Genitourinary Health of Sexually Abused Girls and Boys: A Matched-Cohort Study

Pascale Vézina-Gagnon, PhD candidate, Sophie Bergeron, PhD, Jean-Yves Frappier, MD, and Isabelle Daigneault, PhD

Objective To compare genitourinary health problems of children and adolescents with a substantiated report of sexual abuse with those of the general pediatric population.

Study design Via a prospective matched-cohort design, administrative databases between January 1996 and March 2013 were used to document genitourinary problems of 882 sexually abused children and those of 882 matched controls. Generalized linear mixed models determined the association between a substantiated sexual abuse and diagnoses for sexually transmitted infections and urinary and genital health problems.

Results Adjusted results revealed that up to 12 years after a sexual abuse was substantiated, abused girls had, respectively, 2.1 and 1.4 times more diagnoses for urinary and genital health problems compared with girls from the general population, whereas no difference was found for sexually transmitted infections. Sexually abused boys had an equivalent number of diagnoses as those from the general population for all 3 outcomes. Depending on the genitourinary health problem, abused girls and those from the general population had between 2.5 and 11 times more diagnoses than abused boys or those from the general population.

Conclusions This study showed that substantiated childhood sexual abuse is associated with more urinary and genital health problems among girls but not boys. Early prevention and intervention efforts may mitigate the problems such that they do not persist or worsen over time and into adulthood. *(J Pediatr 2018;194:171-6).*

Based on a recent national survey in the US, 1 in 4 girls and 1 in 20 boys are victims of sexual abuse before the age of 17 years.[1] Survivors of child sexual abuse (CSA) are more at risk of a wide range of mental health problems.[2-4] A number of studies indicate that exposure to CSA also is associated with an increase in other physical health problems during adulthood.[5-8]

Studies on the association between CSA and physical health have been conducted primarily among adults. Little is known about consequences on children and adolescents' physical health. Most studies conducted among adults involved small samples, female subjects, cross-sectional designs, and adult retrospective self-reports of victimization and health.[5-8] Among physical health problems, those related to genitourinary health, such as sexually transmitted infections (STIs), urinary tract infections, and vaginitis, are particularly important to document during adolescence, when sexual activity begins for a majority of individuals.[9] Adolescence is thus a time-sensitive period for onset of genitourinary health issues and is a critical window for prevention.

Studies have shown associations between CSA and STIs,[10-13] vulvovaginitis or pathologic vaginal discharge,[12,14] dyspareunia or other pelvic floor dysfunctions,[12,15,16] and urinary problems, such as enuresis,[14,17] although limitations in methodology restrict the conclusions that can be drawn from them. Indeed, the use of self-report data to document genitourinary health problems[10-13,15,16] or CSA[10-13,15] can lead to recall biases, and the use of cross-sectional designs[11-13,15,16] limits our understanding of the development of these health problems. Furthermore, the majority of these studies were conducted among girls only,[12,13,15,16] or, when the samples were mixed, too few boys were included to draw conclusions about them specifically,[14,17] such that boys' problems are not yet well documented.

The purpose of this study was to compare genitourinary health problems among children and adolescents with a substantiated report of sexual abuse with those of the general pediatric population. The main objective was to determine whether sexually abused children received more diagnoses of STIs, urinary, and genital health problems after the substantiation of sexual abuse compared with children from the general population. A secondary goal was to determine whether differences would be observed in subgroups of girls and boys and whether sex differences exist among subgroups of sexually abused children and those from the general population.

CPA	Child protection agency
CSA	Child sexual abuse
STI	Sexually transmitted infection

From the Department of Psychology, University of Montreal, Montreal, Québec, Canada

Funded by the Ministry of Justice of Quebec (126489 [to I.D.]). P.V.-G. is supported by a scholarship from the Fonds de recherche du Québec—Santé (FRQS). The authors declare no conflicts of interest.

