Child maltreatment : prevalence and risk factors
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The Prevalence of Child Maltreatment in the Netherlands

'Not everything that counts can be counted; not everything that can be counted counts'

Albert Einstein

Abstract

The first nation-wide prevalence study of child maltreatment in the Netherlands (NPM-2005) was designed as a replication of the National Incidence Studies conducted in the USA (NIS; Sedlak & Broadhurst, 1996). Child maltreatment cases were reported by 1,121 professionals from various occupational branches, trained in a detailed registration system of six types of abuse and neglect. In addition, cases registered by the Dutch Child Protection Services were analyzed. The overall prevalence rate for 2005 was estimated to be 107,200 (95% CI 102,054 ~ 112,882) maltreated children from 0-18 years, or 30 cases per 1,000 children. Neglect was the most prevalent type (56% of all cases); sexual abuse had the lowest rate (4%). Forty-seven percent of the maltreated children experienced more than one type of maltreatment. Major risk factors were very low parental education and unemployment. It is worrisome that CPS agencies only see tip of the iceberg as only 12.6% of all maltreatment cases were reported to CPS. Training of professionals in observing and reporting child maltreatment is badly needed. The absence of a legal obligation to report in the Netherlands may be reconsidered.

Introduction

Child maltreatment is associated with a wide range of negative outcomes and although these detrimental consequences are well-documented (e.g., Myers et al., 2002), estimating the prevalence of child maltreatment remains complex and imprecise. Here we present the first systematic, nation-wide prevalence study on child abuse and neglect in the Netherlands, relying on data from both community professionals working with children and their families, and the Dutch Child Protective Services (CPS).

Most prevalence studies are based on retrospective self-reports. Although self-report studies provide valuable retrospective information, the broad range of prevalence estimates may reflect heterogeneity in research methodology and sampling (e.g., Roosa, Reyes, Reinholtz, & Angelini, 1998; Silvern, Waelde, Baughan, & Kaersvang, 2000; see Finkelhor, 1994; Gorey & Lesley, 1997). The current study relies on concurrent, standardized observations of more than 1,000 professionals working with children and their families. We adapted the standard methodology of the National Incidence Studies (*NIS,* Sedlak & Broadhurst, 1996) in the USA for the Netherlands in order to obtain reliable overall prevalence estimates of child maltreatment, and to facilitate cross-time and cross-national (policy) comparisons.

The National Incidence Studies (NIS)

In the 1980s, the first National Incidence Study (*NIS*) in the USA was conducted. This study was the starting point of a line of research using reports of professionals working with children ('sentinels') to calculate prevalence rates of child abuse and neglect. The perspective of a professional in the role of informant and the use of standardized definitions of child maltreatment add valuable information compared to the self-report studies. The personal instruction of the professional informants in a uniform registration system of abuse and the registration of recent incidents rather than (sometimes long-term) retrospective reports are among the distinguishable characteristics of the NIS studies.

The first NIS study reported a prevalence of 9.8 cases of maltreatment per 1,000 children, an estimate based on the 'harm' standard (National Center on Child Abuse and Neglect, Children's Bureau, 1981), as the 'endangerment' standard was not yet developed. In the NIS-2 14.8 children per 1,000 were observed to be maltreated under the 'harm' standard, and this number increased to 22.6 victims of maltreatment per 1,000 children when not only cases fulfilling the 'harm'

standard were included but also the 'endangerment' standard (see Method) (Sedlak, 1991). The endangerment standard did not replace the harm standard. The NIS has applied both standards in parallel from the point of the NIS-2 on. The third NIS study, NIS-3, showed once again a considerable rise in the prevalence of maltreatment. The reports of sentinels and CPS agencies lead to estimates of 23.1 harm (and endangerment) and 18.8 pure endangerment cases per 1,000 children (Sedlak & Broadhurst, 1996). The results of the fourth NIS study are forthcoming in 2009 (www.nis4.org). The rise of the prevalence rates may be a reflection of more accurate estimation procedures, but other factors may play a role as well, such as a growing awareness of child maltreatment among professionals, enabling them to detect more subtle cues of child maltreatment, or the broadening of standards according to which child maltreatment is defined (Sedlak & Broadhurst, 1996). Of course, a plausible explanation can also be a real rise in the incidence of maltreatment since the time of the NIS-2.

Results of studies by the National Data Archive on Child Abuse and Neglect (NCANDS) from the U.S. Department of Health and Human Services (DHHS), registering the number of officially documented cases of maltreatment over the same decade, indicated in 1990 the prevalence of documented cases of maltreatment to be 13.4 cases per 1,000 children; in 2000 this number was 12.3 cases per 1,000 children, and in 2005 the reported rate was 12.1 per 1,000 (DHHS, 2002, 2005). The decrease was most pronounced for officially documented cases of sexual abuse compared with physical abuse and neglect cases, which may be due to changes in policy, attitudes or standards (Jones & Finkelhor, 2001).

