Child maltreatment in numbers : a multimethod study of year prevalence rates and risk factors

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3 The prevalence of child sexual abuse in out-of-home care: A comparison between abuse in residential and in foster care

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ABSTRACT

We investigated the 2010 year prevalence of child sexual abuse (CSA) in residential and foster care and compared it with prevalence rates in the general population. We used two approaches to estimate the prevalence of CSA. First, 264 professionals working in residential or foster care (sentinels) reported CSA for the children they worked with (N = 6,281). Second, 329 adolescents staying in residential or foster care reported on their own experiences with CSA. Sentinels and adolescents were randomly selected from 82 Dutch out-of-home care facilities. We found that 3.5 per 1,000 children had been victims of CSA based on sentinel reports. In addition, 58 per 1,000 adolescents reported having experienced CSA. Results based on both sentinel and self-report revealed higher prevalence rates in out-of-home care than in the general population, with the highest prevalence in residential care. Prevalence rates in foster care did not differ from the general population. According to our findings, children and adolescents in residential care are at increased risk for CSA compared to children in foster care. Unfortunately, foster care does not fully protect children against sexual abuse either, and thus its quality needs to be further improved.

INTRODUCTION

Residential care arrangements are typically characterized by large, frequently changing peer groups, and frequent shifts and instability of caregivers (Ryan, Marshall, Herz, & Hernandez, 2008; Van IJzendoorn et al., 2011), while children in foster care grow up in a more stable family environment. However, in both types of care transitions seem to occur more often than would be desirable (Allen & Vacca, 2010; Oosterman, Schuengel, Slot, Bullens, & Doreleijers, 2007). Frequent transitions, the non-biological relationship between child and caregiver, and possible earlier maltreatment experiences of children, may increase the risk for child sexual abuse (CSA) in out-of-home care. Moreover, because of the larger child-to-caregiver ratio, the presence of larger numbers of vulnerable peers of both sexes and the more unstable care arrangement with high peer and staff turn-over, children in residential care may be at increased risk for CSA compared to children in foster care. However, it has recently been suggested that residential group rearing should be preferred over foster care (Allen & Vacca, 2011; Whetten et al., 2009). We add to this discussion by examining the year prevalence of CSA in residential and foster care, and comparing the prevalence estimates in both types of care with the year prevalence of CSA in the general population.

Child sexual abuse

CSA is defined here as every form of sexual interaction with a child between 0 and 17 years of age against the will of the child or without the possibility for the child to refuse the interaction. Such interactions can be with or without physical contact, such as penetration, molestation with genital contact, child prostitution, involvement in pornography, or voyeurism (Sedlak et al., 2010), and refer to sexual acts by adults as well as peers. Meta-analytic evidence indicates that CSA is a global problem with lifetime prevalence rates between 4 per 1,000 children for informant studies and 127 per 1,000 children for self-report studies (Stoltenborgh, Van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011). The terms prevalence and incidence are both used when describing the occurrence of child maltreatment. The incidence of maltreatment generally refers to all new cases in a given time period, while prevalence rates indicate the total number of children maltreated in a given time period, irrespective of the time of onset (Rothman, 2002). The current study reports year prevalence estimates, which refer to the total number of children experiencing child maltreatment in a specific year.

Among the largest and most comprehensive studies on the year prevalence of child maltreatment including CSA are the National Incidence Studies (NIS; Sedlak et al., 2010). The NIS are periodically conducted in the US since 1979, using reports from professionals working with children (sentinels) and reports to child protective services (CPS) to calculate year prevalence rates of child maltreatment. The most recent version of this study, the NIS-4 (Sedlak et al., 2010), reports that 180,500 children or 2.4 per 1,000 children experienced CSA in the US in 2005/2006. The same sentinel survey methodology was used in combination with self-report by high school students in two Dutch replications of the NIS:

The Netherlands' Prevalence Studies of Maltreatment of Youth (NPM-2005: Euser, Van IJzendoorn, Prinzie, & Bakermans-Kranenburg, 2010; NPM-2010: Alink et al., 2011). The most recent version of the NPM (NPM-2010; Alink et al., 2011) showed year prevalence rates of CSA in 2010 in the Netherlands between 0.8 per 1,000 children (based on sentinel reports) and 58 per 1,000 children (based on self-report).

Child sexual abuse is associated with a variety of short- and long-term negative correlates. Victims of CSA are likely to develop various types of internalizing and externalizing problem behaviors, are at increased risk for recurred sexual victimization, and may as parents place their own children at risk for abuse and neglect (Cutajar et al., 2010; Trickett, Noll, & Putnam, 2011). The large impact of CSA necessitates protecting children against this type of abuse. This protection is especially important for children who have been removed from the home due to maltreatment experiences, because these children may be more vulnerable for becoming victims of CSA than children living with their (biological) parents (e.g., Benedict, Zuravin, Brandt, & Abbey, 1994).

Residential and foster care

When children are abandoned or orphaned, or not properly cared for by their parents, they can be placed out of the home in either residential or foster care. There are indications that children growing up in residential care and foster care have a higher risk of maladaptive development, such as socio-emotional problems and lower cognitive functioning, than children living in biological families (Van IJzendoorn, Luijk, & Juffer, 2008, Vorria, Rutter, Pickles, Wilkind, & Hobsbaum, 1998). Although both residential and foster care can be characterized by frequent placement changes (Ryan et al., 2008) and thus by caregivers who may not be as emotionally involved as a biological parent would be (Van IJzendoorn et al., 2011), foster families seem to offer a relatively stable rearing environment during one placement. Residential care during 24 hours, 7 days per week, however, is often characterized by frequent shifts and instability of caregivers, and frequent changes in the composition of the residential group on a day-to-day basis (e.g., Roy, Rutter, & Pickles, 2000), forcing children to forge new peer relationships more often than foster children.

