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Early home visitation in families at risk for child maltreatment

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DIFFERENCES BETWEEN RESPONDENTS AND NON-RESPONDENTS ON A POSTAL QUESTIONNAIRE ADDRESSING RISK FACTORS FOR CHILD MALTREATMENT

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1 ABSTRACT

In screening studies related to child maltreatment non-response is a potential problem, particularly because risk factors for child maltreatment are in part similar to risk factors for non-respondents. This study evaluates differences between respondents and non-respondents on a postal questionnaire addressing risk factors for child maltreatment.

Different methods were deployed to obtain data for the comparison of respondents and non-respondents. 1) A name algorithm was constructed to estimate the rate of non-western immigrants. 2) Based on the family-addresses neighborhood characteristics for each family were determined and 3) socio-economic and socio-demographic variables were investigated based on a sample of medical files.

Using an independent sample T-test 15.1% of the non-respondents were found to be of non-western origin compared to 7.0% of the respondents ($p < 0.01$). On all neighborhood variables significant differences were found in group comparison, with non-respondents living in disadvantaged neighborhoods more frequently ($p < 0.01$). Small socio-economic and socio-demographic differences were found through sampled file-analysis, with non-respondents more often presenting lower socio-economic and socio-demographic levels.

Statistically significant differences were found between respondents and non-respondents concerning ethnicity and neighborhood and non-respondents were similar to families at risk for child maltreatment. A broader spectrum of screening methods should be deployed to reach non-respondents.

2 INTRODUCTION

Non-response is a serious problem in most studies based on data collected through postal questionnaires (^{1; 16; 17; 25}). The response rate depends on characteristics of the target population, study design and sensitivity of the concerning subject. The results of a study can be influenced by its non-response in case of a selection-bias: if there are systematic differences between non-respondents and respondents the results are not representative for the entire population. It is therefore important to analyze the characteristics of any non-response group to determine the strength of the conclusions found in studies based on postal questionnaires.

Aside from the more obvious reasons for non-response such as lack of time, disinterest or, in the case of immigrants, linguistic problems, in a number of studies several characteristics have been found to distinguish non-respondents from respondents. Amongst these characteristics are unemployment and lower education (^{1; 22}), single status (^{3; 18}), young age (^{2; 28}) and foreign origin (⁴). Furthermore, non-respondents are more often found to live in highly urbanized and densely populated areas and amongst lower social classes (^{2; 26; 39}). The characteristics of families at risk for child maltreatment have been studied extensively as well (^{see 5; 6; 7; 35}). Interestingly, some of these characteristics are single parenthood (^{10; 11}), young parental age (^{10; 36}), poverty, unemployment, and area deprivation (^{13; 23; 37}).

As in a number of other European countries, the origin of Dutch immigrants is predominantly Mediterranean, northern African or (former) colonial. Mediterranean and Northern African immigrants came to the Netherlands during the 1960's and early 1970's as a result of recruitment of temporary workers for low-skilled jobs. And while most Mediterranean workers returned when economy in their homeland improved, northern African immigrants decided to stay and opt for family reunification (²⁹). Currently the unemployment rates amongst immigrants from outside the European Union are much higher than those of natives (²⁹). Also, immigrants are more often assigned to the worst housing projects in the least desirable districts (¹⁴). Based on this information many of the characteristics of non-respondents and families at risk for child maltreatment can

be found amongst non-western immigrants, including young age and single parenthood ⁽¹⁵⁾. Therefore special attention should be paid to non-western immigrants.

Several studies have been conducted to examine the characteristics of non-respondents. However, little is known about non-respondents in a screening study regarding risk factors for child maltreatment. This study aims to analyze differences concerning risk factors for child maltreatment between the non-response and response group in a large Dutch early home visitation program. In this program, known as Project OKé, families were selected by means of a questionnaire addressing risk factors for child maltreatment (see chapter 5). Amongst these risk factors were parental history of violence or maltreatment during childhood, parental characteristics such as depression or addiction and problems in the social context. For the aim of this study data on ethnicity, neighborhood and certain socio-demographics was available on the families addressed in the Project OKé study. Based on this information this study attempts to answer two questions: 1) whether non-respondents differ from respondents, and 2) whether the non-respondents can be considered at risk for child maltreatment.

