaire at completion was much more elaborate since it was used as a means to quantify the information in the dossiers. Thus information was asked about social network, parent-child interaction scores, parental attitudes, types of additional issues addressed during visits as well as referrals and advice provided. As this questionnaire was deployed at completion of the program, the information obtained from the nurse regarding the status of families at the start of the program is of a retrospective nature.

Several statistical procedures were deployed in this study. First of all, in order to determine the relationship between outcomes and certain socio-demographic variables, three procedures were used, depending on the nature of data. To determine the equality of means an independent sample t-test was used or, when more than two categories were present, a one-way analysis of variance with post-hoc Bonferroni-test, using a threshold for α of .05. In one case a Pearson's correlation was calculated since no specific categories were defined. Second, to explore the quality of progress on certain outcome-variables as reported by the nurse, a paired samples t-test was deployed. Through this test the mean value of the paired difference of each case is determined, displayed as the t-value. Significant t-values represent a significant progress in the outcome.

This study was approved by the Ethics Committee of the Leiden University Medical Center.

4 RESULTS

Of all families 91.6% completed the program. Twenty families left the program early. None of them filled out the intermediate form. Both nurses and parents were asked to fill out a drop-out evaluation form. Nurses indicated no concern about 80% (16 out of 20) of the families dropping out. The following reasons for leaving the program early are provided: 4 families dropped out because they were moving to another part of the country, 5 families gave as their main reason to drop out that they had too many problems on their hands, 8 families claimed they did not have time for the visits and 3 families stated they had enough other support to go without the home visits. 80% of the families dropping out had three or less visits. Response on all evaluations is shown in table 3.

Table 3. Response of parents and nurses (N=238).

	Program completed (n=218)		Dropped out (n=20)
	Intermediate evaluation	Final evaluation	Drop-out evaluation
Parents	89.0%	95.4%	55.0%
Nurses	92.2%	100%	100%

4.1 Implementation of the program protocol

At completion of the program the nurses reported an average number of 6.2 visits per family with a maximum of 10 visits and a minimum of 4 visits. Visits shorter than 30 minutes (N=9), that were rescheduled, have not been counted as actual visits. 67.4% of all families received 6 visits; 23 families (10.5%) got less visits and 48 families (22.0%) got more visits. The average number of home visits differs slightly per visiting nurse. Two out of five nurses (nurse A and nurse D) display an average of 6.3 visits per family; nurse C reaches an average of 6.2 visits, nurse E averages 6.1 visits and nurse B has an average of 6.0 visits. Differences are not significant.

In order to determine whether visits took place at their scheduled times we calculated the average number of months after the birth of a child for each visit. Of the families receiving six visits, 16% received their first visit as scheduled, this percentage increased to 54% for the sixth visit being provided as scheduled. Table 4 shows the dispersal of visits, indicating that those families receiving 7 visits got their extra visit as a replacement of the 15 months telephone consult, whereas

families receiving five visits often enrolled in the program too late to receive the first visit.

Table 4. Dispersal of visits: average number of months after birth for each visit grouped per number of visits.

Visits	1 st visit	2 nd visit	3 rd visit	4 th visit	5 th visit	6 th visit	7 th visit	8 th visit
5 (N=21)	3.3	6.0	9.4	13.1	18.0	-	-	-
6 (N=147)	2.3	3.9	6.9	10.1	13.1	18.6	-	-
7 (N=38)	2.6	4.1	6.5	9.2	12.3	15.2	18.4	-
8 (N=7)	2.1	3.4	6.1	8.7	11.5	13.5	16.6	19.0

The average amount of time spent per visit was 110 minutes at the first visit. This number declined to 89 minutes at the sixth visit. The visits ranged from 30 minutes to 180 minutes. The amount of time spent per visit as well as the total amount of time spent per family is displayed in table 5, both for the total sample and per nurse. Nurse C needed significantly more time than the other nurses (Nurse A and B $p < .001$; nurse D and E $p < .01$).

Table 5. Average number of minutes per visit for total sample and per nurse, including total amount of time in minutes spent per family (regardless of number of visits).

	1 st visit	2 nd visit	3 rd visit	4 th visit	5 th visit	6 th visit	Total
Total sample (N=218)	110	101	99	99	96	89	623
Nurse A (n=44)	112	91	85	81	80	72	555
Nurse B (n=42)	87	81	81	80	80	80	506
Nurse C (n=51)	134	118	107	107	105	92	701
Nurse D (n=37)	105	96	90	90	88	78	575
Nurse E (n=44)	108	96	94	95	89	86	579

The majority of visits took place with only the mother present (73.8%). However, 24.1% of the visits were conducted with both parents present. 1.6% of the visits took place with only the father present and 0.5% of the visits were conducted with others (grandparents, social workers). The (index) child was present at all visits.