In addition to the possibly maladaptive development of children in residential and foster care, these children may also be at greater risk for CSA (e.g., Benedict et al., 1994; Hobbs, Hobbs & Wynne, 1999). There are several possible explanations that could lead to such an increased risk. First, children who have been removed from the home may have earlier maltreatment experiences and often show emotional and behavioral problems. Such problems may make children more vulnerable and their behavior can elicit further maltreatment. However, Jaffee, Caspi, Moffit, Polo-Thomas, and Price (2004) found that there is a limit to child effects: Difficult and coercive child behavior can provoke corporal punishment, but the occurrence of physical abuse is largely explained by family factors and not by child characteristics. It is however unknown whether this is also the case for CSA. Second, the non-biological relationship between children and their caregivers in foster or residential care may increase the possible risk for CSA. For example, results of the first

Dutch Prevalence study of Maltreatment of youth (NPM-2005) indicated that children in stepfamilies are at increased risk for maltreatment compared to biological families (Van IJzendoorn, Euser, Prinzie, Juffer, & Bakermans-Kranenburg, 2009). Third, residential groups often have a mixed gender composition, and children with the most severe problem behaviors are frequently placed together in the same group (Ryan et al., 2008; Van IJzendoorn et al., 2011). Without sufficient monitoring of the group interactions by professional caregivers the mixed nature of the residential groups and the severe problem behaviors of the group members may easily trigger peer sexual abuse.

However, comparing the outcomes of children in residential and foster care is difficult, since differences may partly be due to the fact that children are not placed at random in either residential or foster care. It has been found that children in residential care already had more severe problems at the time of placement than children in foster care (e.g., Scholte, 1996). However, some studies have specifically shown that institutional care may cause developmental problems. For instance, in the Bucharest Early Intervention Project (BEIP) young institutionalized children were randomly assigned to foster care or to continued institutional care in Romania (e.g., Smyke, Zeanah, Fox, Nelson, & Guthrie, 2010). The impaired developmental outcomes of children in residential care compared to those of children who went to foster families indicate that residential care is detrimental to child development in virtually all domains, notably the cognitive and socio-emotional domain although the starting points for children in foster and residential care were similar. In addition, Ryan and colleagues (2008) examined the relation between out-of-home placements and juvenile delinquency, using propensity score matching to minimize potential selection bias. Group home placements were associated with a higher risk of delinquency as compared to foster home placements controlling for differences before placement.

Few studies actually examined CSA in out-of-home care, but all found high levels in both residential and foster care (e.g., Benedict et al., 1994; Rosenthal, Motz, Edmonson, & Groze, 1991; US Department of Justice, 2010). None of these studies compared the prevalence rates of CSA in residential care to those in foster care. Furthermore, these studies were often based on self-report of children who experienced CSA, and they did not use a randomly selected sample. For instance, Rosenthal and colleagues (1991) examined 290 cases of abuse reported to an advisory committee, and Benedict and colleagues (1994) examined cases of CSA reported to CPS. This means that only children who were reported to this committee or to the CPS were taken into account, while many non-reported cases were not likely taken into account.

The current study

The prevalence of CSA in residential and foster care has never been systematically examined and compared. The current study addresses CSA that occurred during a one year period (2010), and only while the children were living in out-of-home care. We used a random sample of adolescents in residential and foster care reporting on their own experiences with CSA, and professionals working with children between 0 and 17 years of age

in out-of-home care (sentinels) reporting on cases of CSA. Using two different methods allows us to make a more robust comparison between residential and foster care. Furthermore, earlier findings from the NPM-2010 (Alink et al., 2011) applying the same methods are used for comparison with the general population. The research method of the present study is largely similar to the method used in the NPM-2010 (Alink et al., 2011), except for some adjustments to the Dutch out-of-home care system. Therefore, it is possible to compare the year prevalence estimates from the current study with the year prevalence of CSA in the general Dutch population.

The following research questions were be addressed separately for sentinel and self-report data: 1) What was the overall year prevalence of CSA in out-of-home care in 2010?; 2) Did the year prevalence of CSA in residential care differ from the year prevalence in foster care?; 3) Did the prevalence estimates of the current study differ from the year prevalence of CSA in the general Dutch population?; 4) What were the characteristics of victims and perpetrators of CSA in out-of-home care? It was expected that CSA would occur more often in out-of-home care than in the general population. In addition, because of the greater lack of continuity of care and the group settings in residential care, we expected that the risk for CSA would be higher in residential care than in foster care. Although we expected to find higher prevalence estimates based on self-report compared to sentinel reports (Stoltenborgh et al., 2011), we anticipated that the relative differences between prevalence estimates for the two types of care would converge for the two methods. Since the main aim of this paper was to examine the risk for CSA in different types of care, regardless of type of reporter, the results section is organized by type of reporter. Finally, because both residential and foster care are care arrangements with a number of children living under the same roof, we expected that peers living in the same care arrangement would often be perpetrators of CSA.