0022-3476/$ - see front matter. © 2017 Published by Elsevier Inc.
https://doi.org10.1016/j.jpeds.2017.09.087

Methods

Data for this matched-cohort study come from 3 Canadian administrative databases: (1) one large Canadian city's child protection agency (CPA), (2) the public health insurance agency, and (3) the Ministry of Health and Social Services. Children younger than 18 years of age who had a substantiated report of sexual abuse were selected and comprised the sexually abused group (n = 955). Via the use of their surname, name, complete address, date of birth, and health insurance number, administrative data from the public health insurance agency were found for 882 (92%). Because all Canadian citizens and foreign nationals authorized to stay within the country for more than 6 months are covered by the public health care system, unmatched data are probably due to misspelling of given names, last names, health insurance number, or addresses in the CPA database rather than because sexually abused participants were not covered. Comparisons between participants excluded from the study (n = 73) and those whose health data were matched (n = 882) are described in detail elsewhere.[18] Each of the 882 children and adolescents was matched to a child or adolescent from the general population using the public health insurance agency's administrative database according to the 3 following criteria: (1) birth year and month, (2) sex, and (3) administrative region at the time of the substantiated report of sexual abuse.

The abused group and general population group were each composed of 661 girls (75%) and 221 boys (25%). The average age of abused participants when the first sexual abuse report was substantiated was 11.07 years (SD = 4.18), which is similar to the average age of participants from the matched-control group when selected into the study (M = 11.10, SD = 4.14). Abused boys and those from the general population were significantly younger (M = 9.94, SD = 4.02) than girls (M = 11.45, SD = 4.17; t [1762] = 6 652, $P < .001$) when selected into the study. This study followed 10 yearly waves (2001-2010) of children and adolescents with a substantiated sexual abuse.

Table I presents number of abused participants entering the study by sex, yearly waves (2001-2010), age at study entry, age at study end (2013), and number of years for which genitourinary health problems were documented before and after the first substantiated report of sexual abuse. For participants who were sexually abused, before the first substantiated report of sexual abuse, they had additional reports of neglect (31%), physical abuse (10%), and behavioral problems (8%). Although characteristics of the abuse (eg, nature, frequency) were not available in CPA databases, an incidence study on situations assessed by CPA revealed that corroborated sexual abuses were mostly sexual touching (46%), penetration or attempted penetration (17%), and oral sex (9%).[19] Information about the abuse histories of participants from the general population was unavailable; therefore, they also may have been sexually abused without a report being made and substantiated during the study.

Measures

Reported sexual abuse may include sexual touching, sexual communication (eg, exposure to pornographic material), penetration or attempted penetration, oral sex, voyeurism, exhibitionism, or sexual exploitation (prostitution).[19] When a sexual abuse report is retained by the CPA for evaluation, a social worker makes a clinical judgment regarding the level of corroboration of the sexual abuse. The facts could be (1) founded/substantiated (sufficient evidence that sexual abuse has occurred), (2) suspected (suspicion of sexual abuse but insufficient evidence to substantiate the presence or absence of abuse), or (3) unfounded/unsubstantiated (sufficient evidence to the absence of sexual abuse).[20] For the current study, children and adolescents with at least one substantiated report of sexual abuse (only the first report is considered for this study) between 2001 and 2010 at the CPA were selected and comprised the sexually abused cohort (exposed cohort). Children and adolescents from the general population could be matched only once to a sexually abused child and formed the unexposed cohort because they had no substantiated report of sexual abuse at the same CPA between 2001 and 2010.