In Europe, no studies with the complete NIS-methodology have been conducted yet. In Wales, Sibert et al. (2002) estimated the prevalence of severe physical abuse in children under the age of 14, on the basis of reports by pediatricians and Child Protection Registers (CPR). For babies, a rate of 1.14 per 1,000 infants was found. For children from 1-4 years of age a rate of 0.092 cases per 1,000 children was found. This annual rate decreased to 0.0047 per 1,000 for children in the age range of 5-13 years old, based only on the pediatric reports, as data from CPR were not available for the older age groups. The registration of CPS cases, as part of the NIS methodology, has also been reported in other prevalence studies. Canadian studies observed an increase in reported CPS cases from a total of 21.5 cases per 1,000 children in 1998 (9.7 substantiated and 4.7 suspected cases, which is comparable to the endangerment standard, and 7.1 unsubstantiated) to a total of 45.7 reported cases per 1,000 children in 2003 (21.7 substantiated cases, 5.9 suspected, the remaining cases were unsubstantiated; Trocmé et al., 2005). Studies from the British Department of Health registered a rate of 2.3 CPS reports

per 1,000 children in 2002 (UK Department of Health, 2003). In Israel (Ben-Arieh & Haj-Yahia, 2006) a CPS rate of 17.8 cases per 1,000 children was reported, whereas the rates for substantiated CPS cases in various parts of Australia ranged between 2.4 and 9.3 per 1,000 children (Australian Institute of Health and Welfare, 2008).

A narrative review by Lampe (2002) indicated that the European prevalence of sexual abuse under the age of 16 years, as measured in self-report studies, varies between 6% and 36% for girls and between 1% and 15% for boys. The prevalence of child physical abuse would range from 5% to 50%, according to ten studies from several European countries (Lampe, 2002). In a recent Dutch study, 1,845 adolescents from 14 high schools reported their experiences of child abuse and neglect. This study presented an overall prevalence of 195 maltreatment cases per 1,000 children (Lamers-Winkelman, Slot, Bijl, & Vijlbrief, 2007).

Dutch replication of the NIS studies

For years Dutch social and family policies were based on an estimate of 23 cases of maltreatment per 1,000 children (Willems, 1999), which was a direct extrapolation of the NIS-3 prevalence rate to the Dutch population. But the Dutch context can not be put on a par with the US context. One important difference is the much higher percentage of children living in poverty in the USA, compared with the Netherlands (Vleminckx & Smeeding, 2001). Poverty is related to higher rates of child maltreatment, and is in particular strongly associated with neglect (Berger, 2004). For an empirically based child maltreatment estimate, a NIS-like study in the Netherlands was needed in order to provide a firmer foundation for maltreatment-prevention policies as well as for international comparisons. To enable a comparison between USA and Dutch prevalence estimates, the NPM-2005 was designed as a replication of the NIS studies in the Netherlands.

The NIS studies estimate the prevalence of child abuse and neglect (CAN) on the basis of cases reported to Child Protective Services (CPS) agencies and on reports of instructed community professionals, the sentinels. These professionals, who have jobs that bring them in contact with many children, report on all suspected cases of maltreatment by using a standardized form for each maltreated child. Their reports are essential because the cases from CPS agencies are considered to be only a tip of the iceberg of maltreatment cases (e.g., Ammerman, 1998). Maltreatment cases can be distinguished on five levels: (a) children reported to CPS agencies, (b) children not reported to CPS, but known by other organizations such as the police, (c) children who are neither known by CPS nor by other organizations, but who are observed by other informants such as teach-

ers, (d) children who are observed by people from the immediate environment such as neighbors, and (e) all other, unknown cases. The prevalence estimates of the NIS studies are based on the first three levels and consequently underestimate the actual prevalence of child maltreatment.

The NPM-2005: The first Dutch systematic prevalence study

The *Netherlands' Prevalence study of Maltreatment of youth* (NPM-2005) addressed three questions. The first and main question was: What is the overall prevalence of child maltreatment and its various types in the Netherlands? Second, how high are these rates compared with rates from similar studies in other countries, and compared with rates derived from other methods in the Netherlands? Third, is there (lack of) overlap between cases reported by the professionals and the official cases documented by the Dutch Child Protective Services (CPS)?

Method

Types of maltreatment: Harm and endangerment standards

Seven types of child maltreatment were identified in the NPM-2005, similar to the NIS: (a) sexual abuse, (b) physical abuse, (c) emotional abuse, (d) physical neglect, (e) educational neglect, (f) emotional neglect, and (g) other forms of abuse. To ensure that each child was counted only once in the analyses, we prioritized the types of abuse in the above-mentioned order and assigned each child to the highest type of maltreatment observed for this child (see below).

Any report of child maltreatment made by a professional or the CPS was evaluated against standard definitions of child abuse and neglect. Because of budget restrictions we had to restrict the sentinels' reported suspicions of child maltreatment to the three-month period September 26 - December 23, 2005 (a period similar to NIS), and their reports were extrapolated to a one-year period. A period of 12 months would have been preferable as the CPS data were registered across one year, from February 2005 to February 2006. Similar to NIS coding guide lines, there were two coding standards: a *harm* standard and an *endangerment* standard. The harm standard requirements were viewed as paramount over the endangerment standard requirements. The harm standard requirements were stringent in requiring that a child had noticeable harm during at least 24 hours after the abuse or neglect in order to be included. The endangerment standard included all harm standard children but other cases as well, by relaxing the definitional requirements. The endangerment standard included children were who were not yet noticeably harmed by the maltreatment, but who experienced mal-

treatment that put them in danger of being harmed according to information reported by the professional (Sedlak & Broadhurst, 1996, p. 2-9). The criteria for perpetrators in the endangerment group were more inclusive than the harm standard criteria for perpetrators; other adult caregivers than the parent (substitutes) were also counted. For both standards, the definitions apply to responsible caregivers as perpetrators. Violence in the public domain committed by a stranger (like rape) was not included in these descriptions. In case of divergence between coder and sentinel, the coder's judgment was decisive for the ultimate classification.