METHOD

Participants

Out-of-home care facilities. Both the sentinels and the adolescents were selected from four types of care facilities in the Netherlands: 1) foster care, 2) regular residential care (in which children are free to leave the facility), 3) secure residential care (in which children are not allowed to leave the facility), and 4) juvenile detention. Of all children who stayed in Dutch out-of-home care in 2010, 52% lived in foster care, 39% in regular residential care, 6% in secure residential care, and 3% lived in juvenile detention. In order to realize a representative distribution of these types of facilities in our sample, we selected the four types of facilities proportionate to the numbers of children staying in these types of facilities in the Netherlands. This led to the inclusion of all (locations of) foster care (n = 25), secure residential care (n = 15), and juvenile detention (n = 11) facilities. Foster families in the Netherlands are affiliated with one of 25 foster care facilities. From the 224 regular residential care facilities, a random selection of 20 facilities was drawn (one facility can consist of multiple

locations). In total, 82 locations were asked to participate in the study and 79 locations (96%) agreed to participate.

Sentinels. Professionals from the selected care facilities were sampled based on the following criteria: 1) the employee worked directly with the children staying at the facility (e.g., youth care workers, not foster parents) and 2) the employee had been working in out-of-home care since 2010 or before. In all residential facilities (including juvenile detention facilities), only one professional was selected from each group to prevent professionals reporting on the same group of children. Analogous to the NIS (Sedlak et al., 2010) these selected professionals are called sentinels. To compensate for possible non-response, a back-up sample with a similar number of professionals was selected from each facility, but they were only contacted if one or more sentinels in the first group did not participate. In total, 411 sentinels (36% from foster care) were invited to participate by e-mail, which included a short introduction of the study, a link to the registration form and a link to unsubscribe for participation. The overall response was 64% (n = 264), with 80% for foster care versus 57% for residential care. To compensate for the lower response rate in residential care, a larger number of professionals from the back-up sample were contacted. Sentinels received a compensation of €10 for participation.

Adolescents. Participants of the self-report study were adolescents who stayed in one of the participating care facilities. Adolescents were eligible for participation if they met the following criteria: 1) between 12 and 17 years of age in 2010, 2) stayed in out-of-home care in 2010, and 3) without intellectual disabilities, because completing the questionnaires would have been too challenging for children with intellectual disabilities. A random selection from all eligible adolescents was made: 12 adolescents from each regular residential care and juvenile detention facility, 10 from each foster care facility (in some cases two adolescents from the same foster family), and five from each secure residential care facility. To compensate for possible non-response, an equal number of adolescents were selected from each facility, but they were only contacted if one or more adolescents in the first group did not participate. All selected adolescents and their legal guardians were informed about the study by mail and asked for permission to participate. In the case of foster care placement, the foster parents were also informed about the study. Adolescents who agreed to participate were visited in their residential care facility or foster home by one or two research assistants. They completed the digital questionnaire on the research assistant's laptop. After completing the questionnaire, participants received a leaflet with information about possible effects of traumatization and contact information for help or support. Participating adolescents received a compensation of €10. In total, 669 adolescents were invited to participate; 341 (51%) adolescents actually participated in the study. Data inspection showed that 12 adolescents had systematic answering tendencies or provided very unlikely answers (e.g., over 100 perpetrators). Data from these adolescents were not used in the analyses, leading to a final sample of 329 adolescents. Somewhat more than half of these participants were male (56%), and they were between 12 and 19 years old at the time of par-

ticipation (M = 15.67; SD = 1.66). Eighty-seven percent were born in the Netherlands, and 46% had at least one parent of non-Dutch origin. More than half of the adolescents (52%) received education on the prevocational level or lower, 24% received vocational training, 13% received higher general secondary education or pre-university education, 6% received another type of education or did not know the type of education, and 5% did not go to school. The research protocol of the study was approved by the Ethical Committee of the Leiden University Medical Center.

Measures

Sentinel registration form. The standardized registration form, based on the form used for the NIS (Sedlak et al., 2010), NPM-2005 (Euser et al., 2010), and NPM-2010 (Alink et al., 2011), was digitalized for this study. Sentinels were asked whether they suspected that one or more children experienced child sexual, physical, or emotional abuse, or physical or emotional neglect which occurred in foster or residential care in 2010. Sentinels were asked to report substantiated, non-substantiated, and never reported cases of abuse and neglect. The current study focuses on sexual abuse. The form included open questions to describe the abuse and possible injury, and closed questions about characteristics of the child and the perpetrator, the location and period of the maltreatment, and the frequency with which the maltreatment has occurred. Finally, the sentinels were asked to estimate the number of children they had worked with in 2010. Six sentinels (2%) worked in both types of care in 2010, and they reported separately on residential and foster care (regarding the reported children and total number of observed children). The total numbers of sentinels, reported cases of CSA, observed children in the year 2010 and the total population of children in care are shown in Table 1. Slightly more than half of the observed children were male (53%), 44% were younger than 12 years of age, and 17% had an intellectual disability. In contrast to the self-report study, children with an intellectual disability are taken into account in the sentinel study, to obtain a representative sample of children in out-of-home care.

Coding of child sexual abuse. The cases of child maltreatment reported by the sentinels were independently coded by six trained coders (including one expert coder who also coded cases in the NPM-2010 study), to decide whether the case qualified as sexual abuse (based on the definitions used in the NPM-2010 [Alink et al., 2011] and the NIS-4 [Sedlak et al., 2010]) and to classify the case in one of five types of sexual abuse: 1) sexual abuse with penetration, 2) sexual abuse with genital contact (without penetration), 3) sexual abuse with physical contact (without genital contact and/or penetration), 4) sexual abuse without physical contact, and 5) other sexual abuse. Reported cases of CSA that did not occur in 2010 or occurred in 2010 but prior to the out-of-home placement were not included. Further, consensual sexual interactions between a child and an adult over 21 years of age were included, while consensual sexual interactions between two children under 21 years of age were excluded. To determine reliability, the five coders independently double coded 25% of all cases (n = 89) with the expert coder. The mean inter-coder reliability (kappa) for