Table I. Number of abused participants entering the study per sex, yearly waves, age at study entry, age at study end, and number of years for which genitourinary health problems were documented before and after the first substantiated report of SA

				Age at entry in the study				Age at the end of study				Years (mean) documented for genitourinary problems	
Waves	Total (n)	Girls (n)	Boys (n)	Mean	SD	Min	Max	Mean	SD	Min	Max	Before SA	After SA
2001	95	79	16	10.3	4.3	2.1	17.3	22.0	4.3	14.1	29.0	5.6	11.7
2002	75	60	15	11.1	3.9	3.6	18.2	21.9	3.9	14.3	28.6	6.5	10.7
2003	109	76	33	10.3	3.9	2.6	18.2	20.1	4.0	12.7	28.0	7.5	9.7
2004	99	68	31	10.6	4.3	2.7	18.0	19.3	4.3	11.1	27.1	8.5	8.7
2005	131	93	38	10.6	4.5	2.8	17.9	18.4	4.5	10.4	26.1	9.5	7.8
2006	91	63	28	11.4	4.4	3.0	17.9	18.1	4.4	9.6	25.0	10.6	6.7
2007	105	80	25	12.4	4.1	1.9	18.0	18.2	4.1	7.5	24.0	11.5	5.8
2008	76	60	16	11.2	3.9	2.1	17.9	15.9	3.9	7.1	22.7	12.5	4.7
2009	45	35	10	10.9	4.6	3.2	17.6	14.7	4.5	6.5	21.0	13.5	3.8
2010	56	47	9	12.3	4.0	3.8	17.2	15.1	4.0	6.3	20.2	14.4	2.8
Total	882	661	221	11.0	4.2	1.9	18.2	18.7	4.7	6.3	29.0	9.6	7.7

SA, sexual abuse.

Table II. Unadjusted prevalence (%) of participants with at least one diagnosis for STIs postsexual abuse: results of the adjusted GLMMS* and GLMs for STIs for the total sample, among girls, among boys, among children with SA, and among the GP group

Groups and independent variables	% of participants with at least one diagnosis	Regression coefficient	SE	Relative risk ratio (95% CI)
Total sample (n = 1764)				
Group effect (exposed vs unexposed)*,†	6% vs 3%	0.28	0.30	1.3 (0.75-2.4)
Sex effect (girls vs boys)*,†	5% vs —	2.0	0.59	7.1 (2.3-22.5)
Among girls (n = 1322)				
Group effect (exposed vs unexposed)*,†	7% vs 4%	0.28	0.30	1.3 (0.74-2.4)
Among boys (n = 442)‡	—	—	—	—
Among SA group (n = 882)				
Sex effect (girls vs boys)†,§	7% vs —	1.7	0.67	5.5 (1.5-20.7)
Among GP group (n = 882)				
Sex effect (girls vs boys)†,§	4% vs —	1.7	0.91	5.7 (0.95-34.4)

GLMs, generalized linear models; *GLMMs*, generalized linear mixed models; *GP*, general population.
*Analyses using conditional model controls for matching criteria: sex, birth year and month, and geographic area when using the entire sample and sex-stratified subsamples.
†Controlling for STI's before substantiated CSA and material/social deprivation.
‡Observations among boys for STIs were insufficient to conduct the subsample analyses.
§Controlling for age at first substantiated sexual abuse report/entry into the study.

Outcome Variables: Genitourinary Health Problems

For this study, we used the diagnostic codes for genitourinary problems from the 10th version (2008) of the *International Classification of Diseases*.[21] All genitourinary and STI diagnoses given between January 1, 1996, and March 31, 2013, following each inpatient or outpatient consultations were included. The genitourinary health problems were divided into 3 broad categories: (1) STIs, (2) urinary health problems (eg, renal failure, calculus, UTIs), (3) genital health problems (eg, inflammatory disorders of the penis, inflammatory disease of the uterus or cervix, vaginitis, excessive or irregular menstruation). For each type of genitourinary health problem, 2 continuous variables were created counting the number of diagnoses. The first variable included all diagnoses given before the first substantiated report of sexual abuse (average of 9.6 years, SD = 2.6, min = 5.0, max = 15.0, between 1996 and 2001-2010 according to the year of entry into the study) and was used as a control variable. The second was the dependent variable and included all diagnoses given after the first substantiated report of sexual abuse up until the end of the study (average of 7.7 years, SD = 2.6, min = 2.3, max = 12.2).

