Université de Montréal

Étude prospective de l'association entre l'agression sexuelle durant l'enfance et les grossesses à l'adolescence et des mécanismes sous-jacents aux complications de grossesse

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Cette thèse intitulée

Étude prospective de l'association entre l'agression sexuelle durant l'enfance et les grossesses à l'adolescence et des mécanismes sous-jacents aux complications de grossesse

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Résumé

Les grossesses à l'adolescence sont un important problème de société parce qu'elles présentent des risques considérables pour la santé physique, psychologique et sociale des adolescentes. Une des explications des taux persistants des grossesses précoces est son association avec l'agression sexuelle durant l'enfance, un important facteur de risque. De plus, il est établi dans la littérature scientifique que les femmes qui ont subi une agression sexuelle durant l'enfance ont significativement plus de plaintes somatiques, sont plus souvent hospitalisées et vivent plus de complications pendant la grossesse et à l'accouchement.

La grande majorité des études antérieures ont été effectuées auprès d'une population de femmes adultes et utilise des devis rétrospectifs et des données autorapportées afin de documenter l'agression sexuelle durant l'enfance, les grossesses ou leurs complications. Elles comportent donc des biais de rappel et de sources communes de mesures limitant la compréhension des associations entre l'agression sexuelle durant l'enfance, les grossesses et leurs complications. Certaines pistes d'explications de l'association agression sexuelle durant l'enfance - grossesses à l'adolescence ont été proposées via notamment des comportements sexuels à risque à l'adolescence, tels que la non-utilisation de contraception. Or, ces explications sont lacunaires en ce que les mécanismes sous-jacents aux comportements ne sont souvent pas identifiés. De plus, la trajectoire des conséquences de l'agression sexuelle durant l'enfance menant à des complications de grossesse chez les adolescentes demeure mal comprise. Pourtant, cela permettrait de mieux anticiper les besoins spécifiques associés à un passé d'agression sexuelle durant l'enfance et de permettre une meilleure planification des soins médicaux et psychologiques pertinents au soutien des adolescentes agressées sexuellement qui vivent une grossesse.

En utilisant un devis longitudinal de cohortes appariées et des données médicales provenant de registres administratifs, la présente étude vise d'abord à combler certains biais et lacunes des études antérieures portant sur le lien entre l'agression sexuelle durant l'enfance, les grossesses à l'adolescence et leurs complications. L'échantillon de l'étude est composé de 1322 adolescentes

dont 50 % ont fait l'objet d'un signalement corroboré d'agression sexuelle à un centre de protection de la jeunesse, entre le 1er janvier 2001 et le 31 décembre 2010. Chacune de ces adolescentes a été appariée à une adolescente provenant de la population générale, c'est-à-dire qui n'a pas été l'objet d'un signalement pour agression sexuelle corroboré par le même centre jeunesse, durant ladite période.

L'objectif premier de l'étude était de déterminer, grâce à un devis plus rigoureux, si la prévalence des grossesses à l'adolescence et de leurs complications varie selon le groupe d'adolescentes : a) agressées sexuellement durant l'enfance, ou b) provenant de la population générale. Confirmant l'hypothèse, les résultats démontrent un plus grand risque de grossesses à l'adolescence ainsi qu'un plus grand risque de complications de ces grossesses chez les adolescentes agressées sexuellement dans l'enfance en comparaison à celles provenant de la population générale.

Le second objectif de l'étude était d'explorer le rôle des comorbidités psychiatriques comme médiateur de l'association entre l'agression sexuelle durant l'enfance et les complications de grossesse. Les résultats confirment l'hypothèse selon laquelle l'association est en partie expliquée par les comorbidités psychiatriques.