Table 1. Total number of participating organizations and sentinels,number of reported children, sample size of children observed by the sentinels and total population of children in dutch out-of-home care, per type of facility

Type of facility	Total number of sentinels[1]	Number of reported children	Sample size of observed children	Total population in Dutch out-of-home care[2]
Foster care	117	7	3,466	24,150
Residential care	153	14	2,815	22,677
Total		21	6,281	46,827

[1]The sentinels from foster care and residential care cannot be summed, because six sentinels reported on both types of care. A total number of 264 sentinels reported on foster care and/or residential care.
[1]Derived from Jeugdzorg Nederland (2011) and Pleegzorg Nederland (2011).

sexual abuse was .95 (98% agreement). The mean inter-coder reliabilities for the different types of sexual abuse were: .86 (98%) for sexual abuse with penetration, .64 (95%) for sexual abuse with genital contact, .74 (96%) for sexual abuse with physical contact, .73 (96%) for sexual abuse without physical contact and .75 (93%) for other sexual abuse. The range in kappas was .59-.96 (93% - 98%). All cases were coded separately by two coders. In case of disagreement, the case was discussed to consensus with the expert coder.

Self-report questionnaire. The questionnaire, based on the NPM-2010 (Alink et al., 2011; see also Lamers-Winkelman, Slot, Bijl, & Vijlbrief, 2007), consisted of questions derived from the Dating Violence Questionnaire (Douglas & Straus, 2006) and the Parent-Child Conflict Tactics Scales (CTSPC; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) that were embedded in a series of questions about unpleasant and nasty incidents (such as bullying), nonviolent discipline by parents (CTSPC; Straus et al., 1998), the social desirability items from the Dating Violence Questionnaire (Douglas & Straus, 2006), and questions about socio-demographical characteristics of the children and their families. In the NPM-2010 four questions were asked about sexual abuse. For the current study, 20 questions about sexual abuse were added (six based on Hamby & Finkelhor, 2000; see also Finkelhor, Hamby, Ormrod & Turner, 2005; Helweg-Larsen, & Larsen, 2006) resulting in a total of 24 items on sexual abuse (e.g., An adult has had sex with me; A child/adolescent under 18 years of age forced me to touch his/her genitals; Someone showed me pornographic movies or magazines). Adolescents were asked to report only experiences of CSA that occurred in 2010 while they lived in out-of-home care. If one of the questions about sexual abuse was answered affirmatively, questions were asked about characteristics of the perpetrator, the location and period of the maltreatment, and the frequency with which the maltreatment has occurred. The sexual abuse questions were grouped into five subcategories (similar to

the categories used in the sentinel study).

Statistical procedures

Prevalence rate. The prevalence rate of child sexual abuse (CSA) was reflected as the proportion of reported cases of CSA in relation to the number of observed children in 2010. To obtain this number, the sentinels' estimates of the numbers of children they worked with in 2010 were summed. This was done separately for sentinels from foster care and residential care (regular residential care, secure residential care, and juvenile detention). Prevalence rates for both types of care and for the different types of sexual abuse were calculated with the following formula:

$$X = \frac{C * 4.43}{Tot_s} * Tot_{pop} \tag{3.1}$$

In this formula, X represents the prevalence estimate, C is the number of cases of CSA, Tot_s is the number of children observed by the sentinels and Tot_{pop} represents the total number of children in the population. Summation of the absolute prevalence estimates for foster care and residential care leads to the total prevalence rate of CSA in Dutch out-of-home care.

The same procedure was used to estimate the prevalence of CSA in the self-report study. In this case, the total number of observed children is equal to the number of adolescents who filled out the questionnaire. However, the proportion was not multiplied by the total population to obtain an absolute prevalence estimate, since we were not able to calculate the total number of children between 12 and 17 years of age who stay in Dutch out-of-home care. To calculate the overall prevalence estimate based on self-report, all 24 items about sexual abuse were taken into account. However, when comparing the prevalence rate in out-of-home care with that found in the NPM-2010, only the four questions used in the NPM-2010 were used. Furthermore, the sample of the NPM-2010 was matched with the sample of the current study based on educational level and ethnicity.

Comparison of prevalence estimates. Risk ratios (RRs) with 95% confidence intervals were calculated to determine whether prevalence rates were significantly different. RRs are defined as the ratio between the risk for maltreatment in the exposed group (i.e., out-of-home care) versus the risk for maltreatment in the unexposed group (i.e., NPM-2010). If the confidence interval of the RR includes the value 1, the risk of the exposed group is assumed to be not significantly different from the risk in the unexposed group (Rothman, 2002). In addition, Wilson estimates of the 84% confidence intervals (CI) are presented in the figures depicting the prevalence estimates (Wilson, 1927; Alink et al., 2011; Euser et al., 2010; U.S. Department of Justice, 2010; Moore & McCabe, 1996). 84% CIs indicate a probability of overlap of approximately 5%, and therefore, if 84% CIs of two estimates (partly) overlap, prevalence rates are assumed not to be significantly different (Goldstein & Healy, 1995; Julious, 2004; Payton, Greenstone, & Schenker, 2003). Because the data from the sentinels

Table 2. Prevalence estimates of CSA in 2010, based on sentinel reports: Overall number of children reported by the sentinels, prevalence estimates with 95% confidence intervals, and estimated absolute numbers of abused children

Type of CSA	Number of reported children[1]	Prevalence estimate (‰) [1]	95% CI[2]	Estimated number of abused children
Overall prevalence	21	3.5	0.7-8.3	161
Physical contact	19	3.1	0.5-8.0	146
Penetration	8	1.3	0.1-3.6	61
Touch (genitals)	8	1.3	0.1-3.6	61
Touch (not the genitals)	3	0.5	0.0-2.3	24
No physical contact	3	0.5	0.0-1.3	24
Other	1	0.2	0.0-1.7	7

[1] The numbers of children and the prevalence estimates within Overall prevalence (Physical contact, No physical contact, and Other) and within Physical contact (Penetration, Touch [genitals], and Touch [not the genitals]) do not sum to the total, since children can have experienced multiple types of sexual abuse.
[2] The reported CI is corrected for possible design effect.

may be clustered, a correction for design effect was applied to the confidence intervals of the sentinel study (Hox, 2002; Kish, 1965).