Statistical Analyses

To determine whether sexually abused children and adolescents had more diagnoses of STIs, urinary, and genital problems after the sexual abuse report was substantiated, generalized linear mixed models using negative binomial regression for overdispersed distribution and logit function were conducted. These analyses were performed conditionally on matching cases and controls, a statistical method recommended for matched-cohort studies such as this one,[22] which in this case controls for sex, birth year and month, and geographic area when using the entire sample and sex-stratified subsamples.

Socioeconomic status was controlled in all analyses, measured by an index of material and social deprivation documented in administrative databases. Based on participant's postal code, it is derived from 6 socioeconomic indicators (eg, average income, proportion of people with no high school diploma, proportion of single parent living families).[23,24] For each type of outcome, the number of diagnoses occurring before the substantiated sexual abuse report also was controlled for in analyses. Regression coefficients, relative risk ratios, and their 95% CIs were calculated on the entire sample and on sex stratified subsamples. For group-stratified subsamples, generalized linear models were conducted, additionally controlling for age at first substantiated sexual abuse report because of the sex difference in age at entry into the study. All analyses were conducted with the IBM SPSS 24 program (IBM Corp, Armonk, New York), with a $P < .05$ significance level.

Results

The first column of **Tables II**, **III**, and **IV** share the percentage of participants with at least one diagnosis after the substantiated sexual abuse report for the 3 genitourinary health categories. Analyses could not be conducted among boys for STIs because too few participants had at least 1 diagnosis for this problem (count cell <5). Percentage of participants with at least one diagnosis for genitourinary problems varied between 3% and almost 40%. For both groups of participants, STIs were the genitourinary category with the smallest prevalence (3%-7%) (**Table II**), whereas prevalence was greater for urinary problems (6%-25%) (**Table III**) and genital problems (10%-39%) (**Table IV**).

Results from the generalized linear mixed models and generalized linear models are presented for STIs (**Table II**) and urinary (**Table III**) and genital health problems (**Table IV**). Using the total sample, we found that results for STIs showed that, when we controlled for diagnoses before the abuse report and material/social deprivation, children and adolescents with a substantiated sexual abuse had similar numbers of diagnoses

Table III. Unadjusted prevalence (%) of participants with at least one diagnosis for urinary health problems postsexual abuse: adjusted results of the GLMMS* and GLMs for urinary health problems for the total sample, among girls, among boys, among children with SA, and among the GP group

	% of participants with at least one diagnosis	Regression coefficient	SE	Relative risk ratio (95% CI)
Total sample (n = 1764)				
Group effect (exposed vs unexposed)*,†	28% vs 26%	0.71	0.14	2.0 (1.5-2.7)
Sex effect (girls vs boys) *,†	18% vs 2%	2.0	0.21	7.1 (4.6-10.7)
Among girls (n = 1322)				
Group effect (exposed vs unexposed)*,†	25% vs 22%	0.76	0.15	2.1 (1.6-2.9)
Among boys (n = 442)				
Group effect (exposed vs unexposed)*,†	6% vs 7%	–0.23	0.40	0.80 (0.36-1.7)
Among SA group (n = 822)				
Sex effect (girls vs boys)†,‡	25% vs 6%	2.4	0.29	11.0 (6.2-19.5)
Among GP group (n = 822)				
Sex effect (girls vs boys)†,‡	22% vs 7%	1.4	0.33	4.2 (2.2-8.2)

*Analyses using conditional model controls for matching criteria: sex, birth year and month, and geographic area when using the entire sample and sex-stratified subsamples.
†Controlling for urinary health problems before substantiated CSA and material/social deprivation.
‡Controlling for age at entry into the study/entry into the study.

when compared with the unexposed cohort from the general population. Over the course of the study, abused children and adolescents had twice the number of diagnoses for urinary health problems (**Table III**) and 1.5 times the number of diagnoses for genital health problems (**Table IV**) compared with children and adolescents from the general population, regardless of previous diagnoses and material/social deprivation. Also, on average, girls had 7 times more diagnoses of STIs and urinary problems and 4.5 times more diagnoses of genital problems than boys (see sex effect for the whole sample in **Tables II, III,** and **IV**).

