

Contents lists available at ScienceDirect

Child Abuse & Neglect



The prevalence of childhood sexual abuse and adolescent unwanted sexual contact among boys and girls living in Victoria, Australia[☆]

Elya E. Moore^{a,b,*}, Helena Romaniuk^{a,c,d}, Craig A. Olsson^{a,d,e}, Yasmin Jayasinghe^{a,b,d}, John B. Carlin^{a,c,d}, George C. Patton^{a,d}

^a Centre for Adolescent Health, Murdoch Childrens Research Institute, Melbourne, Victoria, Australia

^b Department of Microbiology and Infectious Diseases, Royal Women's Hospital, Melbourne, Victoria, Australia

^c Clinical Epidemiology and Biostatistics Unit, Melbourne, Victoria, Australia

^d Department of Pediatrics, Melbourne, University of Melbourne, Victoria, Australia

^e Psychological Sciences, University of Melbourne, Melbourne, Victoria, Australia

ARTICLE INFO

Article history:

Received 7 July 2009

Received in revised form

18 December 2009

Accepted 7 January 2010

Available online 26 March 2010

Keywords:

Childhood sexual abuse

Adolescent unwanted sexual contact

Prevalence

ABSTRACT

Objectives: Childhood sexual abuse (CSA) is associated with both short- and long-term adverse mental and physical health consequences, yet there remains considerable controversy about the prevalence of CSA in the general population. There is also little prospective data on unwanted sexual contact (USC) collected during adolescence.

Methods: Data from a 10-year cohort study of a nationally representative sample of students aged 14–15 years in Victoria, Australia from 1992 to 2003 was used. CSA prior to age 16 was assessed retrospectively at age 24 years using a 6-item validated questionnaire. USC was assessed prospectively via questionnaire at 3 time points during adolescence. Multiple imputation was used to handle missing data.

Results: One thousand nine hundred forty-three of 2032 eligible adolescents participated in at least one wave of the study. One thousand seven hundred forty-five (812 males and 933 females) provided sufficient information to allow for multiple imputation and inclusion in the main analysis. The prevalence of any CSA was substantially higher among girls [17%, 95% confidence interval (CI): 14–20%] than boys (7%, 95% CI: 3–10%), as was the prevalence of USC reported during adolescence (14%, 95% CI 11–16%, versus 6%, 95% CI: 4–8% respectively).

Conclusions: These findings highlight the high prevalence of childhood sexual abuse and unwanted sexual contact among girls as well as boys.

Practice implications: In order to accurately inform early recognition, intervention and education programs for individuals with a history of CSA the frequency of sexual abuse must first be precisely quantified. Developing more standardized approaches will be important in order to improve our understanding of the extent of this problem.

© 2010 Elsevier Ltd. All rights reserved.

Introduction

In 2004 the World Health Organization (WHO) declared childhood sexual abuse (CSA) "a silent health emergency" of international importance (The World Health Organization [WHO], 2004). The long-term negative consequences of CSA are

[☆] This work was supported by a National Health and Medical Research Council Capacity Building Grant in Population Health Research (ID: 436914, authors: EM, JC, and GP). Dr Olsson is supported by an Victorian Health Promotion Foundation Research Fellowship. Professor Patton is supported by an Australian National Health and Medical Research Council Senior Principal Research Fellowship.

* Corresponding author address: Murdoch Childrens Research Institute, Bio21, 55 Flemington Road, Parkville, Victoria 3052, Australia.

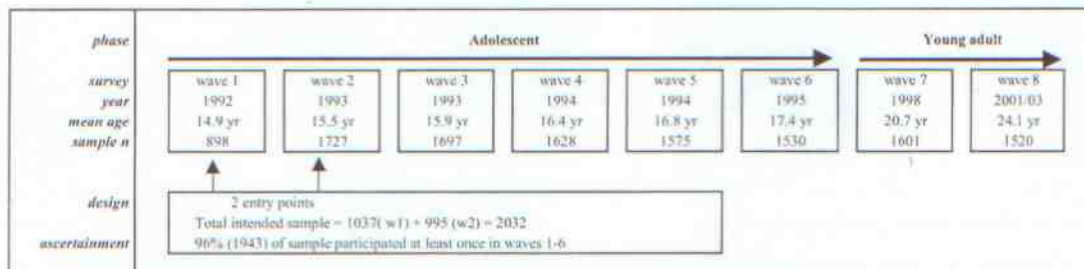


Figure 1. Sampling and ascertainment in the Victorian Adolescent Health Cohort, 1992 to 2003.