RESULTS

Sentinel study

Prevalence rates. The overall prevalence estimate and the estimates for the different types of CSA with 95% confidence intervals are shown in Table 2 for overall out-of-home care in 2010. A total of 161 children were victim of CSA, and the majority of victims experienced CSA with physical contact. The overall prevalence estimate of CSA in foster care was 49 children or 2.0 (95% CI: 0.02-6.08) per 1,000 children. In residential care the overall prevalence of CSA was 112 children or 5.0 (95% CI: 1.3-11.2) per 1,000 children. Observed children in residential care were on average substantially older (89% were 12 years or older) than children in foster care (32% were 12 years or older). To prevent a possible age effect when comparing the two populations, the prevalence estimates were recalculated for children aged 12 years or older. The risk ratio was not significantly different from one, RR = 1.17; 95% CI: 0.8-1.7, indicating that for this age group, the prevalence of CSA in foster care (4.6 per 1,000) was not significantly different from the prevalence in residential care (5.4 per 1,000), at least from the perspective of the sentinels.

Comparison with the general population (NPM-2010). The second Dutch Prevalence Study of Maltreatment of youth (NPM-2010; Alink et al., 2011) showed that on the basis of

sentinel reports 2,796 children or 0.8 (95% CI: 0.3-1.3) per 1,000 children between 0 and 17 years of age had experienced CSA in the Netherlands in 2010. The risk ratio for overall out-of-home care was 4.5 (95% CI: 3.9-5.3), indicating that children in Dutch out-of-home care had a nearly fivefold increase in risk for CSA compared to children in the general Dutch population in 2010 (Figure 1a). The risk for children from 0-17 years of age in foster care was also significantly higher than the risk for children in the general population (RR = 2.3; 95% CI: 1.9-3.4). However, the 84% confidence intervals of the two estimates (in which a correction for possible design effect was taken into account [see Method]) are partly overlapping, indicating that the prevalence of CSA in foster care is not significantly different from the prevalence in the general population (Figure 1b). Because in our sample most children in residential care had a minimum age of 12, the prevalence estimates for children aged 12 years or older were compared with that of the same age category of the NPM-2010. The prevalence rate of CSA in the general Dutch population of children aged 12 years and older was 0.7 (95% CI: 0.3-1.0) per 1,000 children. The risk ratio for residential care was significant and large, RR = 9.2, 95% CI: 7.5-11.3; children in residential care had a ninefold increase in risk for CSA in 2010 compared to children aged 12 years or older in the general Dutch population (Figure 1c).

Child and perpetrator characteristics. The sexually abused children reported by the sentinels were between 4 and 17 years of age, 86% were 12 years of age or older, 95% of the reported children were girls, 24% had an intellectual disability, and 81% were born in the Netherlands. A proportion test showed that girls more frequently experienced CSA than boys ($\chi^2 = 21.43$; $p < .01$), and children who were sexually abused were significantly older overall ($\chi^2 = 7.53$; $p < .01$), and in foster care ($\chi^2 = 5.00$; $p < .05$), but not in residential care ($\chi^2 = 0.55$; $p = .46$).

In 67% of the cases of CSA one perpetrator was involved and in all other cases two or more perpetrators were reported by the sentinel. In foster care, perpetrators were foster parents or other adult members of the foster family (57%), adolescents who stayed in the same foster home (14%), or people who were unknown to the sentinel (29%). In the majority of all cases in residential care, perpetrators were adolescents from the same residential care facility (50%) or other adolescents (29%). In the other cases, an employee of the residential care facility was the perpetrator (7%) or the perpetrator was unknown to the sentinel (21%). Percentages for residential care do not sum to 100%, because one child was abused by more than one type of perpetrator. Of all perpetrators, 91% were male, 3% were female, and of 6% of the perpetrators the gender was unknown. 53% of the perpetrators were 21 years old or younger, 19% of the perpetrators were older than 21 years and in 28% the age of the perpetrator was unknown.

Self-report study

Prevalence rates. In total, 78 adolescents reported at least one type of CSA. The prevalence estimates for all types of CSA with 95% confidence intervals for overall out-of-home care