Sex-stratified subsample analyses revealed that, for girls, results were similar to those found using the whole sample, ie, sexually abused girls and those from the general population had similar number of diagnoses of STIs, whereas abused girls had twice the number of diagnoses of urinary health problems and almost 1.5 times the number of genital health problems compared with girls from the general population. These last differences were not found in the subsample of boys, as abused boys had similar numbers of diagnoses of urinary and genital health problems as those observed in boys from the general population.

Group-stratified subsample analyses for STIs, urinary, and genital health problems (**Tables II, III,** and **IV**) revealed similar results to those stemming from the whole sample with regard to the sex effect, ie, abused girls and those from the general population had more diagnoses than boys. The relative risk girls were exposed to, compared with boys, was similar in both groups for STIs and genital problems (see sex effect among CSA and general population in **Tables II** and **IV**). However, for urinary health problems, the relative risk sexually abused girls encountered when compared with abused boys appeared to

Table IV. Unadjusted prevalence (%) of participants with at least one diagnosis for genital health problems postsexual abuse: adjusted results of the GLMMS* and GLMs for genital health problems for the total sample, among girls, among boys, among children with SA, and among the GP group

	% of participants with at least one diagnosis	Regression coefficient	SE	Relative risk ratio (95% CI)
Total sample (n = 1764)				
Group effect (exposed vs unexposed)*,†	32% vs 24%	0.34	0.12	1.4 (1.1-1.8)
Sex effect (boys vs girls)*,†	34% vs10%	1.5	0.16	4.5 (3.2-6.1)
Among girls (n = 1322)				
Group effect (exposed vs unexposed)*,†	39% vs 29%	0.36	0.13	1.4 (1.1-1.8)
Among boys (n = 442)				
Group effect (exposed vs unexposed)*,†	10% vs 10%	0.03	0.36	1.0 (0.51-2.1)
Among SA group (n = 822)				
Sex effect (girls vs boys)†,‡	39% vs 10%	1.2	0.23	3.2 (2.1-5.1)
Among GP group (n = 822)				
Sex effect (girls vs boys)†,‡,§	29% vs 10%	0.89	0.23	2.5 (1.6-3.9)

*Analyses using conditional model controls for matching criteria: sex, birth year and month, and geographic area when using the entire sample and sex-stratified subsamples.
†Controlling for genital health problems before substantiated CSA and material/social deprivation.
‡Controlling for age at first substantiated sexual abuse report/entry into the study.
§Genital health problems before substantiated CSA were not controlled; variance according to sex was too small to conduct analyses.

be more than twice that of the risk girls from the general population encountered when compared with boys from the general population (11 vs 4—see sex effect among CSA and general population in **Table III**).

Discussion

In accordance with our hypotheses, abused children/adolescents had more diagnoses of urinary and genital health problems up to 12 years after the abuse substantiation than those of the general population although similar numbers of STI diagnoses, which contradicts results from previous studies.[10-13] This could be explained in part by the characteristics of our sample as the distribution of participants' age at the end of the study varied from 6 to 29 years old, with an average of 19 years. Because the probability of being sexually active in Canada varies between 30% and 68% among 15-17 year olds and 18-19 year olds, respectively,[25] and although sexual activity status is unknown in this study, the relatively young age of participants could limit the detection of STIs. In comparison, participants in other studies either had high rates of sexual activity (90%),[11] were all sexually active,[13] or were older (18-26 years old) when STIs were measured.[10] Further, STIs are often asymptomatic and are rarely the main reason to consult a physician. In this study, a physician could, for example, attribute a gastrointestinal diagnosis for the consultation and carry out screening tests for STIs at the same time, which would not appear in the medical database.