3 METHODS

In the Project OKé study, during a period of 13 months, all parents with newborns (N=8899) in a geographically circumscriptive area were approached with a postal questionnaire addressing risk factors for child maltreatment. Nurses from the local Well Baby Clinic (WBC), visiting the family two weeks after birth, were asked to fill out a questionnaire as well, regarding birth weight, gestational age and possible concerns about the family. The families who returned the questionnaires were selected based on their response and randomized into an intervention and control group. The intervention group was offered a home visitation program during 18 months. Of all parents, 55.0% returned the questionnaire (N=4899). The remaining 45% of these parents are the primary focus of this study.

There are several approaches to the analysis of non-response bias, for instance to use variables already known for both respondents and non-respondents, or to extrapolate characteristics of late respondents to non-respondents ⁽³⁴⁾. Obviously the first approach is much preferred over the second one, provided the information is available and relevant. In this study the first approach was applicable because, regardless of the nature of the response, names and addresses were available about all families. Based on this information several relevant characteristics about the non-respondents were determined. First of all, the ethnicity of families was estimated based on the names of the children (first and last name) ⁽⁹⁾. Secondly, based on the family-address some information about the neighborhood these families resided in was obtained. A third method that was adopted was an analysis of socio-demographic information found in the files at the local Well Baby Clinics. File analysis took place through the assistance of WBC-nurses and was thereby made anonymous for all research. These three methods will be addressed in the following paragraphs. This study was approved by the Ethics Committee of the Leiden University Medical Center.

3.1 Ethnicity

In order to estimate the rate of non-western immigrants a name algorithm was constructed. In previous studies Razum and others (2000) developed an algorithm for Turkish names in Germany, based on municipal data from both Turkey itself and part of Germany, reaching a sensitivity of 85% ⁽³²⁾. Bouwhuis and Moll (2003)

developed an algorithm for Turkish, Arabic and Surinamese names in the Netherlands, helped by assistants with the same ethnicity as those researched ⁽⁹⁾. The Bouwhuis algorithm resulted in a sensitivity of 81 (Turkish), 77 (Arabic) and 69% (Surinamese). Except for the Surinamese names in the Bouwhuis study the sensitivity found in both studies was high enough for the algorithms to be useful. In the current study an algorithm was developed by using several studies of first and family names in the Netherlands, as well as various websites of popular names in the Netherlands and other countries (i.e. Muslim countries, South America, North America, China, etc.) ^(e.g. 8; 21; 38). A small portion of names (1.8%) could not be identified in any website or database; hence a subjective estimation was applied.

First and last names were evaluated separately and classified into 2 categories: natives (names of Dutch origin) or western immigrants (names of Western European and North American origin), and non-western immigrants (names originating in Africa, South America, Asia and the European Balkan). There was a remaining non-informative category (indiscriminating names, such as Sheila, which could be both of western or non-western origin). After separate evaluation of first and last names, both names were combined. When a first name was labeled 'non-western' and the matching last name was labeled 'native' the final label given to the child was 'non-western immigrant'. The same procedure was applied for non-informative names, starting from the assumption that if one parent is of 'non-western origin' this will reflect on the child's name. Figure 1 displays the realization of the algorithm.

To measure the validity of the algorithm, this method was compared with two test sets. The first test set consisted of 143 questionnaires, filled out by families in the Project OKé study and addressing amongst other things the parents' country of birth. Based on the results several adaptations were made in the dataset. For instance, the name 'Ali' is both a typical Islamic name and an ancient Dutch name. Based on the results of test set 1 it was decided to label this name 'non-western' instead of native. To verify the impact of these adaptations a second test set was employed for comparison. This test set was the result of an analysis of WBC-files (n=430). In this analysis country of birth was registered for both parents. The outcome of both test sets is displayed in table 1.