extensive, including an increased risk for substance abuse, obesity, violence, depression, and suicide (Dube et al., 2005; Hussey, Chang, & Kotch, 2006; Mullen, Martin, Anderson, Romans, & Herbison, 1996; Paolucci, Genuis, & Violato, 2001; Senn, Carey, & Vanable, 2008). However, there remains considerable debate about the prevalence of CSA in the general population and therefore the extent to which it pervades the community is uncertain (Leserman, 2005; Sapp & Vandeven, 2005). For girls, estimates of prevalence within nationally representative, community-based populations range from 11 to 32% (Gustafson & Sarwer, 2004; Leserman, 2005; Sapp & Vandeven, 2005). Less is known about the prevalence of CSA among boys, which is reflected by estimates ranging from 4% to 76% in one systematic review (Holmes & Slap, 1998). Reasons for this wide range include variations in the definition of sexual abuse and population sampling. In large (>1000 participants) population-based studies of CSA among boys in the United States and Canada, the estimated prevalence ranges from 4% to 16% (Holmes & Slap, 1998). The WHO guidelines for prevention of child maltreatment reinforce that defining the nature and extent of CSA is essential to the planning and implementation of effective prevention and treatment response interventions (The World Health Organization [WHO], 2006).

There are several methodological explanations for widely disparate prevalence estimates of CSA (Sapp & Vandeven, 2005). There is considerable variation in how CSA is defined (Haugaard, 2000). While there is no universal definition of CSA, few studies have adopted previously validated definitions. Furthermore, few definitions have distinguished between sexual abuse with and without physical contact, and there has been limited detail regarding the specific types of sexual abuse experienced (Gustafson & Sarwer, 2004). Detailed information regarding abuse is relevant given that certain types of abuse have been associated with more negative long-term outcomes (Senn et al., 2008; Senn, Carey, Vanable, Coury-Doniger, & Urban, 2007). Furthermore, many estimates are derived from clinic-based samples, which have limited generalizability (Gorey & Leslie, 1997).

Most studies of CSA have extensive missing data, either due to non-response, or refusal to answer questions. Missing data threatens to undermine even the most rigorous study design, especially when the missingness is ignored (Greenland & Finkle, 1995; Schafer & Graham, 2002). Gorey and Leslie (1997) reviewed 16 studies and found that the response rate varied between 25 and 98%, and was inversely related to the estimated prevalence of CSA. While there is no panacea for handling missing data (Altman & Bland, 2007) the method of multiple imputation is increasingly used as an approach for recovering information from study participants with incomplete data (Carlin, Galati, & Royston, 2008; Schafer, 1997; Schafer & Graham, 2002). To our knowledge, this approach has not been used previously to assist with prevalence estimations of CSA.

The primary purpose of this study was to estimate the prevalence of CSA among girls and boys using a representative sample from the general population, and a validated definition of CSA collected retrospectively. The secondary aim of this study was to investigate unwanted sexual contact measured in adolescence using a prospective self-administered measure. The specific aims were (1) to compare the prevalence of overall and different types of CSA among boys and girls, and (2) to estimate the prevalence of unwanted sexual contact in adolescence, using data drawn from a 10-year (8-wave) population-based study of the health and wellbeing of young Australians.

Methods

Design and participants

The Victorian Adolescent Health Cohort (VAHCS) is a representative sample of young Australians living in the state of Victoria who have been followed across 8 waves of data collection since 1992. The methodology of this study has been described previously (Coffey, Veit, Wolfe, Cini, & Patton, 2003; Patton et al., 2002, 2007; Sancu et al., 2008). Briefly, the cohort was defined with a two-stage cluster sample in which two classes during year 9 were selected at random from each of 44 schools drawn from a stratified frame of all schools (Government, Catholic and Independent) within the state of Victoria, Australia. One class from each school in the sampling frame was recruited in 1992 and yielded a total sample of 1037 participants of which 898 participated in the wave 1 survey (mean age 14.9 years). At the second survey point, 6 months later (in 1993, when the selected classes had progressed to year 10), the second class from the same year-level cohort at each school was recruited to increase the sample size. Of the final intended cohort of 2032, 1727 participated in the wave 2 survey (mean age 15.5 years) (Figure 1).