Results indicating that sexually abused girls had more diagnoses of urinary and genital health problems than girls from the general population are concordant with previous cross-sectional and prospective studies, showing that sexually abused girls were more likely to suffer from vaginal infections,[14] pelvic floor dysfunctions,[16] and greater genitourinary symptoms (ie, dyspareunia, irregular menses)[12] than nonabused girls or those from the general population.

A novel result of this study is that abused boys did not have more diagnoses of any genitourinary health problem compared with boys from the general population. It is possible that the effect of CSA on boys manifests itself in other areas of their physical health, either functional gastrointestinal disorders or somatic symptoms.[26,27] Moreover, a recent study revealed that for boys, CSA is more importantly associated with severe physical health problems requiring hospitalization than to less-severe problems requiring outpatient services.[28] It is possible that genitourinary problems were not severe or urgent enough yet for boys to consult a physician or require hospitalization.

Girls from both groups had more diagnoses of urinary and genital health problems than boys. Although the lack of previous studies precluded any hypothesis regarding sex differences in genitourinary problems of sexually abused children/adolescents, this result is not entirely unexpected. Indeed, girls' genitourinary system may require more medical attention than boys', such as a medical consultation for menstrual problems or vaginitis, which have no parallel in boys. Also, girls and women from the general population are significantly more likely to experience urinary tract infections than boys and men.[29,30] Still, sexually abused girls had on average 11 times more diagnoses of urinary health problems than abused boys, which was 2.6 times greater than the sex difference found in the general population, thus a significant difference. Overall, the present study reveals that among girls, effect sizes for urinary health problems were greater (average risk ratio 2.1) than those found previously for general physical health problems (1.2-1.6),[31] whereas effect sizes for genital health problems were similar in magnitude (average risk ratio 1.4). This indicates that CSA, despite being considered a nonspecific risk factor, seems to have a varied effect according to the health problems assessed.

These findings should be interpreted in light of some limitations. First, they can only be generalized to children and adolescents with a substantiated sexual abuse who had contact with a CPA, which may represent only 10% of all sexual abuse victims,[32] and usually the most severe instances of abuse with co-occurrence of other forms of maltreatment.[32,33] Second, characteristics of the abuse (eg, nature, frequency) were not available in CPA databases and, thus, could not be described or included in analyses. Characteristics of the abuse could have helped to explain the significant difference found between girls and boys regarding urinary health problems among the CSA sample (eg, girls could have experienced more severe sexual abuse than boys). Third, a proportion of the unexposed group from the general population also may have been sexually abused, without a report being made and substantiated during the study. Consequently, the differences observed in our results could underestimate the actual differences observed between abused and nonabused children. Fourth, using only administrative databases to gather medical information has some limitations, the most important being that participants may have experienced genitourinary health problems without consulting their physician, which may underestimate problems in both groups. Lastly, another diagnosis could have been given precedence when the physician was facing multiple problems.

The use of a prospective matched-cohort design with longitudinal administrative data represents an important strength of this study. Indeed, this type of design can document several variables in a temporal sequence, such as genitourinary health problems before and after the substantiated report of sexual abuse. It also avoids recall biases associated with the use of retrospective self-report data. Further, the large sample size allowed for the inclusion of a sufficient number of boys to conduct sex analyses. Lastly, as the majority of participants (65%) were older than 18 years old at the end of the study, conclusions may be generalized to young adult victims as well.