De manière générale, cette étude contribue à la compréhension des facteurs de risque aux grossesses à l'adolescence et leurs complications. Plus spécifiquement, son devis permet la confirmation de la temporalité des événements suivants : 1) les agressions sexuelles durant l'enfance, 2) les comorbidités psychiatriques et 3) les complications de grossesse. Enfin, elle réaffirme la portée des conséquences des agressions sexuelles durant l'enfance et souligne l'interinfluence de ses effets délétères sur la santé mentale et la détérioration subséquente de la santé physique.

Mots-clés : agression sexuelle durant l'enfance, grossesse à l'adolescence, complication de grossesse, santé mentale, comorbidité psychiatrique.

Abstract

Teenage pregnancies are an important society problem because they present considerable risk for the physical, psychological and social health of teenagers. One explanation for the persisting high rates of early pregnancies is its association with sexual abuse in childhood, an important risk factor. Moreover, it has been established is the scientific literature that women who have been sexually abused in childhood have significantly more somatic complaints are more often hospitalised and have more pregnancy-related complications.

The majority of previous studies were carried out with a population of adults, used crossed-sectional design and used self-reported measures to document the abuse, pregnancies or their complications. They hence introduce memory biases and limit conclusions regarding the associations between childhood sexual abuse, pregnancies and complications.

Some possible explanations of the association childhood sexual abuse – teenage pregnancies have been suggested via at-risk sexual behaviours in adolescence, such as the non-use of contraception. However, these explanations are deficient in that the mechanisms underlying the behaviours are often not identified. Furthermore, the trajectory of the consequences of childhood sexual abuse leading to pregnancy complications in teenagers remains poorly understood. However, this would help to better anticipate the specific needs associated with a history of abuse and allow for better planning of medical and psychological relevant care in support of sexually abused girls who experience a pregnancy.

Using a longitudinal design of matched-cohorts and medical data from administrative registries, this study is primarily intended to address some biases and gaps in previous studies on the association between childhood sexual abuse, teenage pregnancies and their complications. The study sample consists of 1322 teenagers, 50% of whom were the subject of a corroborated report of sexual abuse at a youth protection center between January 1, 2001 and December 31, 2010. Each of these teenagers was matched to a teenager from the general population, that is to say who was not the subject of a corroborated report of sexual abuse by the same youth protection center, during the same period.

The primary objective of the study was to determine, through a more rigorous design, whether the prevalence of teenage pregnancies and their complications varies by group: a) sexually abused in childhood, or b) from the general population. Confirming this hypothesis, the results show a greater risk of teenage pregnancies and a greater risk of complications from these pregnancies in girls who were sexually abused in childhood compared to those of the general population.

The second objective of the study was to explore the role of psychiatric comorbidities in mediating the association between childhood sexual assault and pregnancy complications. The results confirm the hypothesis that the association is partly explained by the comorbidities.

In general, this study contributes to the understanding of risk factors for teenage pregnancies and their complications. More specifically, its design allows for the confirmation of the temporality of the following events: 1) sexual abuse in childhood, 2) psychiatric comorbidities and 3) pregnancy complications. Finally, it reaffirms the scope of the consequences of childhood sexual abuse and underlines the interinfluence of its deleterious effects on mental health and subsequent deterioration of physical health.

Keywords: childhood sexual abuse, teenage pregnancy, pregnancy complications, mental health, psychiatric comorbidity.

Table des matières

Résumé 5

Abstract 7

Table des matières 9

Liste des tableaux 13

Liste des figures 14

Liste des sigles et abréviations 15

Remerciements 19

Chapitre 1 – Contexte théorique 21

Grossesses à l'adolescence 21

Agression sexuelle durant l'enfance : un facteur de risque aux grossesses à l'adolescence 22

Explications de l'association entre l'agression sexuelle durant l'enfance et les grossesses à l'adolescence 23

Association entre l'agression sexuelle durant l'enfance et les complications de grossesses 25

Association entre l'agression sexuelle durant l'enfance et les issues de grossesses 26

Explications de l'association entre l'agression sexuelle durant l'enfance et les complications de grossesses à l'adolescence 28