Figure 1. Realization of the name algorithm.

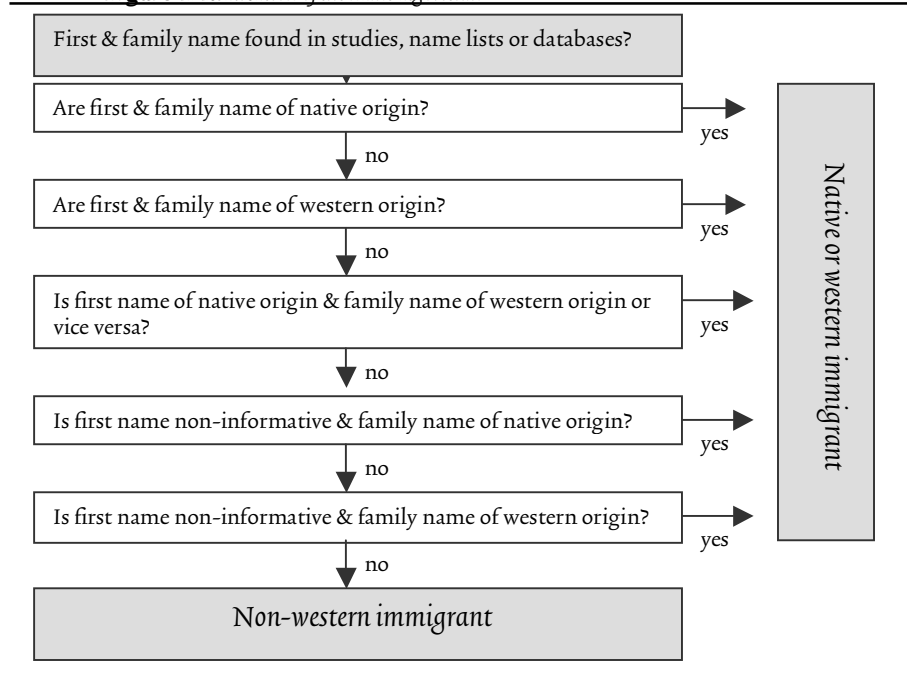


Table 1. Validity of the name-algorithm in test set 1 (N=143) and test set 2 (N=430)

		Actual					
		Set 1			Set 2		
		N.W.Imm.	Natives	Total	N.W.Imm.	Natives	Total
Classified	Set 1	N.W. Imm.*	10	4	14		
		Natives	8	121	129		
		Total	18	125	143		
	Set 2	N.W. Imm.			111	24	135
		Natives			22	273	295
		Total			133	297	430

*: N.W.Imm. means Non-western Immigrants

Through a chi-square test positive and negative predictive values were determined after applying each test set. The second test set demonstrated the adaptations to be an improvement for the positive predictive value (the chance of correctly identify a child to be of non-western origin), which increased from 71.4% in the first test, set to 82.2% in the second test set. The negative predictive value (the chance of correctly identifying a

child to be of native origin) decreased slightly from 93.8% to 92.5%. With these outcomes the algorithm was considered acceptable to determine the distribution of non-western immigrants amongst the response versus the non-response group by means of an unpaired sample T-test.

3.2 Neighborhoods

Based on the family-addresses it was possible to assess the kind of neighborhood a family resided in. Data from the Dutch National Institute for Statistics (CBS) provided information about population density (number of addresses per square kilometer), mean income (per income recipient), non-western immigrants (in percentages) and welfare recipients (percentage of people receiving welfare as main income) on neighborhood-level⁽³⁰⁾. This information was available for all neighborhoods except those containing less than 50 inhabitants. These CBS-variables adequately describe disadvantaged neighborhoods. In close cooperation with municipal authorities of six towns in the study-region, files linking individual addresses to the specific neighborhoods based on either street name or six-digit zip code were obtained. In other mainly smaller towns electronic databases on neighborhoods were not yet available, therefore the sample for analysis is only part of the entire sample studied.