These findings add to the body of research suggesting that a history of CSA among girls predicts greater rates of diagnosed urinary and genital health problems. Future research should determine whether urinary and genital health problems are associated with increased distress and reduced quality of life and should specify factors explaining the increased risk among abused girls such as characteristics of the abuse (eg, chronicity, age at onset) or co-occurring maltreatment. ■

We thank Pierre McDuff, a research associate in our research team, employed by The Interdisciplinary Research Center on Intimate Relationship Problems and Sexual Abuse at Université de Montréal.

Submitted for publication Jul 20, 2017; last revision received Sep 26, 2017; accepted Sep 29, 2017

Reprint requests: Pascale Vézina-Gagnon, PhD candidate, Department of Psychology, University of Montreal, 90 Avenue Vincent d'Indy, Montreal, QC H2V 2S9, Canada. E-mail: pascale.vezina-gagnon@umontreal.com

References

1. Finkelhor D, Shattuck A, Turner HA, Hamby SL. The lifetime prevalence of child sexual abuse and sexual assault assessed in late adolescence. J Adolesc Health 2014;55:329-33.
2. Afifi TO, MacMillan HL, Boyle M, Taillieu T, Cheung K, Sareen J. Child abuse and mental disorders in Canada. Can Med Assoc J 2014;186:E324-32.
3. Fergusson DM, McLeod GF, Horwood LJ. Childhood sexual abuse and adult developmental outcomes: findings from a 30-year longitudinal study in New Zealand. Child Abuse Negl 2013;37:664-74.
4. Hillberg T, Hamilton-Giachritsis C, Dixon L. Review of meta-analyses on the association between child sexual abuse and adult mental health difficulties: a systematic approach. Trauma Violence Abuse 2011;12:38-49.
5. Harlow BL, Stewart EG. Adult-onset vulvodynia in relation to childhood violence victimization. Am J Epidemiol 2005;161:871-80.
6. Mark H, Bitzker K, Klapp BF, Rauchfuss M. Gynaecological symptoms associated with physical and sexual violence. J Psychosom Obstet Gynaecol 2008;29:164-72.
7. Afifi TO, MacMillan HL, Boyle M, Cheung K, Taillieu T, Turner S, et al. Child abuse and physical health in adulthood. Health Rep 2016;27:10-8.
8. Irish L, Kobayashi I, Delahanty DL. Long-term physical health consequences of childhood sexual abuse: a meta-analytic review. J Pediatr Psychol 2010;35:450-61.
9. Finer LB, Philbin JM. Sexual initiation, contraceptive use, and pregnancy among young adolescents. Pediatrics 2013;131:886-91.
10. Haydon AA, Hussey JM, Halpern CT. Childhood abuse and neglect and the risk of STDs in early adulthood. Perspect Sex Reprod Health 2011;43:16-22.
11. Ohene S-A, Halcon L, Ireland M, Carr P, McNeely C. Sexual Abuse history, risk behavior, and sexually transmitted diseases: the impact of age at abuse. Sex Transm Dis 2005;32:358-63.
12. Champion JD, Piper JM, Holden AEC, Shain RN, Perdue S, Korte JE. Relationship of abuse and pelvic inflammatory disease risk behavior in minority adolescents. J Am Acad Nurse Pract 2005;17:234-41.
13. Upchurch DM, Kusunoki Y. Associations between forced sex, sexual and protective practices, and sexually transmitted diseases among a national sample of adolescent girls. Womens Health Issues 2004;14:75-84.
14. Anderson B, Thimmesch I, Aardsma N, Ed DM, Carstater S, Schober J. The prevalence of abnormal genital findings, vulvovaginitis, enuresis and encopresis in children who present with allegations of sexual abuse. J Pediatr Urol 2014;10:1216-21.
15. Landry T, Bergeron S. Biopsychosocial factors associated with dyspareunia in a community sample of adolescent girls. Arch Sex Behav 2011;40:877-89.