Agression sexuelle durant l'enfance et comportements délétères pour la santé 28

Agression sexuelle durant l'enfance et symptômes psychiatriques 29

Multiples mécanismes en jeux 31

Limites des études antérieures et apport de la présente étude 32

Objectifs et hypothèses 34

Description de la thèse 34

Chapitre 2 – A Matched Cohort Study of the Association Between Childhood Sexual Abuse and Teenage Pregnancy 37
Abstract 37
Introduction 38
Method 40
Participants and procedures 40
Corroborated CSA report 40
Data linkage and general population controls 40
Independent measure 41
Dependant measures 41
Teenage pregnancies and their outcomes 41
Complications 42
Statistical analyses 42
Results 42
Discussion 43
References 49
Chapitre 3 – Childhood sexual abuse, teenager pregnancy and the mediating role of psychiatric comorbidity 65
Abstract 65
Introduction 65
Childhood sexual abuse: a risk factor to teenage pregnancies 65
Childhood sexual abuse: a risk factor to teenage pregnancy complications 66
Factors involved in the childhood sexual abuse - teenage pregnancy complications association 66
Age at pregnancy 66

Unhealthy lifestyles 67
Psychiatric disorders 68
Explanatory models for the association between psychological and physical symptoms 68
Purpose of this study 68
Method 70
Study design and ethical consideration 70
Corroborated childhood sexual abuse report 70
Participants 70
Variables 71
Teenage Pregnancies 71
Complications 72
Psychiatric Comorbidity 72
Socioeconomic status 73
Statistical Analyses 73
Results 74
Descriptive results 74
Results from the mediation model 74
Discussion 76
Strength and limitations 79
Recommendations 81
Conclusion 81
References 85
Chapitre 4 – Discussion générale 91
Rappel de la problématique 91

Implications théoriques....92
Forces de l'étude....95
Limites de l'étude....96
Implications pratiques....97
Conclusion....98
Références bibliographiques....99
Annexes....115

Liste des tableaux

Article 1

Table 1. – Results from generalized conditional linear models using logistic and binomial density links function with the group effect to predict the prevalence of consulting for at least one pregnancy, complication, provoked abortion and live birth (*n* = 1322). 47

Table 2. – Percentage of teenagers having at least one pregnancy-related consultation, complications, provoked abortion, live birth and fetal losses after a corroborated report of sexual abuse and before 18 years old, according to the group. 48

Article 2

Table 1. – Numbers and proportions of girls with a corroborated report of sexual abuse (n = 126) and girls from the general population (n = 35) with at least one psychiatric diagnosis after the date of report and before first teenage pregnancy, in each mental and behavioural category, (International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)). 83

Table 2. – Numbers and proportions of girls with a corroborated report of sexual abuse (n = 126) and girls from the general population (n = 35) with at least one psychiatric diagnosis after the date of the report and before first teenage pregnancy, in 0 – 8 of the categories, (International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)). 84

Annexe 1

Table 1. – Diagnoses of pregnancy, complications and psychiatric disorders included in this study variable from the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10 CA). 121

Liste des figures

Figure 1. – Results of mediation analysis testing the link between childhood sexual abuse and number of pregnancy complication diagnoses through psychiatric comorbidity, while controlling for age at first pregnancy, socioeconomic level, and psychiatric disorders that occurred before the corroborated report of sexual abuse. The b represents the unstandardized regression coefficient. The 95% confidence intervals for total, direct, and indirect effects were created with robust standard errors as our outcome is a count variable. 75

Liste des sigles et abréviations

ASE : Agression sexuelle à l'enfance

CSA : Childhood Sexual Abuse

CJQ-CN : Centre Jeunesse du Québec – Centre National

RAMQ : Régie de l'assurance maladie du Québec

MSSS : Ministère de la santé et des services sociaux

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Chapitre 1 – Contexte théorique