By joining these files to the available family-addresses database a file containing 4348 families was generated. By means of an unpaired sample T-test respondents and non-respondents were compared. Since it was conceivable that the number of immigrants in a neighborhood could influence the correlation between the other CBS-variables as well as the response rate, a logistic regression analysis was conducted to check for this influence. To clearly distinguish between at-risk and low-risk groups a division in tertiles was made; the values on each CBS-variable were divided into high-risk (the most negative values) and low-risk (the average and more positive values). For the variable 'population density' the high-risk tertile consisted of neighborhoods housing 2700 or more inhabitants per square kilometer, the two low-risk tertiles were those neighborhoods housing less than 2700 inhabitants per square kilometer. Regarding 'mean income' the limiting value between the low-risk and high-risk group is a gross yearly income of €16.000. For the variable 'percentage of immigrants' the limiting value between groups is 11% non-western immigrants. Finally for 'welfare recipients' the limiting value is 15%.

Through logistic regression the odds ratio (OR) for each variable without any adjustments was first determined. Secondly, the odds ratios for the population density, the mean income and the percentage of welfare recipients were calculated, controlling for percentage of immigrants. This led to two columns displaying odds ratios in neighborhoods with high and low percentages of immigrants. Thirdly the odds ratios could be adjusted for the percentage of immigrants found in each neighborhood, resulting in new odds ratios as displayed in the far right column of table 5.

3.3 Other socio-demographics

Socio-demographic differences between respondents and non-respondents were investigated based on a sample of WBC-files. For this purpose a checklist was developed, addressing ethnicity, age, education level and type of employment of the parents, family composition, possible handicaps or pre- or dysmaturity of the child. For several items in this checklist a cut-off point had to be established: the score on education was considered worrisome when a person had a lower general secondary education or below; the score on employment was considered worrisome when a person was a lower employee or untrained manual laborer. The non-response group was compared to the response group on all these variables using a chi-square test.

For this file analysis a stratified random selection was taken from the original database containing all 8899 families addressed in the Project OKé study. Initially, six strata were chosen. First, non-response was divided into two groups, those where nurses responded to the selection questionnaire but parents did not, and those where no response was received. Second, responding parents were divided into 'low risk' and 'at-risk' families. Finally, 'at-risk' families were divided into families participating to the intervention program, families declining participation and families that could not be approached for several reasons (see chapter 8). For each stratum a sample of 65 families was randomly selected. Amongst low-risk families an additional 40 families were randomly selected to enlarge the second test set for the name algorithm. To improve comprehension of this study, these six groups were collapsed into two groups: 1) non-response (N=130), 2) response group (N=300), containing 105 in the low risk group and 195 in the 'at-risk' group. During the file-analysis at the WBC's 8 families in the non-response group and 8 families in the 'at-risk' group could not be traced due to relocation.

4 RESULTS

The distribution of non-western immigrants over the different response groups, as found through the name algorithm, is shown in table 2. The total N for this variable is lower than the total number of families in the study (8899), which is explained by the fact that in the Project OKé study families incapable of reading and writing the Dutch language, were excluded (N=147). The results of the group-comparison for the neighborhood variables are displayed in table 3.

Table 2. Distribution of non-western immigrants based on the name-algorithm over low risk and at-risk families, non-respondents and respondents.

	Non-respondents N=3748	Respondents		
		Low risk families N=3721	At-risk families N=1283	Total N=5004
Non-western immigrants	15.1%	5.0%	13.3%	7.0%
Natives/w. immigrants	84.9%	95.0%	86.7%	93.0%
Total	100%	100%	100%	100%

Table 3. Distribution of neighborhood variables over low risk and at-risk families, non-respondents and respondents.