Participants were subsequently interviewed at 6-month intervals at wave 3 (15.9 years), wave 4 (16.4 years), wave 5 (16.8 years), and wave 6 (17.4 years). Response rates were consistently high across waves (min 81%, max 89%), with 96% of students participating in at least one wave from waves 1 to 6 ($N = 1943$). Since completion of secondary school, participants have been interviewed at 3 yearly intervals at wave 7 (20.7 years) and wave 8 (24.1 years). Response rates for waves 7 and 8 were 83% and 78%, respectively. At waves 1–6, the survey was self-administered to participants on laptop computers. The 7th and 8th waves of data collection were undertaken by computer-assisted telephone interviews.

Childhood sexual abuse prior to age 16

Due to ethical considerations, CSA prior to age 16, at wave 8 (average age 24 years) was retrospectively assessed. We employed a validated 6-item structured survey: "Before you were 16, did any adult or older person involve you in any unwanted incidents like: Inviting or requesting you to do something sexual?; Kissing or hugging you in a sexual way?; Touching or fondling your private parts?; Showing their sex organs to you?; Making you touch them in a sexual way?; Attempting or having sexual intercourse?" (Martin, Anderson, Romans, Mullen, & O'Shea, 1993). Possible responses to each question were: never, once, or more than once.

Unwanted sexual contact

Unwanted sexual contact (USC) was prospectively assessed at waves 4, 5, and 6 when participants were on average 16.3, 16.8, and 17.4 years old respectively: "Have you ever had any sexual contact when you didn't want to because someone threatened or used physical force to make you?" Possible responses were: yes or no. Subjects were also asked: "When did this happen?" Possible responses were: less than 6 months ago, 6–12 months ago, and more than 12 months ago.

Teenagers could have interpreted "unwanted sexual contact" as a variety of possible experiences as the question was not explicit about the type of contact. It was therefore believed that participant follow-up based on responses to this question would have been invasive. Therefore no attempt was made to contact or refer subjects based on responses to this question. At the end of each laptop-administered questionnaire, participants were provided information on who to contact if they had any questions or concerns. They were also mailed a letter with this contact information shortly after participating in each wave.

The study has received consecutive ethics approvals across all waves through the Royal Children's Hospital Human Research Ethics Committee.

Statistical analysis

The prevalence of CSA and USC was first estimated separately for boys and girls using an available case analysis. For CSA, this included those individuals who participated in wave 8 and answered at least 1 of the 6 CSA questions. The prevalence of USC was estimated for waves 4, 5, and 6 separately, with available cases defined as those who responded to the relevant questions at each respective wave. A combined USC prevalence was also estimated across waves 4, 5, and 6 among those who answered any USC questions at each wave. To assess potential continuities of abuse, we identified any one who had reported USC at wave 4, then as the waves were on average 6 months apart, estimated those subjects who reported continuing abuse (i.e., USC < 6 months ago) at waves 5 and 6. Due to the manner in which USC was ascertained, we could not confidently distinguish reports of CSA from reports of USC in adolescence as the questions were not phrased with clear time frames, so the overlap between the reported events could not be determined. Thus, we were unable to assess either consistency or continuity of abuse between CSA and USC. The sex-specific frequencies of each specific type of abuse were estimated, and sex differences were examined using a chi-squared test.

The prevalence of CSA and USC using multiple imputation of missing data was then estimated. Twenty imputed datasets were created using the statistical software IVEware (<http://www.isr.umich.edu/src/smp/ive/>) in SAS (Version 9.1, SAS Institute Inc., Cary, NC, USA). In addition to the outcome measures of CSA and USC, the other variables included in the imputation procedure were adolescent and adult sexual behavior (waves 2–8); subject's demographic and behavioral characteristics (e.g., smoking and drinking status); parents' demographic and behavioral characteristics (e.g., level of education, marital status, smoking and alcohol status); a measure of area deprivation and gender interactions. Of the 1943 subjects, 198 (131 females and 67 males) had a large number of missing observations and were excluded from the analysis. These individuals were either missing data on all CSA questions and more than half of the 64 variables included in the imputation, or they hadn't responded to any of the sexual behavior questions in waves 2 through 8. In the reduced sample, 14% of the participants had missing responses for all of the CSA questions at wave 8; USC at waves 4, 5, and 6 were missing for 12%, 13%, and 17% of the respondents respectively. Rubin's rules for combining estimates were used to estimate prevalence, and the normal approximation to the binomial distribution was used to test the difference in proportions for each outcome by gender (Rubin, 1987).

Results

Of the 1943 individuals (943 males and 1000 females) enrolled in the study, 1520 (696 males and 824 females) were interviewed at wave 8, of whom 1509 (691 males and 818 females) responded to at least 1 question pertaining to CSA. Those missing information on CSA were more likely to be male (58% versus 46%), born outside of Australia (30% versus 12% respectively), and to have left school before year 11 (16% versus 8%) ($p < 0.001$). The parents of those who were missing were more likely to have dropped out of high school (40% versus 32% respectively), but had similar divorce or separation rates (24% versus 22% respectively).