Grossesses à l'adolescence

Les grossesses à l'adolescence sont un important problème de société. En comparaison aux grossesses à l'âge adulte, les grossesses à l'adolescence présentent des risques considérables pour la santé physique des jeunes femmes tels que l'anémie, l'hypertension, la prééclampsie et les grossesses répétées non désirées (Boardman, Allsworth, Phipps, & Lapane, 2006; Briggs, Hopman, & Jamieson, 2007; Jolly, Sebire, Harris, Robinson, & Regan, 2000; Konje et al., 1992; Paranjothy, Broughton, Adappa, & Fone, 2009). Les grossesses à l'adolescence comportent également des risques pour la santé psychologique des jeunes femmes (Corcoran, 2016). Par exemple, en comparaison aux adolescentes qui ne vivent pas de grossesse (taux de dépression variant entre 7.5 % et 11 %), les adolescentes qui vivent une grossesse sont plus à risque de vivre une dépression (le taux de dépression variant entre 25 et 42 %) (Barnet, Duggan, Joffe, & Wilson, 1994; Ginsburg et al., 2008; Hodgkinson, Colantuoni, Roberts, Berg-Cross, & Belcher, 2010). De plus, la dépression présente des risques pour les adolescentes vivant une grossesse en ce qu'elle influence les issues de ces grossesses, le risque de grossesses répétées non désirées et les capacités parentales (Corcoran, 2016; Jarde et al., 2016; Patchen, Caruso, & Lanzi, 2009). La mortalité néonatale, postnatale et infantile est également plus fréquente lors de grossesses précoces que lors de grossesses chez les femmes d'âge adulte (Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004; Olausson, Cnattingius, & Haglund, 1999). Parmi les adolescentes qui poursuivent leur grossesse, une grande proportion d'entre elles sont issues de milieux socioéconomiques défavorisés (Gouvernement du Québec, 2005). Les contextes de vulnérabilité se perpétuant dans bien des cas, étant elles-mêmes filles de mères adolescentes (Gouvernement du Québec, 2005). En effet, les mères adolescentes atteignent un plus faible niveau d'éducation, progressent moins dans leurs emplois et sont plus vulnérables à vivre de la pauvreté que les autres mères, ce qui les rend plus susceptibles de dépendre des services sociaux, (Mirowsky & Ross, 2002). D'ailleurs, l'ampleur des coûts sociaux et économiques annuels associés aux grossesses à l'adolescence a été estimée à 10.9 milliards de dollars aux États-Unis (Osterman, Kochanek, MacDorman,

Strobino, & Guyer, 2015). Considérant les répercussions des grossesses à l'adolescence en regard de la santé des jeunes filles et de la santé publique, une meilleure compréhension des facteurs de risques est nécessaire afin que les efforts de préventions et les interventions soient mieux adaptés à la problématique et conséquemment plus efficaces.

Agression sexuelle durant l'enfance : un facteur de risque aux grossesses à l'adolescence

Un vaste corpus de recherche reconnaît l'agression sexuelle à l'enfance comme un facteur de risque important aux grossesses à l'adolescence (Brown, Cohen, Chen, Smailes, & Johnson, 2004; Fergusson, Horwood, & Lynskey, 1997; Fiscella, Kitzman, Cole, Sidora, & Olds, 1998; Kirkengen, Schei, & Steine, 1993; Lodico & DiClemente, 1994; Noll & Shenk, 2013; Raj, Silverman, & Amaro, 2000; Saewyc, Magee, & Pettingell, 2004; Stock, Bell, Boyer, & Connell, 1997; Yampolsky, Lev-Wiesel, & Ben-Zion, 2010). Deux importantes méta-analyses, principalement basées sur des devis rétrospectifs et dont les données étaient autorapportées, ont d'ailleurs indiqué que les femmes avec un passé d'agression sexuelle à l'enfance sont deux fois plus à risque de vivre une grossesse à l'adolescence que les autres femmes (Madigan, Wade, Tarabulsy, Jenkins, & Shouldice, 2014; Noll, Shenk, & Putnam, 2009).