Sampling procedure sentinels

In the NIS-3 (Sedlak & Broadhurst, 1996) 5,926 non-CPS community professionals (called sentinels) were included. The total American population amounts to 290 million inhabitants. In the Netherlands, with a population of 16 million people, a sample of 330 sentinels would be proportional. However, because of the increase in the number of sentinels in the successive NIS studies, which will also be the case for the NIS-4 (Sedlak, personal communication, March 2005), we decided to use a considerably larger numbers of sentinels.

To create geographic zones with approximately equal numbers of children, the total population of children living in the Netherlands was distributed into five zones or 'counties'. These five zones cover the whole country, whereas the NIS studies included only a subset of the total number of counties. In the NIS-3 42 out of the 3,142 counties were drawn and in the NIS-4 122 counties participate.

We sampled sentinels from organizations within several occupational branches (see Table 1 for an overview). The number of sentinels varied among these branches (e.g., 491 for primary schools and 50 for police forces, see Table 1), but within one occupational group the number of organizations was approximately equal across the zones. The number of sentinels per zone is evenly allocated, while the number of children with whom the sentinels (potentially) came in contact is slightly unequally distributed. This slightly unequal distribution of (potentially) observed children per zone was due to three reasons. First, non-response of the selected organizations played a role; a second reason was the strategy to enlarge the number of sentinels when possible. Third, the sentinels were asked to estimate the number of children they (potentially) could have met in the 3-month period they reported on. The number of (potentially) observed children per zone (in contrast to the number of children living in the zone) could not be determined a priori.

Response rate

The NPM-2005 had a sample of 1,121 sentinels, a much higher number than the originally planned sample of 700 sentinels. The individual response rate for sentinels within organizations was very high, whereas the response rate on the organizational level was considerably lower: 511 organizations were invited and 189 organizations (37%) agreed to participate in the study. However, despite the non-response of organizations, the representative distribution of sentinels over the country remained intact. More importantly, the 1,121 sentinels were asked to estimate the number of children (potential victims) they were interacting with, or could have met, in the 3-month period they reported on child maltreatment cases.

Table 1. *Total Number of Sentinels, Overall Number of Reports (Without Overlapping Cases) per Occupational Branch for Harm and Endangerment Standards, Sample Size of Children Observed per Occupational Branch, and Total (Potentially) Covered Population of Children in the Netherlands, Differentiated per Occupational Branch*

Occupational branches	Total number of sentinels	Overall number of reports harm	Overall number of reports endanger-ment	Sample size of observed children per occupational branch	Total popula-tion of Dutch children per occupational branch
Primary education	491	17	25	12,207	1,595,100
Secondary education	333	12	17	35,361	1,199,916
Child day care centers	58	5	6	1,496	352,128
Well-baby Clinics	81	34	79	37,143	
0 and 1 year olds					395,085
2 and 3 year olds					407,490
4 year olds					208,051
General practitioners	25	4	3	16,115	3,597,591
Shelters for battered women	60	56	49	589	2,118
Police forces	50	64	221	973,680	3,597,591
Child Protection Boards	23	91	40	696,785	3,597,591
Total	**1,121**	**283**	**440**	**1,773,376**	

Their estimates covered almost 1.8 million children, which is about half of the Dutch population of children in the age of 0-18 years. For example, in the Netherlands more than 95% of all infants and toddlers visit well-baby clinics at regular time-intervals for a social and medical check-up and inoculation program. We were able to include 81 sentinels from 12 well-baby clinics spread across the country.

Standardized registration forms

The standardized registration form (the original form may be requested from the authors) used by the sentinels is a copy of the form used in the NIS studies. The sentinels were instructed in the use of this uniform registration system for child abuse, based on detailed definitions and descriptions of the various forms of child maltreatment. The registration form provided information on more than 30 characteristics of the reported children, their parental figures and families, the suspected perpetrators, and the severity and nature of the maltreatment. Similar to the NIS approach, the description of maltreatment in every child's data record was independently evaluated by the project staff in order to classify the maltreatment (assign final codes) and to decide whether or not the events described qualified the child to count as maltreated.

Instruction meetings

Analogous to the NIS procedure, instruction meetings were planned nation-wide for the participating organizations during the months July, August and September 2005. Several topics were addressed during these meetings: the design of the NPM-2005 study, the various types and definitions of child maltreatment, the registration form, and the legal aspects of the study (professional confidentiality, privacy, etc.) The instruction meetings of approximately 1.5 to 2 hours were given in the building of the organization, or in the immediate surroundings. The sentinels received standardized instructions from one of six trained members of the research team. Training materials may be requested from the authors. As we aimed to instruct a maximum number of sentinels, we decided to send an instruction package to the participants who were unable to attend a meeting. From the 1,121 participating sentinels, 806 received an instruction meeting and 315 sentinels were mailed an information package. Analyses showed no differences in the number of reported cases between sentinels who were instructed in a meeting and those who were instructed by means of an instruction package.