Questions pertaining to USC were administered at waves 4, 5, and 6. Seventy-two percent ($N = 1394$) of the original cohort participated in all 3 of these waves, of whom 94% ($N = 1305$) responded to questions pertaining to USC.

Prevalence estimates using multiple imputation

Based on the 1745 individuals (812 males and 933 females) included in this analysis, the prevalence of any CSA was higher in girls (17.0%) than boys (6.6%). This was true for both sexual abuse with contact (14.0% versus 4.6% respectively) and without contact (13.9% versus 5.7% respectively). The prevalence of each class of CSA (e.g., inviting you to do something sexual) was also higher among girls compared with boys ($p < 0.001$). For both boys and girls the most common form of CSA was "Inviting or requesting you to do something sexual" (see Table 1).

The prevalence of any self-reported USC during waves 4, 5, and 6 was 13.5% for females and 6.1% for males ($p < 0.001$). For girls, the prevalence at each subsequent wave was higher than the previous wave (wave 4: 6.3%, wave 5: 7.5%, wave 6: 9.1%), whereas for boys this trend was less evident (wave 4: 2.6%, wave 5: 2.3%, wave 6: 3.2%). For the boys reporting USC, the USC reported as occurring in the last 6 months increased at each wave (wave 4: 28.6%, wave 5: 36.8%, wave 6: 46.2%), while the

Table 1.
Frequency of childhood sexual abuse prior to age 16 assessed in young adulthood (average age 24 years)^a.

Sexual abuse without contact	Males ($N = 812$)			Females ($N = 933$)		
	<i>N</i>	%	(95% CI)	<i>N</i>	%	(95% CI)
Inviting or requesting you to do something sexual?						
Never	772	95.0	(91.8, 98.3)	818	87.6	(85.0, 90.2)
Once	27	3.3	(0.1, 6.5)	58	6.2	(4.0, 8.4)
More than once	13	1.7	(0.8, 2.5)	58	6.2	(4.6, 7.7)
Showing their sex organs to you?						
Never	795	97.9	(96.8, 98.9)	851	91.3	(89.4, 93.1)
Once	9	1.1	(0.3, 1.9)	33	3.5	(2.3, 4.8)
More than once	8	1.0	(0.3, 1.7)	49	5.2	(3.8, 6.6)
Any sexual abuse without contact						
No	766	94.3	(91.0, 97.7)	803	86.1	(83.4, 88.7)
Yes	46	5.7	(2.3, 9.0)	130	13.9	(11.3, 16.6)
Sexual abuse with contact						
Kissing or hugging you in a sexual way?						
Never	788	97.0	(95.7, 98.4)	839	89.9	(87.7, 92.1)
Once	12	1.5	(0.5, 2.6)	39	4.2	(2.5, 5.8)
More than once	12	1.4	(0.6, 2.3)	55	5.9	(4.4, 7.5)
Touching or fondling your private parts?						
Never	793	97.7	(96.6, 98.8)	840	90.0	(88.1, 92.0)
Once	8	1.0	(0.2, 1.7)	40	4.3	(2.9, 5.6)
More than once	11	1.3	(0.5, 2.1)	53	5.7	(4.2, 7.2)
Making you touch them in a sexual way?						
Never	796	98.1	(97.0, 99.1)	863	92.5	(90.8, 94.3)
Once	8	0.9	(0.1, 1.7)	25	2.6	(1.5, 3.8)
More than once	8	1.0	(0.3, 1.7)	45	4.9	(3.5, 6.2)
Attempting or having sexual intercourse?						
Never	801	98.6	(96.5, 101.7)	895	96.0	(94.5, 97.4)
Once	6	0.8	(0.0, 2.8)	16	1.7	(0.6, 2.9)
More than once	5	0.6	(0.1, 1.2)	22	2.3	(1.3, 3.3)
Any sexual abuse with contact						
No	774	95.4	(92.6, 98.2)	802	86.0	(83.4, 88.6)
Yes	38	4.6	(1.8, 7.4)	131	14.0	(11.4, 16.6)
Any sexual abuse (with or without contact)						
No	759	93.4	(89.6, 97.3)	774	83.0	(80.0, 86.0)
Yes	53	6.6	(2.7, 10.4)	159	17.0	(14.0, 20.0)

^a Estimated from multiply imputed data.