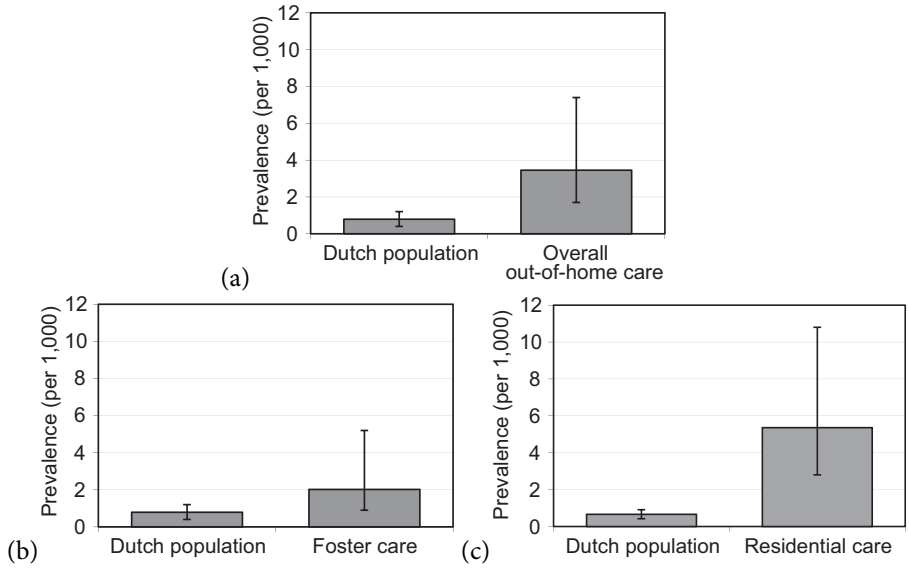

Figure 1. (a) Prevalence estimates (‰) of child sexual abuse in 2010 based on sentinel reports in the general Dutch population and overall out-of-home care. (b) Prevalence estimates (‰) of child sexual abuse in 2010 based on sentinel reports in the general Dutch population and foster care. (c) Prevalence estimates (‰) of child sexual abuse of children with a minimum age of 12 years based on sentinel reports in the general Dutch population and in residential care.
Note. 84% confidence intervals are presented instead of 95% confidence intervals, because they indicate a probability of overlap of approximately 5% (Julious, 2004).

based on self-report are shown in Table 3. Comparable to the sentinel study, the majority of victims reported CSA with physical contact. More than half of the adolescents (51%) stayed in residential care, 35% stayed in foster care, and 14% of the adolescents reported that they stayed in both residential and foster care in 2010. In this sample, boys (63%) were overrepresented in residential care, while boys and girls were evenly distributed in the other two groups. Furthermore, adolescents in residential care (M = 16.1; SD = 1.46) were significantly older than adolescents in foster care (M = 15.1; SD = 1.83). The groups did not differ on ethnicity. We found significant differences between the overall prevalence estimate of CSA in foster care and residential care. Prevalence rates of CSA in 2010 were 168 (95% CI: 110-249) per 1,000 in foster care, 280 (95% CI: 216-355) per 1,000 in residential care, and 341 (95% CI: 219-489) per 1,000 for adolescents who stayed in both residential and foster care. Risk ratios indicated that adolescents in foster care reported significantly less CSA than adolescents from residential care (RR = 0.6; 95% CI: 0.37-0.97) and adolescents from both residential and foster care (RR= 0.5; 95% CI: 0.3-0.9). The difference between residential care and both residential and foster care was not significant (RR = 0.8; 95% CI: 0.5-1.3).

Table 3. Prevalence estimates of CSA in 2010 per type of sexual abuse, based on self-report: sample size, overall number of adolescents who reported sexual abuse, and prevalence estimates with 95% confidence intervals

Type of CSA	N[1]	Number of adolescents who report CSA[2]	Prevalence estimate (‰)[2]	95% CI
Overall prevalence	314	78	248	204-299
Physical contact	314	59	188	149-235
Penetration	315	27	86	59-122
Touch (genitals)	316	39	123	92-165
Touch (not the genitals)	319	27	85	59-121
No physical contact	316	53	168	131-213
Other	312	9	29	15-55

[1]Participants who did not want to answer specific questions are considered missing.
[2]The numbers of adolescents and the prevalence estimates within Overall prevalence (Physical contact, No physical contact, and Other) and within Physical contact (Penetration, Touch, genitals, and Touch not the genitals) do not sum to the total, because adolescents can have experienced multiple types of sexual abuse.

Comparison with the general population (NPM-2010). The prevalence estimates based on self-reports from the current study were compared with those from the NPM-2010. To control for possible effects of educational level and ethnicity, a random NPM-sample was selected (n = 543) with equal percentages of highly educated adolescents (13%) and adolescents born in the Netherlands (87%) as in the sample of the current study. In this NPM-2010 sample, the prevalence estimate of CSA was 74 (95% CI: 54-99) per 1,000 adolescents. On the basis of the four items about CSA used in the NPM questionnaire, the prevalence of CSA in out-of-home care was 143 (95% CI: 109-187) per 1,000 adolescents. Based on self-report measures, the risk for CSA in Dutch out-of-home care was significantly higher than in the matched Dutch population (RR = 2.0; 95% CI: 1.3-2.9). The prevalence estimates in the Dutch population and in foster care (55 [95% CI: 23-117] per 1,000; based on the four NPM-items) were not significantly different (RR = 0.7; 95% CI: 0.3-1.7). However, the risk for CSA in residential care (194 [95% CI: 140-263] per 1,000; based on the four NPM-items) was significantly higher than in the Dutch population (RR = 2.6; 95% CI: 1.7-4.1). Prevalence estimates based on the four NPM-items are shown in Figure 2.