	Non-respondents N=2154	Respondents		
		Low risk families N=1611	At-risk families N=583	Total N=2194
Population density	2447	2160	2475	2246
Non-western immigrants	12.0%	9.3%	12.4%	10.1%
Mean income	€16.932,-	€17.360,-	€16.869,-	€17.233,-
Welfare recipients	13.6%	11.9%	14.0%	12.5%

Table 2 displays a significantly ($p < 0.01$) higher number of non-western immigrants in the at-risk group versus the low risk group, as well as in the non-respondent group versus the respondent group. Significant differences ($p < 0.01$) are found as well with regards to the neighborhood variables in table 3, both between high-risk and low-risk families and between non-respondents and respondents. High-risk families and non-respondents live in less favorable neighborhoods than do low-risk families and respondents.

The neighborhood variable ‘Immigrants’ might cause confounding in the analysis of the effect of neighborhood on response. Therefore a logistic regression was conducted. It is demonstrated that after adjustment a slight effect-modification occurs, but the adjusted odds ratio is still significant (table 4).

Table 4. Odds Ratio for response by neighborhood variables before and after adjusting for ‘percentage immigrants’.

	Raw OR (95 % CI)	OR		adjusted OR (95 % CI)
		high % imm.	low % imm.	
Pop. density (≥ 2700 vs. < 2700)	0.73 (0.65-0.83)	0.87	0.82+	0.84 (0.73-0.97)
Mean income (< 16000 vs. ≥ 16000)	0.63 (0.56-0.72)	0.94	0.82+	0.87 (0.76-0.99)
Welfare recipients ($\geq 15\%$ vs. $< 15\%$)	0.62 (0.55-0.70)	0.57*	0.97	0.74 (0.62-0.88)
N.W. Immigrants ($\geq 11\%$ vs. $< 11\%$)	0.72 (0.63-0.81)			

± = $p < 0.05$; * = $p < 0.01$.

For the last part of the analysis the low risk and at-risk families as well as the non-respondents and respondents were compared on all variables obtained from the WBC-file analysis. The results of this comparison are shown in table 5. The high-risk families display a higher probability on almost all variables, with some significant Odds Ratios and some trends towards significance ($p < .1$). Most of these variables are also more likely to be found amongst non-respondents, although Odds Ratios for most categories are not statistically significant.

Table 5. Comparison of risk factors for child maltreatment between low risk (N=105) and at-risk (N=187) families as well as non-respondent (N=122) and respondent (N=292) families.

	Non-respondent vs. respondent families		Low risk vs. at-risk families	
	OR	(95 % CI)	OR	(95 % CI)
Non-western immigrant mother	1.81†	(1.04-3.14)	2.41†	(1.06-5.46)
Non-western immigrant father	2.18†	(1.18-4.05)	4.88*	(1.43-16.69)
Age mother < 19 years	2.19	(0.36-13.25)	0.64	(0.58-0.69)
Age father < 19 years	0.41	(0.36-0.46)	0.64	(0.58-0.70)
Minimal education mother	0.35	(0.07-1.68)	0.77	(0.22-2.65)
Minimal education father	1.27	(0.28-5.69)	2.90	(0.54-15.53)
Low qualified employment mother	0.85	(0.49-1.48)	1.77‡	(0.90-3.46)
Low qualified employment father	1.23	(0.75-2.02)	2.58*	(1.35-4.94)
Single parent family composition	2.39‡	(0.77-7.44)	6.54†	(0.83-51.37)
Handicapped child	1.47	(0.51-4.28)	2.87	(0.62-13.38)
Prematurity (< 37 weeks)	1.63	(0.74-3.55)	2.38‡	(0.77-7.31)
Small for gestational age (< 2500 gram)	1.48	(0.65-3.39)	2.20	(0.71-6.82)

‡ = $p < 0.1$; † = $p < 0.05$; * = $p < 0.01$.