In order to determine a possible relationship between the number of visits and several socio-demographic variables of clients an independent sample T-test was conducted. In table 6 the results are presented. Families receiving more than the scheduled 6 visits are found to have a significantly higher inclusion score as well as a significantly higher number of worrisome stressors. There are also significantly more immigrant mothers in these families.

Table 6. Means (and SD) or percentage for socio-demographic variables related to number of visits with significance of difference (N=218).

Variable	Number of visits	
	6 or less (N=170)	7 or more (N=48)
Inclusion score	2.0 (1.3)	2.9 (1.7)***
Number of worrisome stressors	2.0 (1.8)	3.4 (2.7)***
First child	49.1%	41.3%
Lower educated mothers	13.7%	23.8%
Immigrant mothers	7.8%	22.2%**

***p<.001, **p<.01

A Pearson's correlation test was conducted to determine the relationship between the total amount of time spent per family and the demographic variables shown in table 6. A significant (p<.001) relationship was found between the amount of time and the family's inclusion score (r =.30) and the number of worrisome stressors (r =.24). This relationship indicates that more time was spent on families with a higher inclusion score or a higher number of worrisome stressors.

4.2 Attainability of the program objectives

Social support for each family is assessed by the nurse, both within the extended family and within the group of friends. The quality of this support is rated at the start and the end of the program. The result of this assessment is displayed in table 7. Improvement of support is analyzed by means of a paired samples t-test. Both t-values indicate a significant improvement of the support system.

Table 7. Development of social support from family and friends according to the nurse in absolute numbers and results of paired samples t-test (N=217*)

First visit		Sixth visit			t-value	p-value
		Positive	Neutral	Negative		
Family support:	Positive	80	14	0	5.3	.000
	Neutral	31	52	3		
	Negative	3	26	8		
Friends support:	Positive	80	10	1	6.1	.000
	Neutral	52	55	2		
	Negative	5	7	5		

*Data on one family is incomplete for these variables.

In order to increase informal social support 83% of all families were referred to various activities. Most referrals were to thematic meetings about parenting (24.8%),

hobby- or sports clubs (23.5%), ‘baby-swimming’ (23.1%) and parenting courses (17.6%). As for the efforts made to increase formal support; 66.9% of all families were referred to professional care. Most referrals were directed towards the Well Baby Clinics (33.6%), followed by referrals to psychologists, psychotherapists or child rearing counselors (23.9%) and social work (16.8%). Other referrals were to the family physician (13.0%) and the child rearing helpdesk, an information center on parenting issues (11.3%).

The nurses discussed parenting behavior, parent-child interaction and child behavior with the parents during each visit. Observation scores ranging between 1 and 5 were given, with 5 representing the optimal performance. In table 8 the scores given at the first visit are displayed along with the scores at the last visit and the results of a paired samples t-test addressing the significance of positive change. Apparently nurses felt they had achieved a significant positive effect on child health and behavior, on interaction and on the affectionate bond between parent and child.

Table 8. Observation-scores of parenting and child behavior at first visit, change of scores in percentages and results of paired samples t-test (N=218)

Observation	Score at 1 st visit	Score at 6 th visit	t-value	p-value
Nurture and care	3.91	3.95	1.7	.097
Child health & behavior	3.77	3.94	3.6	.000
Parent-child interaction	3.42	3.76	4.8	.000
Affectionate bond	3.88	3.98	3.2	.002
Involvement of spouse	3.72	3.78	1.1	.284

Based on the dialogues the nurse had with the mother regarding mother’s ontogenic development the nurse was asked to assess the quality of mother’s parenting capacities and her coping with stress, both at the beginning and at the end of the program. The assessment is displayed in table 9, along with a paired samples t-test to determine the positive influence of the intervention as perceived by the nurse. Results of this analysis indicate that the nurses feel they have reached a significant improvement on both variables.

Table 9. Mother's parenting and coping abilities, according to the nurse, at beginning and end of the program in absolute numbers and results of paired samples t-test

First visit		Sixth visit			t-value	p-value
		Positive	Neutral	Negative		
Parenting (N=216)*:	Positive	82	5	0	9.6	.000
	Neutral	45	39	1		
	Negative	11	29	4		
Coping (N=215)*:	Positive	56	4	0	10.1	.000
	Neutral	48	59	2		
	Negative	8	33	5		

*Data on two and three families are incomplete for these variables.