Sample

In total, 917 registration forms were returned by the sentinels. Fifteen cases were removed because the victims were 18 years or older, seven cases were excluded because they did not meet our standards for maltreatment and 29 cases were removed because the maltreatment did not take place in the period from September 26 until December 23, 2005. We also checked all cases for duplications (see paragraph on Unduplication) and identified six children who were reported by more than one professional. In these cases, the information of all sentinels was integrated into one form, and the type of abuse with the most accurate description was selected. If several types of abuse were reported, the type of abuse with the most harmful consequences was selected. This reduced the number of forms to 860. For two registration forms, the occupational branch of the sentinel could not be traced, rendering the inference to prevalence rates for the population impossible. We therefore calculated the prevalence numbers on the basis of 858 sentinel reports.

Data from the Child Protective Services agencies

In addition to the sentinels' information, we were able to use the reported CPS cases with strong evidence (according to CPS guidelines) for substantiated maltreatment in 2005. In the Netherlands, 17 CPS agencies (in Dutch: Advies en Meldpunten Kindermishandeling [AMK]) cover nation-wide all cases of child maltreatment that have been formally reported. Anyone working with families or observing children in any professional or informal capacity is entitled to report a case of suspected child maltreatment to the CPS, although in the Netherlands no legal obligation to report exists (Baeten, 2002). In a multidisciplinary team the suspected case receives a diagnosis (presence or absence of child maltreatment, and type of maltreatment), and recommendations for treatment are proposed. The CPS is not obliged to prove legally that a child has been maltreated in order to recommend treatment. We used the data for substantiated maltreatment in 2005 and organized these data per individual child. We performed similar analyses for sentinel data and for CPS data taking into account some minor variations between the CPS data and the sentinel reports. The final estimates of the prevalence of maltreatment in the Netherlands were based on the combination of both sources of information.

Unduplication

In the NIS approach 'unduplication' has been an important methodological requirement. Of course, various sentinels may report the same case, and senti-

nel reported cases may also be included in the CPS files. In fact, one would hope that most maltreatment cases reported by sentinels would also be processed by CPS. Unduplication is difficult because of confidentiality considerations that preclude sentinels or CPS reporting full names of (suspected) maltreatment cases. We therefore asked for a set of unique identifiers to control for overlapping cases between sentinels, and between CPS and sentinels, without these identifiers disclosing the true identity of the individual involved. These identifiers were: first name, first letter of last name, date of birth, gender, and the first two numbers of the (Dutch) zip code. By means of pivot tables in Excel all cases provided by sentinels and CPS agencies were systematically compared and identical sets of identifiers were detected and examined. Six cases were reported by more than one sentinel, and in the sentinel and CPS reports 135 cases were identical. In our estimates of the prevalence of child maltreatment these overlapping cases have been taken into account (see Results).

Comparison sample: National Kinship Panel Study

In 2002 the Netherlands Kinship Panel Study (NKPS, see www.nkps.nl) started with a first survey on the largest representative sample studied in the Netherlands thus far ($N = 8,161$) as a cross-section of 18-79 years old individuals residing in private homes in the Netherlands. To be eligible to participate, the sample members needed only sufficient knowledge of the Dutch language. The sample frame was a national address sample and the data-set is in the public domain. The main NKPS research questions revolve around the theme of solidarity (see www.nkps.nl). For the purpose of comparison with the NPM-2005 data, we selected families with at least one child in the age range of 0-18 years living at home ($N = 3,144$). For comparison of family characteristics that were not measured in the NKPS sample data were derived from the registration of the Dutch Central Bureau for Statistics (CBS).

Multinomial tests were used to compare observed frequencies in the NPM-2005 sample with proportions in the normative NKPS sample or -- in case of comparison with CBS data -- proportions in the Dutch population. A chi-square goodness-of-fit test was performed using the program MULTINOM (Kroonenberg, 1998; see http://three-mode.leidenuniv.nl/) to compare the NPM-2005 distributions with the proportions in the NKPS sample. Significant χ^2s indicate a significantly higher or lower risk for maltreatment compared to the risk in the national NKPS sample. The unit of analysis was the number of maltreated children in the NPM-2005 sample. The number of maltreated children with a specific family background, for example low SES families, was compared with the

proportion of families with that specific background in the representative NKPS sample. In our study, use of the multinomial test was essential since only the observed frequencies of the NPM-2005 sample are included, preventing inflated degrees of freedom.

Intercoder agreement

The registration forms completed by the sentinels were carefully assessed for conformity to the study definitions of abuse and neglect by two trained coders (EME and another member of the research team). Both coders were very familiar with all the definitions of child abuse as they had trained the sentinels in instruction meetings. The meetings and the abuse descriptions in the sentinel reports motivated us to make some minor additions in order to adapt the USA definitions to a Dutch context (e.g., clarification of boundaries between certain types of emotional neglect, see Discussion. A description of the adaptations is available from the authors on request).

Both coders independently coded 11% of all registration forms (n = 96). Cohen's *kappa* was calculated to assess the inter-coder agreement. The agreement for the six abuse categories was: κ = .92 for sexual abuse, κ = .91 for physical abuse, κ = .80 for emotional abuse, κ = .68 for physical neglect, κ = .71 for emotional neglect and κ = .94 for educational neglect. The overall reliability was κ = .83. The coders resolved disagreements by discussion.