Adolescent and perpetrator characteristics. Adolescents who reported CSA were between 12 and 19 years of age at the time of participation in the study (M = 15.73, SD = 1.47), 60% were girls, and 49% had at least one parent of non-Dutch origin. It should be noted that only adolescents of 12 years or older were selected to participate. Girls reported experiences of overall CSA more frequently than boys (χ^2 = 10.32; p < .01). No differences were found

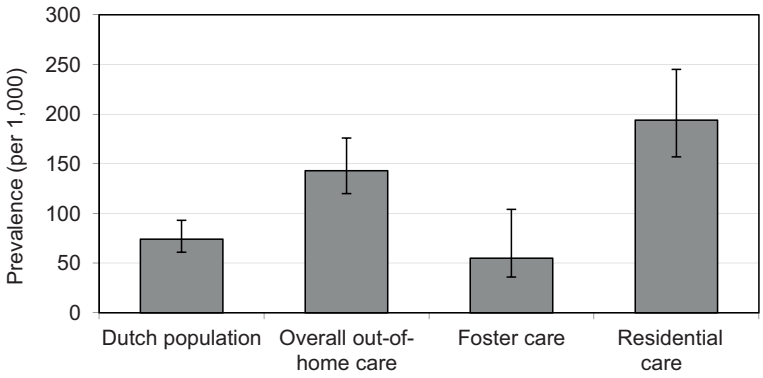

Figure 2. Prevalence estimates (‰) of child sexual abuse in 2010 based on self-report in the Dutch population, overall out-of-home care, foster care, and residential care. The NPM-2010 and out-of-home care sample are matched on educational level and ethnicity for comparison.
Note. 84% confidence intervals are presented instead of 95% confidence intervals, because they indicate a probability of overlap of approximately 5% (Julious, 2004).

for age (F [1,314] = .21; p = .65) or ethnicity (χ^2 = .20; p = .66) between adolescents who did and who did not report CSA.

Overall, nearly half of the adolescents who reported CSA (46%) did not want to report about their relationship with the perpetrator. Of the adolescents who did report about the perpetrator, in foster care, 27% of the adolescents reported to be sexually abused by their foster parent or another adult member of the foster family, 27% by an adolescent from the same foster home, 40% by another adult, and 27% by another adolescent. Perpetrators reported by adolescents from residential care were adolescents from the same residential facility (57%), employees from the residential facility (13%), other adults (33%), or other adolescents (27%). Percentages within residential and foster care do not sum to 100%, because victims could report more than one type of perpetrator. Of the adolescents who did report about the perpetrator, 77% reported that at least one of the perpetrators was 21 years of age or younger and 41% reported that at least one of the perpetrators was older than 21 years of age. Seventy-two percent of the victims of CSA reported that at least one of the perpetrators was male, 32% of the CSA victims reported that at least one of the perpetrators was female, and the gender of at least one of the perpetrators was not reported by 22% of the victims.

DISCUSSION

Children who are placed in out-of-home care and in residential care in particular, seem to experience CSA more frequently than children in the general Dutch population. Based on sentinel reports, a total number of 162 children or 3.5 per 1,000 children experienced CSA in out-of-home care in 2010. The separate year prevalence rates for residential care

and foster care were 5.0 per 1,000 and 2.0 per 1,000, respectively. These prevalence rates did not differ significantly. The year prevalence estimates based on self-report were considerably higher than those based on sentinel reports: 248 per 1,000 children in overall out-of-home care, 168 per 1,000 children in foster care, and 280 per 1,000 children in residential care. In contrast to the results based on sentinel reports, adolescents in residential care reported significantly more CSA than adolescents in foster care. As expected, CSA occurs more frequently in out-of-home care, and residential care in particular, than in the general population. Based on sentinel reports the difference between foster care and the general population did not seem substantial, and based on self-report the year prevalence of CSA in foster care did not differ from the general population.

Given the non-experimental research design, the current findings cannot provide any causal explanations for the divergence between residential and foster care so we can only speculate about this. As discussed before, the characteristics of residential care settings may be responsible for a higher prevalence of CSA. It has been suggested that the absence of a biological relationship between the child and the caregiver can increase the risk for CSA (Daly & Wilson, 1994). However, since we found that the risk was particularly increased for children in residential care and that the results were equivocal for foster care, the absence of a biological relationship cannot be the only risk factor for CSA. Residential care settings have previously been associated with 'structural neglect' (Van IJzendoorn et al., 2011). In a care arrangement with a large flow in both caregivers and children, it is difficult for a child to develop and maintain stable relationships with their caregivers and peers. Moreover, children in residential care live in large groups of children that often consist of both boys and girls and children with the most severe problem behaviors are frequently placed together in the same group. This may increase the risk of CSA, also by peers, who were the perpetrator in about half of the cases in the current study, especially in residential care. An important implication of our findings is that not only child-caregiver relationships in out-of-home care should be closely examined, but also peer relationships in residential and foster care need more supervision to prevent CSA.

Based on sentinel and self-report, girls were more frequently victims of CSA. Since relatively more boys than girls are staying in residential care as compared to foster care, the gender difference cannot account for the higher prevalence rates in residential care. Other studies also found this gender difference in prevalence rates of CSA. A comprehensive meta-analysis on the worldwide prevalence of CSA showed that girls reported CSA more frequently than boys (Stoltenborgh et al., 2011).

The same meta-analysis also showed a large discrepancy between sentinel and self-report prevalence rates (Stoltenborgh et al., 2011). Because of these expected differences between sentinel and self-reported prevalence rates, both approaches were included in the current study. Indeed, we found large differences between prevalence estimates based on sentinel reports and self-report, with adolescents reporting considerably more CSA than sentinels. One of the explanations for the different prevalence rates is that sentinels only report about cases of CSA that are known to them. CSA is a great taboo and therefore

children may not always disclose their experiences to their caretakers. The fact that more than half of the adolescents in our study did not want to report who the abuser was shows that victims of CSA are reluctant to talk about their experiences, even on an anonymous questionnaire. Therefore, it is likely that the cases of CSA reported by professionals are only the tip of the iceberg (Stoltenborgh et al., 2011). Furthermore, the prevalence estimate based on adolescent self-report may be an over- or underestimation, since adolescents may interpret questions about different types of sexual abuse differently from what was meant by the researchers (Stoltenborgh et al., 2011). Therefore, the prevalence rates in the current study based on sentinel reports should be considered as a lower bound of the actual prevalence rate of CSA.