To determine if the intervention objectives were reached with more success for specific types of families the scores on demographic variables provided in paragraph 3.1 were compared through an independent sample t-test. Few socio-demographic variables appear to be related to the improvement of intervention objectives. Nurses feel that family support improves significantly ($p<.001$) in families with a higher inclusion score as does friends support ($p<.05$). Significantly more referrals to formal support have been made in families with a higher inclusion score ($p<.001$) and also in families with a high number of worrisome stressors ($p<.01$). This is the case for immigrant ($p<.05$) and lower educated ($p<.01$) mothers as well. Parent-child interaction is significantly ($p<.05$) improved in families with an immigrant mother according to the nurse. Parent coping appears to improve significantly ($p<.05$) in mothers with a first child based on the nurses' assessment.

4.3 Satisfaction about the program

The results of the intermediate evaluations, both amongst the nurses and the parents, displayed a high level of satisfaction. Nurses indicated that the protocol could be followed well in 96.6% of all families. Nevertheless, nurses felt it was difficult to reach all prescribed goals during the home visits in 15.2% of all families. Forming a bond with parents was reported difficult in only 0.7% of all families. Parents largely confirmed this: 88.7% were very positive about their nurse and the remaining 11.3% were sufficiently satisfied. Regarding the protocol followed, 88.6% of the parents were satisfied about the number of home visits, 94.3% were content about the duration of each visit. Through the open questions many parents indicated that they highly appreciated the time, attention and advice they received

from the nurses, as well as the fact that these visits took place within the trusted environment of their own home. In turn, nurses frequently indicated that they appreciated the possibility to provide more information and advice to families than was possible at the WBC. Furthermore they often stated to be surprised at the openness of parents about their own problems as well as their willingness to change.

In the second evaluation, at completion of the program, parents were asked how they appreciated several aspects of the protocol such as the number and duration of visits. A large majority of parents was very satisfied about all aspects. Of those that were not, 9.6% would have liked more home visits whereas 1.4% preferred less visits (88.9% were satisfied). Regarding the duration of visits, 3.3% would have liked shorter visits and 1.4% rather wanted longer visits (95.2% were satisfied). As for the dispersal of visits, 8.8% would rather have had more visits during the first months, 7.4% on the other hand would have appreciated more visits during the last months of the program (83.8% were satisfied). Finally, regarding the duration of the program, 2.9% of the parents thought 18 months were too long, however 27.1% considered 18 months too short (70.0% were satisfied). No significant differences between nurses were found regarding parental satisfaction about the protocol. Some differences were found on demographic variables. Parents wanting more and longer visits and parents wanting to continue the program after 18 months were significantly ($p < .05$) more often immigrant mothers. Also, mothers preferring longer visits had a significantly lower level of education ($p < .05$). Parents who preferred a shorter program had more than one child significantly more often ($p < .05$) than other parents.

Furthermore, parents were asked how they felt about their future family life and parenting experiences now that the home visits were completed. The majority of parents felt positive about their future (61.7%), 28.3% were not sure how they felt and 10.0% felt insecure about their future. Also parents were asked how meaningful they felt the program had been to their family life and child rearing competence. A majority of 67.5% stated the program had been very meaningful, another 17.5% felt the program had been rather meaningful, 12.6% of the parents had experienced the home visits as sometimes meaningful and 2.4% stated the program had not been meaningful to them. No significant differences between nurses were found on

these answers, however, some differences were found on demographic variables. Significantly more lower educated mothers ($p<.05$) were unsure about their future compared to the other respondents to this question. Also, parents who felt positive about their future had a significantly lower number of worrisome stressors ($p<.05$) than the other two response groups. As for the home visits being meaningful to parents, those that responded negatively to this question had significantly more children ($p<.05$) than other parents.

Finally parents were asked to give a grade between 1 and 10 (10 being the best) for several aspects concerning the content of the program. The average grade for each aspect is very high. In table 10 satisfaction about content aspects is displayed for the entire sample of parents as well as per nurse. No significant differences between the nurses were found in these scores.