Statistical procedures

The sentinel data collection period of three months was extrapolated to an annual prevalence figure by multiplying the number of cases four times, assuming an equal distribution of reports throughout the year. To test this assumption we checked our CPS data file for variability in the number of reports across the seasons. The CPS data file, containing all unique cases over the year 2005, showed that 23% of all cases had been reported in our data collection period. To obtain a prevalence estimate for the year 2005, we therefore multiplied our estimations from the NPM-period by a factor 4.35 (= 100/23). In order to estimate the set of children the sentinels potentially observed (such a set is called the 'sample of children observed per occupational branch', see Table 1), we asked all sentinels to indicate the number of children they (potentially) met in their job during the observation period. This estimation -that might contain some error variance-enabled us to calculate the proportion of reported children in relation to the sample of (potentially) covered children by a certain branch of sentinels. We were also

able to indicate the size of the total population of children for each occupational branch. This resulted in the formula:

$$x = \frac{C * 4.35}{Tot_s} * Tot_{pop}$$

where x represents the estimation of the number of maltreated children, C refers to the number of reported cases during the research period of 3 months, Tot_s is the total number of covered children in the sample of a category of sentinels, and Tot_{pop} is the total population of Dutch children belonging to an occupational branch of sentinels. For example, if sentinels from primary schools reported 25 cases of child maltreatment (C = 25), this number was multiplied by factor 4.35, which resulted in 108.75 reports from primary schools over a whole year. In total, the sample of primary school children covered by the sentinels consisted of 12,207 children (see Table 1). The number of reports (108.75) was divided by this sample size (108.75 / 12,207 = 0.0089088). We then multiplied this proportion (0.0089088) by the total number of primary school children in the Netherlands (Tot_{pop} = 1,595,100).

This calculation resulted in an estimation of 14,210 abused elementary school children according to the teachers. Summation of the estimates over all categories led to the total number of maltreated children in the Netherlands.

Reliability of the NPM-2005 prevalence estimates

We calculated Wilson estimates for the 95% confidence intervals for each type of abuse (Wilson, 1927, see Table 2). The 95% confidence intervals are reported for each type of maltreatment separately, taking into account the hierarchy of maltreatment types (see Table 2). For example, on the basis of 118 reports of emotional and educational neglect, the estimated prevalence of this type of abuse is 8,078 with a confidence interval ranging from 7,659 to 8,555. The confidence interval for each type of abuse was calculated by summating all confidence intervals from each branch of sentinels per type of abuse. The confidence interval for the overall estimate was calculated by summating the total confidence interval per type of maltreatment.

Results

Prevalence estimates according to the sentinels

The number of children between the ages of 0 to 18 years living in the Netherlands in 2005 was 3,597,591. Table 1 shows the population of children differentiated per occupational branch of sentinels. Based on these population sizes, the prevalence estimates per occupational group were calculated, separate for harm and endangerment cases. The prevalence estimates for the number of maltreated children according to the sentinels in the various occupational branches are reported in Table 2. Of the total number of 102,216 maltreated children, 41,658 were cases with documented harm and 60,558 concerned endangerment cases. The 95% confidence interval for the estimate of 102,216 children ranged from 97,305 to 107,628.

As a proportion of the total population of children, 2.84% of all Dutch children between 0 and 18 years were maltreated in 2005. The least prevalent form of child maltreatment was sexual abuse: 0.13% (n = 4,834) of the children were victims of this type of abuse. Physical abuse was much more prevalent, with a percentage of 0.55% (n = 19,815). Emotional abuse was reported in 0.33% (n = 11,732) of the children living in the Netherlands, whereas physical neglect was the most prevalent type of abuse and was reported in 0.93% (n = 33,509) of all children. Educational and/or emotional neglect cases were reported in 0.79% of the children between 0 and 18 years old (n = 28,449). Other types of maltreatment were observed for 0.11% (n = 3,877) of all children. It should be noted that the rates for types of maltreatment were presented on the level of individual children who were assigned to one type of maltreatment in the coding process. The rates do thus not reflect the rates of types of maltreatment themselves as more types may have been recorded per child. Co-morbidity of types of abuse was regularly reported. In 53% of the cases the child experienced one type of (reported) abuse, in 34% two types were present, in 11% the victims suffered from three types, and in 2% of the cases four or more types of abuse were reported.

Prevalence of child maltreatment according to the CPS agencies

From February 2005 to February 2006, 13,538 children with substantiated maltreatment were identified by the 17 CPS agencies in the Netherlands. We selected for each child the most severe type of abuse, according to the same rank order as described for the sentinel reports. The distribution of children across the various types of abuse is reported in Table 3.

Four percent (*n* = 538) of all substantiated maltreatment cases were cases of sexual abuse, 10.5% (*n* = 1,419) of the reported children were victims of physical abuse, while 11% (*n* = 1,494) suffered from emotional abuse. Physical neglect was present in 10.3% of the cases (*n* = 1,390), educational and/or emotional neglect were identified in 15.1% (*n* = 2,045) of the reported children, whereas in 13.7% (*n* = 1,856) of the substantiated cases children witnessed domestic violence. A remarkably high percentage of children (35.4%, *n* = 4,796) experienced indefinable or incompletely registered types of maltreatment.