Certains auteurs ont néanmoins obtenu des résultats non concluants concernant la présence d'une association entre l'agression sexuelle durant l'enfance et les grossesses à l'adolescence (Blinn-Pike, Berger, Dixon, Kuschel, & Kaplan, 2002; Brown et al., 2004). Or, les résultats non concluants de la méta-analyse de Blinn-Pike et al. (2002) peuvent être expliqués par le fait que les définitions des différents types de maltraitance variaient considérablement d'une étude à l'autre en plus d'être étudiés de manière confondue, cumulés ou non à l'agression sexuelle. De plus, selon les auteurs, toutes les méthodologies employées sauf une, étaient basées sur des devis rétrospectifs et utilisaient des questionnaires autorapportés qui réduisent la portée des conclusions. Notons cependant que 10 études sur les 15 incluses avaient préalablement trouvé un lien significatif entre la maltraitance à l'enfance (dont l'agression sexuelle) et les grossesses à l'adolescence. Par ailleurs, selon les résultats de Brown et al. (2004), aucun lien significatif n'était révélé entre un seul épisode d'agression sexuelle à l'enfance et les grossesses à l'adolescence,

mais le lien devenait significatif lorsqu'au moins 2 agressions sexuelles à l'enfance étaient rapportées au cours d'une entrevue auprès des adolescentes.

D'autres formes de maltraitance à l'enfance (abus physique et négligence) ont également été liées aux grossesses à l'adolescence (Carpenter, Clyman, Davidson, & Steiner, 2001; Madigan et al., 2014; Noll & Shenk, 2013; Putnam-Hornstein, Cederbaum, King, Cleveland, & Needell, 2013). Toutefois, l'agression sexuelle durant l'enfance a été identifiée comme étant plus fortement associée aux grossesses à l'adolescence (RC = 2,1) que l'abus physique (RC = 1,5), tandis que la négligence et l'abus émotionnel ne démontraient pas de lien significatif (Madigan et al., 2014). Bien que deux études aient plutôt identifié la négligence comme plus fortement associée aux grossesses à l'adolescence (RC = 3,4 VS 2.2, respectivement) (Negriff, Schneiderman, & Trickett, 2015; Noll & Shenk, 2013), l'agression sexuelle durant l'enfance, à l'instar de la négligence, était identifiée comme prédicteur indépendant des grossesses à l'adolescence, c'est-à-dire que la présence de l'agression sexuelle ajoutait un risque additionnel même en présence de négligence (Noll & Shenk, 2013). De plus, notons que les effets les plus importants étaient rapportés lorsque différents types de maltraitance étaient cumulés (Negriff et al., 2015). Par exemple, la cumulation de l'abus physique et l'agression sexuelle était plus fortement associée aux grossesses à l'adolescence que lorsque les types de maltraitance étaient isolés (RC = 3.83; CI: 2.96–4.97) (Madigan et al., 2014).

Explications de l'association entre l'agression sexuelle durant l'enfance et les grossesses à l'adolescence

L'adoption de comportements sexuels à risque est l'explication la plus souvent avancée pour expliquer le risque augmenté de grossesses à l'adolescence chez les victimes d'agression sexuelle durant l'enfance. En effet, comparativement aux filles qui n'ont pas été agressées sexuellement, celles qui l'ont été auraient plus souvent une sexualité précoce (Carpenter et al., 2001; Fergusson et al., 1997; Fiscella et al., 1998; Grimstad & Schei, 1999; Hillis, Anda, Felitti, & Marchbanks, 2001; Houck, Nugent, Lescano, Peters, & Brown, 2010; Lodico & DiClemente, 1994; Negriff et al., 2015; Polit, White, & Morton, 1990; Raj et al., 2000; Richter et al., 2014; Stock et al., 1997), un plus grand nombre de partenaires sexuels (Carpenter et al., 2001; Fergusson et al., 1997; Hillis et al.,

2001; Negriff et al., 2015; Raj et al., 2000; Saewyc et al., 2004; Stock et al., 1997), des relations sexuelles non protégées (Fergusson et al., 1997; Houck et al., 2010; Lodico & DiClemente, 1994; Saewyc et al., 2004; Stock et al., 1997) et des relations sexuelles sous l'influence de l'alcool ou de la drogue (Negriff et al., 2015; Oshri, Tubman, & Burnette, 2012; Richter et al., 2014).