16. Postma R, Bicanic I, van der Vaart H, Laan E. Pelvic floor muscle problems mediate sexual problems in young adult rape victims. J Sex Med 2013;10:1978-87.
17. Frothingham TE, Hobbs CJ, Wynne JM, Yee L, Goyal A, Wadsworth DJ. Follow up study eight years after diagnosis of sexual abuse. Arch Dis Child 2000;83:132-4.
18. Daigneault I, Vézina-Gagnon P, Bourgeois C, Esposito T, Hébert M. Physical and mental health of children with substantiated sexual abuse: gender comparisons from a matched-control cohort study. Child Abuse Negl 2017;66:155-65.
19. Hélie S, Turcotte D, Trocmé N, Tourigny M. Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse en 2008 (ÉIQ-2008): Rapport Final. Centre jeunesse de Montréal-Institut universitaire, 2012. [Quebec Incidence Study on situations evaluated in Youth Protection in 2008 (ÉIQ-2008): Montreal Youth Center - University Institute, 2012.]
20. MSSS. Filing a report with the DYP is already protecting a child. In: Sociaux Mdlseds. Québec, Canada: La Direction des communications du ministère de la Santé et des Services sociaux du Québec; 2008.
21. World Health Organization. International Statistical Classification of Diseases and Related Health Problems 10th Revision. Geneva: World Health Organization; 2008.
22. Niven DJ, Berthiaume LR, Fick GH, Laupland KB. Matched case-control studies: a review of reported statistical methodology. Clin Epidemiol 2012;4:99-110.
23. Hamel D, Pampalon R, Gamache P. Guide d'utilisation du programme d'assignation de l'indice de défavorisation 2006. [Methodological guide—The material and social deprivation index: a summary] Québec, Canada: Institut national de santé publique du Québec, 2010.
24. Pampalon R, Gamache P, Hamel D. The Québec Index of Material and Social Deprivation: Methodological Follow-up, 1991 Trough 2006. Québec, Canada: Institut national de santé publique du Québec; 2011.
25. Rotermann M. Sexual behaviour and condom use of 15-to 24-year-olds in 2003 and 2009/2010. Health Rep 2012;23:1-5.
26. Paras ML, Murad MH, Chen LP, Goranson EN, Sattler AL, Colbenson KM, et al. Sexual abuse and lifetime diagnosis of somatic disorders: a systematic review and meta-analysis. JAMA 2009;302:550-61.
27. Bonvanie IJ, van Gils A, Janssens KA, Rosmalen JG. Sexual abuse predicts functional somatic symptoms: an adolescent population study. Child Abuse Neglect 2015;46:1-7.
28. Daigneault I, Bourgeois C, Vézina-Gagnon P, Alie-Poirier A, Dargan S, Hébert M, et al. Physical and mental health of sexually abused boys: a 5 year matched-control and cohort study. J Child Adolesc Trauma 2016;10:9-17.
29. Foxman B. Epidemiology of urinary tract infections: incidence, morbidity, and economic costs. Am J Med 2002;113:5-13.
30. Winberg J, Andersen H, Bergström T, Jacobsson B, Larson H, Lincoln K. Epidemiology of symptomatic urinary tract infection in childhood. Acta Paediatr 1974;63:1-20.
31. Daigneault I, Hébert M, Bourgeois C, Dargan S, Frappier J. Santé mentale et physique des filles et garçons agressés sexuellement: une étude de cas contrôle apparié avec un suivi de cohorte sur 10 ans. Criminologie 2017;50:99-125.
32. Afifi TO, MacMillan HL, Taillieu T, Cheung K, Turner S, Tonmyr L, et al. Relationship between child abuse exposure and reported contact with child protection organizations: results from the Canadian Community Health Survey. Child Abuse Negl 2015;46:198-206.
33. Tonmyr L, Ouimet C, Ugnat A-M. A review of findings from the Canadian Incidence Study of Reported Child Abuse and Neglect (CIS). Can J Public Health 2012;103:103-12.