Table 2. *Number of Children Reported by the Sentinels, Prevalence Estimate and 95% Confidence Intervals (CI) for Each of the Various Types of Maltreatment*

Type of maltreatment	Number of reported children	Prevalence estimate	Lower limit CI	Upper limit CI
Sexual abuse harm	18	1,658	1,514	1,820
Physical abuse harm	92	14,148	13,535	14,822
Emotional abuse harm	37	6,214	5,833	6,709
Physical neglect harm	59	10,841	10,036	11,444
Emotional neglect harm	118	8,078	7,659	8,555
Other types of abuse harm	8	719	644	792
Sexual abuse endangerment	24	3,176	2,942	3,485
Physical abuse endangerment	86	5,667	5,314	6,005
Emotional abuse endangerment	41	5,518	5,167	5,881
Physical neglect endangerment	126	22,668	21,921	23,445
Emotional neglect endangerment	237	20,371	19,563	21,273
Other types of abuse endangerment	12	3,158	2,907	3,397
Total	**858**	**102,216**	**97,305**	**107,628**

Table 3. The Distribution of Types of Maltreatment as Registered by the Dutch Child Protection Agencies

Type of abuse	Frequency	Percentage
Sexual abuse	538	4.0
Physical abuse	1,419	10.5
Emotional abuse	1,494	11.0
Physical neglect	1,390	10.3
Educational/emotional neglect	2,045	15.1
Witnessing intimate partner violence	1,856	13.7
Other types and unknown abuse	4,796	35.4
Total	**13,538**	**100.0**

Overlap between reports from sentinels and CPS agencies

Through the unduplication procedure (see Method) we detected 135 cases of overlap between sentinel reports and CPS files. We subtracted these overlapping cases from the sentinel reports. Without overlapping CPS cases we recomputed the sentinels' prevalence estimate, which was 93,662, with the CI for this estimate of about 5%. Together with the 13,538 substantiated maltreatment cases that were reported by CPS agencies, the overall prevalence estimate of child maltreatment in the Netherlands thus equaled 107,200 cases. For this final prevalence figure the 95% CI can only be estimated because the figure is a composite of estimates on the basis of sentinel reports and a population rate as produced by all CPS agencies in The Netherlands. Using the 95% CI computed for the sentinel estimate as a conservative CI, our final child maltreatment estimate of 107,200 cases ranges from 102,054 to 112,882.

Our hypothesis that cases with noticeable harm would have more chance to be observed and reported by both a sentinel and a CPS agency was not supported by our data. In total, 135 of the 858 children reported by the sentinels were also reported by CPS; 49 were cases with noticeable harm and 86 were endangerment cases. Two sources of systematic variance were tested. First, there was no association between duplicated reports and the absence or presence of noticeable harm, and second, no single type of maltreatment showed a significant overrepresentation or underrepresentation in the number of overlapping cases between CPS and sentinel reports (all ps > .05). It should be noted that CPS only reached a

small percentage of the total number of victims of child maltreatment: 13,538 of the estimated 107,200, which is only 12.6%.

Child age and family background according to the sentinels

The sentinels reported children in the age of 0 to 18 years: 31.4% of the maltreated children were 3 and younger, 42.0% were in the age range of 4 to 11 years, and 26.5% of the children belonged to the oldest age group (12-18 years). In the Dutch population children between 0 and 18 years old, 22.3% was in the preschool age, 44.3% was between 4 to 11 years old, and 33.4% was in adolescence (CBS, 2005). The age distribution of the maltreated children differed significantly from the population χ^2 (2, N = 776) = 40.42, p < .01), with an overrepresentation of young children and an underrepresentation of adolescents.

Based on the highest education of one of the parents (or substitute caregivers), socio-economic status was divided in three subgroups: families with a moderate-to-high, a low, and a very low educational background. For the families of the maltreated children, 36.1% of the parents had a moderate to high education, 25.0% had a low educational level and 38.9% belonged to the group with a very low educational background (defined as primary school only or no formal education at all). Apart from the group 'sexual abuse with harm', the educational level of the families with maltreated children in the sample was significantly lower for all types of abuse χ^2 (2, N = 743) = 1,422.30, p < .01), in comparison with a normative sample of the Dutch population (NKPS, 2006). It was especially the very low educated group that was significantly overrepresented: the percentage of very low educated parents was 6.8 times higher than in the normal population, suggesting that a very low level of parental education strongly elevated the risk for maltreatment.

Another potential risk factor was parental unemployment, defined as both parents being without a paid job. The data showed that 37.7% of the parents of maltreated children were unemployed, in 28.0% of the cases parents had a paid job (part-time or fulltime), and in 35.2% of the cases the sentinels had no information about the job status of the parents. In 2005, 6.8% of the Dutch population in the age of 15 to 64 years was unemployed (CBS, 2005). The unemployment rate was 5.2 times higher (χ^2 [1, N = 860] = 1,097.00, p < .01) for parents of maltreated children in comparison to the Dutch population, indicating unemployment as a risk factor for child maltreatment.

Discussion

Cross-national comparison of prevalence rates

The NPM-2005, the first national prevalence study on child abuse and neglect in the Netherlands as reported by professional informants, shows a prevalence of 107,200 victims of child maltreatment in 2005, which is equal to a rate of 30 cases per 1,000 children. A direct comparison of our prevalence rate with other rates is only appropriate for the methodologically similar NIS-3 estimate of 42 cases per 1,000 children in the USA. Our overall prevalence estimate of 30 victims of maltreatment per 1,000 children had a confidence interval ranging from 28.5 to 31.5 cases (i.e. an error of approximately 5%) (Wilson, 1927), indicating a rather reliable estimation. The NIS-3 study reported an overall prevalence estimate of 42 maltreatment cases with a confidence interval of 30 to 54 victims per 1,000 children (equal to an error of 29%, see Sedlak & Broadhurst, 1996), implying that the Dutch prevalence rate falls just within the estimated prevalence range of NIS-3.