It should also be noted that the current study assessed year prevalence and not life-time prevalence of CSA. The former is generally associated with lower prevalence rates compared to life-time prevalence (Stoltenborgh et al., 2011). This should be kept in mind when interpreting the high year prevalence estimates found in the current study. Only in one year and based on sentinel reports, already over 160 Dutch children placed out of the home experienced CSA. Lifetime prevalence of CSA in residential and foster care would likely show even higher rates.

Because of the large differences in prevalence rates based on methodology, it is not possible to give a reliable absolute number of victims of CSA in residential and foster care. However, and more importantly, we were able to compare our results with those in the general population (Alink et al., 2011), because of similar methods. Comparisons between out-of-home care prevalence rates based on sentinel and self-report on the one hand and general population rates on the other converged. Both approaches showed a higher prevalence of CSA in out-of-home care compared to the general population, and in both approaches this difference was mainly accounted for by the high prevalence estimate in residential care.

Some limitations of the current study should be considered. First, branch organizations and management teams of out-of-home care facilities were at first reluctant to participate, which has led to a delay in data collection. This increased the time interval between participation and the period about which the sentinels and adolescents reported CSA, leading to a possible underestimation of the prevalence of CSA. The moderate response rate in the self-report study (51%) shows that adolescents or their legal guardians were also reluctant to participate. This may have led to an underestimate, if abused adolescents or their legal guardians felt uncomfortable with participation, or to an overestimate, if non-abused adolescents or their legal guardians thought it was unnecessary to participate, since the adolescents did not have anything to report. A second limitation pertains to the measurement of CSA. On the one hand, sentinel reports provide valuable information, but it is likely that sentinels are not aware of all cases of CSA. On the other hand, retrospective self-report of children may have limited reliability and validity. Nevertheless, the comparison with the general population still holds, because the two approaches of the current study were similar to those used to assess CSA in the general population. Results from both ap-

proaches converge in that they indicate higher year prevalence rates in residential care as compared to the general population.

This is the first study in which the prevalence of CSA in residential and foster care was systematically examined and compared, and therefore a first indication of the increased risk for CSA in out-of-home care and in residential care specifically. However, since the prevalence rates reported in this paper are based on cases of CSA during one year, in one country, generalizing our findings should be done carefully. This systematic prevalence study needs to be replicated in order to examine the risk for CSA in out-of-home care in other countries, but also to examine the effect of changing policies on CSA in out-of-home care.

Finally, we did not have information about variables that may be related to the increased risk for CSA in residential care, such as care stability or group composition. Therefore, it remains unclear whether the increased risk for CSA in residential care is actually caused by the characteristics of the residential care arrangement. In fact, it should be noted that placement in either residential or foster care does not occur at random, and thus the divergence in prevalence could partly be due to pre-existing differences between children before placement. However, these possible differences may be difficult to assess, partly because of the large placement instability between types of care. For instance, James and colleagues (2004) found that about one third of the children in out-of-home care did not achieve placement stability in the first 18 months of out-of-home care, and often moved back and forth from foster care to residential care. In the current sample of adolescents, we found that boys were overrepresented in residential care, and that adolescents in residential care were somewhat older than those in foster care. These factors cannot account for differences in victimization rates because we found that girls were more at risk for experiencing CSA and because we controlled for age in the analyses on the difference between residential and foster care. However, children in residential care may also differ on other aspects from children in foster care, such as maltreatment experiences, attachment representations or problem behavior present before placement (e.g., Ryan et al. 2008; Zegers, Schuengel, Van IJzendoorn, & Janssens, 2008). Such pre-existing differences could make these children more vulnerable to become a victim of CSA. However, these differences do not justify the higher prevalence rates in residential care; if children in residential care are indeed more vulnerable, they should receive extra protection against CSA in a professional therapeutic environment. The actual effect of changes in caregivers, large group size, or same-sex or mixed-sex groups on CSA in out-of-home care remains unclear. Future studies examining CSA in out-of-home care should measure and control for such characteristics of the care arrangement.

In light of the current findings we return to the renewed debate about residential and foster care. It has been argued that residential care is a good alternative to foster care and might even be better for the development of children than community rearing (Allen & Vacca, 2011; Whetten et al., 2009). For example Allen and Vacca (2011) state that children in foster care would lag behind in their academic achievements due to the frequent placement

changes and the system would fail to prepare children for life after they have aged out of foster care. Instead of the current foster care system, it is proposed to look at properly working residential care settings and implement these as an alternative to foster care (Allen & Vacca, 2011). However, these arguments for residential care as a better alternative to foster care do not hold in light of the increased year prevalence of CSA in residential care. Especially given the large number of under-aged perpetrators, small, single-sex residential groups and smaller child-to-caregiver ratios are recommended in residential care, in order to enable adequate supervision of group interactions. However, because we have shown that CSA still occurs in foster families, policy should also be directed at improving foster care, such as reducing the number of transitions, and promoting support for foster parents taking care of these vulnerable children.

In conclusion, the current findings show that children in residential care are at increased risk for CSA compared to children growing up in foster families. This raises questions about the use of residential care for treatment of vulnerable children who may already be at risk for adverse development related to earlier maltreatment experiences. Although the risk of sexual abuse may be lower for children in foster care than for children in residential care, the quality of foster care should be further improved to protect vulnerable children against any risk of abuse.