5 DISCUSSION AND CONCLUSION

The findings in this study, based on a postal questionnaire regarding risk factors for child maltreatment, show that families with a non-western ethnicity are found more frequently among non-respondents. Non-respondents also tend to be living more often in neighborhoods with a high population density, a high percentage of non-western immigrant inhabitants, a low income per inhabitant and a high percentage of welfare recipients; often referred to as disadvantaged neighborhoods. More young mothers, single parents and premature, dysmature or handicapped children are found amongst non-respondents in comparison to respondents. All characteristics found to be associated with families at risk for child maltreatment in this study are found in non-respondent families as well. Based on these findings we conclude that non-respondents are more similar to at-risk families than to low-risk families.

There were several advantages and disadvantages to this study. The name algorithm deployed in this study as a method to determine ethnicity generated a sensitivity of 83.5%, which is high compared to other studies ^(9; 32) especially considering the assembly of ethnicities. As the Bouwhuis algorithm shows, it is especially difficult to reach a high sensitivity regarding people from the Netherlands Antilles and Suriname. Sensitivity might have been increased by leaving the Surinamese ethnicity out of the assembly. In our algorithm non-discriminative names were classified as being native and names that could not be identified in databases were given a subjective estimation. In other words: no remaining group of names was maintained, which may also have influenced sensitivity. The use of six-digit zip codes or street names and numbers to combine with information from the National Institute of Statistics (CBS) can be considered a refinement compared to other studies ^(12; 24; 27; 33) using mainly four-digit zip codes or census tracts. Our neighborhood analysis was limited by the number of municipal administrations able to provide the necessary data as well as the lack of information on neighborhoods with less than 50 inhabitants from CBS. Thus conclusions about the neighborhood are based on a sample, but we consider this to be representative for the study-region. Finally, analyzing the wide range of socio-demographic data in the WBC-files was a unique opportunity to create an advantage over previous studies relying mostly on public registers providing only age, gender and income

data (^{16; 33; 34}). The reliability of the findings from the file-analysis is limited by the fact that several variables displayed with large numbers of missing values. WBC-nurses appear to rarely address parental education for example as data was missing on 72% of mothers and 77% of fathers. With this limited reliability even non-significant Odds Ratios larger than 1 should be taken into consideration as a possible indication of selection bias.

As was discussed in the introduction, ethnic minorities in the Netherlands, especially those of non-western origin, deserve special attention since this group is expected to be overrepresented among non-respondents and is vulnerable to many of the risk factors associated with child maltreatment. This vulnerability lies in the fact that financial and housing disadvantages result in stress, which, combined with a lack of constructive social support, could prove a combusive combination. The risk for child maltreatment is further increased by the fact that in some non-western cultures spanking of children is more acceptable as a method of child rearing and child discipline (³¹). To avoid misunderstandings we emphasize the fact that the relationship between ethnicity and risk factors for child maltreatment is by no means definite. Part of the non-response in this group was undoubtedly caused by linguistic problems.

One of the unique features of this study compared to other studies is the fact that part of the data analyzed was available for the large majority of subjects investigated (in the case of names this was 100%). This study found that non-respondents do differ from respondents and that they are more comparable to families at risk for child maltreatment than to low-risk families. However, the exact proportion of families at risk amongst non-respondents remains unclear. There are indications that this proportion is in fact small as an inverse response rate - child maltreatment prevalence association was found in earlier studies addressing the prevalence of maltreatment (^{19; 20}). A possible explanation for this finding may be that “adults who have experienced child abuse are more likely to respond to such surveys than their nonabused counterparts are” (^{19, p395}). Although these findings are related to the prevalence of sexual abuse amongst the population and not to the prevalence of families at risk for maltreatment, it may be conceivable that this explanation in part applies to our study as well, particularly related to parental childhood experiences of maltreatment and family violence. Finally, as is applicable to ethnic minorities,

other factors could have caused non-response, such as linguistic problems, illiteracy, lack of time and lower education level causing problems in understanding the purpose of a study.

The characteristics of non-respondents have been the focal point of several previous studies. However the connection between these characteristics and risk factors for child maltreatment has rarely been made. The results of this study point out that non-respondents deserve ongoing attention especially in studies screening for families at risk for child maltreatment.

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