Prevalence figures from several other countries can be compared with prevalence outcomes based on official Child Protection Services (CPS) cases. In the Netherlands, CPS agencies registered 3.8 substantiated maltreatment cases per 1,000 children in 2005. The figures of Australia ranged from 2.4 to 9.3 per 1,000 for the various areas of this continent (AIHW, 2008). Studies from Israel, the United States and Canada reported rates of 17.8, 9.7 and 21.7 (harm/substantiated) CPS cases per 1,000 children, respectively (Ben-Arieh & Haj-Yahia, 2006; DHHS, 2000; Trocmé et al., 2003); all much higher than the Dutch rate. Only the United Kingdom had a lower rate than the Dutch one: 2.3 cases per 1,000 children (UK Department of Health, 2003). It should be noted that we assigned each child to one type of maltreatment although much co-morbidity existed (on average, the reported children experienced two types of maltreatment), to ensure that each child was counted only once in the statistical analyses. This made it impossible to compare prevalence of sub-types of maltreatment across studies.

CPS agencies see only tip of iceberg

An important finding is the lack of overlap between CPS cases and reports of sentinels: of all the cases reported by sentinels, only 135 cases were reported to a CPS agency as well. Extrapolating these numbers to the population, CPS only reached 12.6% of the total number of victims of child maltreatment. It is an alarmingly small percentage of maltreated children who receive the care they need. The remaining cases did not reach the CPS agencies for reasons that can be

very diverse: a lack of knowledge about the procedures, privacy reasons, the start of voluntary mental health care, fear of the consequences for the professional's relationship with the parents when reporting to CPS, or fear for the safety of the reporters themselves (Ceelen, 2007). A detailed inspection may provide clues for strategies to increase the reporting rate in the future, such as more specific training of professionals or campaigns to enhance citizens' awareness of CPS procedures (see Hoefnagels & Zwikkers, 2006). The absence of a legal obligation to report in the Netherlands may also be a reason for the modest overlap between sentinel's reports and CPS registrations. Countries with mandated reporting as well as some protection for reporters seem to produce more CPS reports. One might however also argue that the less severe or more doubtful maltreatment cases would be easier to report without the legal obligation.

Our hypothesis that cases with noticeable harm would have more chance to be reported by both a sentinel and a CPS agency was not confirmed. Of the 135 children reported by the sentinels and included in the CPS files, 36% were cases with noticeable harm and 64% were endangerment cases, and statistically no significant difference was present in the chance of harm or endangerment cases to be certified by CPS as maltreatment cases. In fact, the number of overlapping endangerment cases was remarkably high, showing that for these children absence of noticeable harm was not a barrier for reporting the child to a CPS agency, and for diagnosing the case as certified abuse. In these cases sentinels had made the correct observation, as the experts from CPS evaluated these cases as substantiated maltreatment as well. The convergence between the diagnoses of the experts and the descriptions of sentinels about the presence of maltreatment (with harm that is not -or not yet- noticeable) validated the judgment of the sentinels and emphasized the importance of including endangerment cases in the prevalence estimates.

More than a third of the CPS registered children did experience indefinable or incompletely registered types of maltreatment. This is worrisome as the CPS procedures to diagnose maltreatment cases appear to be conducted in careful ways, in a multidisciplinary team. However, within and across CPS agencies diagnostic procedures and tools are divergent, and transparent, standardized registration was still a desideratum at the time of data-collection. Only when diagnostic methods are comparable and registration is standardized, it becomes possible to use CPS data to the fullest, also on the level of types of maltreatment. Standardization across CPS agencies in various countries would facilitate cross-national comparisons on prevalence rates and policies.

Professional sentinels versus self-reports

There is a large gap between the outcomes of retrospective self-report studies and the rates of sentinel-based studies like the NPM-2005. A Dutch self-report study with adolescents (Lamers-Winkelman et al., 2007) reported 195 maltreatment cases per 1,000 children in 2005, which is more than six times higher than our prevalence estimate. It should be noted that these two rates are not directly comparable because of differences in study design, sample, and population, but the impact of methodology on outcome remains remarkably large, even when we bear that in mind. Studies with well-instructed professionals overcome some of the limitations inherent to self-report studies (Sedlak, 2001). The professionals are trained in a uniform registration system, they report about current cases and they do not suffer from potential memory distortions of painful abuse experiences. When self-report and sentinel studies recruit non-overlapping groups of informants, the two methodologies may, however, reach different parts of the iceberg of maltreatment cases, resulting in divergent outcomes in prevalence rates.

Differences between the NIS and the NPM-2005

Although the NPM-2005 was designed as a replication of the NIS studies, some adaptations were made. Firstly, the smaller population size of the Netherlands allowed for conducting a less complex sampling procedure than the NIS studies. With respect to the statistical procedures, only two steps were necessary: one to correct for fixed versus varying populations of children that sentinels observed, and one for extrapolating the three-month period into a year. Secondly, some adjustments to the definitions of abuse were made. We added a subcategory for sexual abuse to classify cases where sentinels reported unspecific indications for sexual abuse, without any type of substantiation. It was our experience that sentinels tended to report a broad range of rather vague symptoms (e.g., headaches) as associated with sexual abuse, without a detailed description of the circumstances of the abuse.