Table 10. Parental satisfaction about the program for total sample and per nurse (N=218)

Content aspect (av. 1-10)	Total sample	Nurse A	Nurse B	Nurse C	Nurse D	Nurse E
Personal support	8.5	8.5	8.4	8.8	8.4	8.4
Information & advice	8.4	8.4	8.4	8.6	8.2	8.4
Time & attention	8.8	8.7	8.7	9.2	8.6	8.8
Fit to individual family	8.3	8.4	8.4	8.5	8.1	8.4
Bond with nurse	8.7	8.7	8.6	9.0	8.5	8.7

In the same evaluation, at completion of the program, nurses were asked how they perceived the level of problems in the families they visited, both at the first and last visit. They were asked to rate the problems in each family from 0 to 3 with 3 being severe. Through a paired samples t-test the nurses' perception of the influence of the home visits is determined as is displayed in table 11. Furthermore, nurses were asked about their expectations regarding future parenting problems and future maltreatment in the families they visited. These expectations are also displayed in table 11. As was determined in paragraph 3.1, the families that were visited by nurse C had a significantly higher inclusion score than did the families visited by nurse E. We found that in her own perception, nurse C visited significantly ($p<.001$) more families with severe problems at the start of the project than all other nurses. Nurse C also worries about future parenting problems in significantly more of the families she visited ($p<.001$ compared to nurse A and B, $p<.05$ compared to nurse D and E). No significant differences between nurses are found regarding the level of problems at completion, nor regarding the risk for future maltreatment. Except for

nurse E, all nurses feel the level of problems in the families they visited has significantly improved.

Table 11. Differences in level of problems per nurse, progress through intervention, expectation of future problems, according to the nurse, and relationship to inclusion score (N=218)

	Incl. score	Problems at start	Problems at completion	t-test results	Future paren- ting problems	Future maltreatment
Tot. sample	2.3	1.3 (1.0)	0.8 (0.9)	-10.4***	20.8%	4.6%
Nurse A	2.4	1.2 (0.8)	0.6 (0.8)	-5.2***	9.3%	4.5%
Nurse B	2.3	1.0 (1.1)	0.4 (0.8)	-4.2***	11.6%	7.0%
Nurse C	2.6	2.2 (0.7)	1.5 (0.7)	-6.7***	44.0%	6.0%
Nurse D	2.1	1.2 (0.9)	0.4 (0.6)	-6.6***	16.2%	5.4%
Nurse E	1.8	0.8 (0.8)	0.6 (0.8)	-1.2	18.6%	0.0%

***p<.001

For the level of problems in families as perceived by the nurse, and her expectations regarding future problems, differences regarding the demographic variables presented in paragraph 3.1 were found using an independent samples t-test. Families with severe problems at the start, as observed by the nurse, have a significantly ($p<.001$) higher inclusion score than do families with less severe problems. These families also have a significantly ($p<.001$) larger number of stressors. Other demographic variables are not related to the severity of problems at the start. The improvement of these problems as perceived by the nurse is also significantly related to a higher inclusion score ($p<.001$) but not to the number of stressors or any other demographic variables. As for the possibility of future parenting problems, nurses expect these problems significantly more often in families with a high inclusion score and a high number of stressors ($p<.01$). Parenting problems are also significantly more often foreseen in mothers with a lower education ($p<.05$) and in families with more than one child ($p<.01$). Finally future child maltreatment is expected significantly more often in families with high inclusion scores and high numbers of stressors ($p<.001$) as well as in families with more than one child ($p<.01$) and immigrant mothers ($p<.001$).

5 DISCUSSION

Based on the data presented in this study several conclusions can be drawn. First of all, the response on the evaluation forms used to obtain these data is very high. In other process-evaluations this response is often much lower, sometimes as low as 15%⁽¹¹⁾. The same can be said for client retainment. Only 8.4% of all families did not complete the program, whereas for instance Hawaii's Healthy Start Program had lost 49% of their clients by the 12th month⁽⁶⁾. Reviews on home visitation process-evaluation present percentages of lost clients up to 60%⁽⁷⁾ or even 67%⁽⁸⁾.

Regarding the implementation of the program protocol a partial success is attained. Not only does the prescribed number of visits seem feasible according to the mean number of 6.2 visits found, this number has been successfully delivered to 67.4% of all clients. Of the remaining clients only 10.5% received less visits, a result which is contrasted by for instance the 6% families receiving at least the planned number of visits in the Elmira Nurse Home Visiting Program⁽¹³⁾. It should be noted that the number of visits provided in other studies is often lower than planned⁽⁷⁾, sometimes even reduced by half⁽¹⁴⁾. Still, the dispersal of visits and particularly the duration of each visit deviate from the protocol. There is an average delay of one month in the dispersal of visits and each visit takes over 20 minutes more than was planned in the protocol. The delay may however partly be related to the use of a substantial baseline questionnaire for research purposes. This delay might decrease in a practical setting where no questionnaires will be deployed. Regarding the duration of home visits there are clear differences between the visiting nurses. When exploring the relationship to particular family characteristics it seems that more and longer visits are provided to families with a higher inclusion score as well as to families with a higher number of stressors. More visits are also provided to immigrant mothers.