Furthermore, we decided to include maltreatment cases with caregivers who might be considered less accountable for their behavior. These cases were excluded in the American NIS studies. We distinguished seven categories of serious problems of (one of the) caregivers of the maltreated child: (chronic) somatic illness, mental handicap, psychiatric disorder, substance abuse, alcohol abuse, imprisonment and serious financial problems and/or gambling addiction. Lastly, we made a few minor definitional changes in order to create clear coding rules to differentiate between less clear-cut subcategories, which was particularly the case

for emotional neglect (e.g., 'inadequate affection' versus 'other emotional neglect').

Although these changes might have led to significant differences in prevalence estimates, the fact that the most recent NIS (NIS-3) does not significantly deviate from our Dutch prevalence estimate shows the robustness of NIS-type procedures. In a country with a smaller population it has been proven to be easier to produce estimates with narrower confidence boundaries. This is important for the detection of policy-related but rather small differences in maltreatment prevalence within a country across time, and for comparisons between countries at the same point in time.

Limitations

The current study has some limitations to consider. Although the ratio of sentinels to children in the NPM-2005 is higher than in the NIS studies, an increase of the number of sentinels would further improve the coverage. The forthcoming NIS-4 has again increased the number of sentinels, resulting in a ratio of around 1.6 sentinels per 100,000 children. It should be noted that the ratio in our study was still twice as high with more than 3 sentinels per 100,000 children. Moreover, the NPM-2005 had nationwide coverage, whereas the NIS included only a sample of the counties due to the much larger population size of the USA.

Furthermore, it would be methodologically sound to randomly draw a sample of sentinels *within* each organization, but we faced many practical, structural and organizational barriers for sentinels to participate which made randomization impossible. A policy of compulsory participation to this type of studies for all relevant state-funded organizations and professionals involved would be of great help.

Our study included a fairly broad spectrum of non-CPS sentinels, but in a follow-up study the number of non-CPS organizational categories may be extended, for example through the inclusion of emergency units of (pediatric) hospitals or the centers for child and youth care ('Bureaus Jeugdzorg') that function as the main entrances for more specialized types of help. However, the contribution of child mental health care to the number of CPS reports is small: only 2% of all CPS reports comes from this branch (Wolzak, 2008), which is similar to the findings of the NIS-3 study where only 3% of all reports came from mental health sources (Sedlak & Broadhurst, 1996). Pediatricians were virtually absent among our sentinels; they were asked to participate but the great majority declined, mainly because of time constraints. This seems to mirror the American situation where pediatricians were willing but submitted very few cases and therefore 'the

potential of pediatricians as sentinels has been explored and rejected twice during the NIS history' (Sedlak, 2001, p. 69). Nevertheless the next prevalence study may try and include the staff at emergency units and pediatric units of hospitals.

With respect to the coding procedure of the sentinel reports, two major stages can be distinguished: deciding to which subtype the maltreatment belonged, and evaluating the impact of the maltreatment on the child. The main problem of the first stage is the validity of the hierarchy of the maltreatment subtypes, ranging from sexual abuse as the subtype highest in ranking to 'other types of abuse' in the lowest position, and with priority given to harm cases. A firm empirical base for any prioritization is currently lacking, though hierarchical classification schemes such as we used have been found to have predictive validity for child developmental outcomes (Lau et al., 2005). The second stage, evaluating the severity of the impact of maltreatment, is challenging as well. An inherent problem of coding harm is the complexity of evaluating harm for child development. Developmental trajectories are characterized by complex transactional pathways, implicating non-linear relationships between harm and maltreatment, and the possibility of latent harm. Harm that is not yet present or visible on the short term cannot be registered and precludes categorization in the harm standard. Furthermore, in many cases the causal association between a specific type of maltreatment and visible symptoms cannot easily be established. Evaluating harm remains therefore a decision where errors can be made in both directions: the possibility of false negatives is increased by the strict criteria required for the harm standard, leading to a lack of identification of seriously abused children without (visible) symptoms. On the other hand, the limited knowledge about specificity and causality of the relation between various symptoms and specific types of abuse can lead to false positives and the inclusion of too many cases, by wrongly attributing symptoms to the maltreatment. But the same difficulties are even more apparent in the only alternative to coding harm, which would be an evaluation of the maltreatment situation itself. Sentinels are seldom eye-witnesses of the maltreatment and the request to provide a complete judgment about the maltreatment situation as such would therefore create ample opportunity for unreliable reports.

Prevalence trends

The absence of previous Dutch prevalence studies precludes any conclusions about the stability of the current rate, and repeated monitoring with the NPM methodology is therefore urgently needed. Periodic assessments can provide the information necessary to evaluate the influence of changed policies, changes in the composition of the Dutch population, or evolving child rearing

attitudes of parents. Child maltreatment is a serious social problem, affecting approximately one in each 30 children, with huge financial and psychological consequences for society. Insight in the size and nature of this problem is needed to provide a firm, evidence-based ground for policy, prevention and therapeutic programs.

The United Nations Convention on the Right of the Child obliges national governments to stimulate and support initiatives to prevent child maltreatment, and to treat its harmful consequences. Our study has increased the visibility of the iceberg of maltreatment cases below the water line, but a major part may still remain undetected. A periodical monitor of the prevalence of maltreatment is a prerequisite for the initiatives to prevent child maltreatment, and we argue that structural implementation of prevalence studies is one of the duties deriving from the United Nations Convention. At the same time, a European initiative is needed to coordinate child maltreatment prevalence studies in the various countries in order to compare the effects of country-specific policies on child maltreatment. We hope that these efforts will contribute to the ultimate goal: a childhood free of abuse and neglect for all children.

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