As for the attainability of the program's objectives, nurses report a significant increase in social support through the intervention, both from the extended family and from friends outside the family. Based on the observation scores that the visiting nurses provided, parenting behavior has improved partially. Noticeable is the fact that nurture and general care for the child have not significantly improved during the intervention according to the nurse. This may be related to the fact that

observed items have changed considerably over time. For instance the appropriate environment for a baby holds different requirements than does the environment for a toddler. According to the nurse mother's parenting and coping capacities have both significantly improved during the intervention. Most of the improvements realized in the families visited do not seem to be related to particular family characteristics. Support was improved particularly in families with a high number of risk factors. Mother's coping capacities improved most in first time mothers and parent-child interaction seemed to gain most improvement for immigrant mothers according to the nurses.

Finally when addressing the parental satisfaction the first conclusion should be that parents are highly satisfied with the program, both regarding protocol issues and regarding the content of the program. The majority of parents had no problem with the fact that the nurses' support had ended, which applies particularly to families with a lower number of worrisome stressors. Those mothers that were unsure regarding their future more often had a lower education. Eighty-five percent of all parents felt the program had been meaningful. It appears that the program is experienced as less meaningful by parents with more than one child. Parental satisfaction did not significantly differ per nurse. There were however differences in the nurses' own perception of problems within a family, which coincide with the average inclusion score found in families when divided per nurse. When exploring the relationship to family characteristics the problems in families are significantly related to the inclusion score and the number of stressors. These problems appear to improve most in families with a higher inclusion score. The prediction of future problems, both in parenting and regarding maltreatment is significantly related to all characteristics with the exception of mother's level of education when maltreatment is concerned and mother's immigrant status when parenting problems are concerned.

At first sight the program seems to be a success. The protocol is adequate although home visits have a slight delay and take up more time than planned. Most objectives improved significantly according to the nurses and parents are highly satisfied. However, all data discussed above are provided by either parents or home visitors. This may very well cause considerable bias in our conclusions, especially regarding the attainability of objectives and the client satisfaction. The most important bias to

be considered is commonly called the Hawthorne Effect (⁵). According to this effect the mere attention nurses were paying to the families visited may have caused improvement in parents. As such, the client satisfaction may be exaggerated. Also, the nurses' desire to diminish the risks in a family may have caused them to over-estimate their own success as they were not only rating a family but their own performance as well. In light of this it may however be interesting that nurses reported an improvement of the level of problems significantly more often in families with a higher inclusion score (a condition to which they were blind) but not in families with a higher number of stressors. A second bias to be considered is called observer bias (²²). Nurses may have developed a special liking for some families over others which may cause them to over-rate accomplishments in these families. Finally a third bias to be considered is called subject bias (²²). Parents may have given more positive answers to the evaluation in order to please or compliment their nurse or because they consider the subject of this study to be very important and hope to influence a continuation of the project with their responses.

With these possible biases the results of this study should be handled with care. However, some of the findings provide information that can be used in examining the program effects. Regarding the implementation of the protocol, the large differences found in the amount of time spent per family are worth exploring, controlling for the inclusion score and number of stressors. With regards to the objectives of the program no robust leads for effect analysis are encountered. Few differences between nurses were found. Nurse C differed from the other nurses to some extent on several aspects that may very well be related: the high inclusion score found in the families she visited is related to the level of problems she perceived in these families. This high inclusion score may also be related to the fact that she needed more time per family as well as to the fact that she is more concerned about future parenting problems in these families. Finally regarding the demographic differences found in this study, some of the findings appear to be self-evident. For instance, it makes sense that visits to immigrant mothers take more time due to linguistic difficulties. Particularly the inclusion score and the number of stressors appear to play an important role in several of the outcomes studied, and should thus be explored in effect analysis.

In conclusion we find that the aims of this process-evaluation have mostly been reached. The program under evaluation appears to be implemented as planned. Some variability has been found in all parts of the evaluation, providing leads for the effect-evaluation to be conducted in the next chapter. Both response and client retainment are high compared to other studies and a high degree of satisfaction about the program is found in both clients and home visitors.

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