L'adolescence est une période développementale qui se caractérise par des changements majeurs à différents niveaux : psychiques, cognitifs, affectifs et physiologiques (Sulimovic, Lamas & Corcos, 2021). Certains éléments développementaux propres à l'adolescence incluent notamment un processus d'autonomisation-individualisation des parents et un élan vers l'identification et l'affiliation avec les pairs, une maturation du corps par l'arrivée de la puberté, ainsi qu'un processus de réorganisation identitaire (Sulimovic et al., 2021). Sur les plans identitaire et social, il s'agit d'une période de sensibilité au rejet, ce qui peut rendre plus difficile de négocier l'utilisation de la contraception et de s'affirmer quant au refus d'une relation sexuelle (Loignon, 1996). De plus, la maturation sexuelle ne coïncide pas nécessairement avec la maturité psychosociale (Tremblay, 2001), ce qui peut rendre les adolescentes plus vulnérables à l'adoption de comportements sexuels à risque n'étant pas adéquatement outillées sur les plans cognitif, émotionnel et social pour prévoir et négocier les risques liés à la sexualité, notamment les infections transmises sexuellement et les grossesses non planifiées (Tremblay, 2001). Cela dit, ces facteurs de risque pourraient être exacerbés chez les adolescentes qui ont été agressées sexuellement durant l'enfance. En effet, selon un des modèles conceptuels des répercussions de l'agression sexuelle durant l'enfance le mieux établie dans la littérature, la théorie des dynamiques traumagéniques, l'agression sexuelle durant l'enfance altère le développement normal des plans cognitif, émotif et social, perturbant la relation au soi et au monde et les capacités d'adaptation des enfants et des adolescents (Finkhelor & Browne, 1985). Ces auteurs suggèrent que par l'entremise de quatre facteurs traumatiques (sexualisation traumatique, trahison, stigmatisation et impuissance), les enfants ayant été agressés sexuellement durant l'enfance sont plus susceptibles d'adopter des comportements sexuels à risque. De plus, l'agression sexuelle durant l'enfance est identifiée comme étant un facteur de risque significatif, bien que non spécifique, au développement de psychopathologies chez les enfants et les adolescents (Hillberg, Hamilton-Giachritsis & Dixon, 2011).

Certaines études ont utilisé des modèles de médiation afin d'expliquer l'association entre l'agression sexuelle durant l'enfance et l'adoption de comportements sexuels à risque par l'entremise de difficultés psychologiques. Par exemple, une étude menée auprès de jeunes filles agressées sexuellement durant l'enfance a identifié l'agression sexuelle comme étant significativement associée à un dérèglement psychologique, plus spécifiquement des difficultés à réguler comportements, émotions et cognitions. Cela à son tour expliquait une partie du nombre plus élevé de comportements sexuels à risque chez ces adolescentes, notamment le nombre élevé de partenaires sexuels et la non-utilisation de contraception (Noll, Haralson, Butler, & Shenk, 2011). Selon une autre étude, les symptômes d'abus et de dépendance à l'alcool ou à la drogue étaient identifiés comme médiateurs de l'association entre l'agression sexuelle durant l'enfance et la non-utilisation de contraception ainsi que les comportements sexuels sous l'influence de l'alcool ou de la drogue (Oshri et al., 2012).

Association entre l'agression sexuelle durant l'enfance et les complications de grossesses

Plusieurs études ont trouvé des associations entre un passé d'agression sexuelle durant l'enfance et des conséquences négatives pour la santé physique (Drossman, Talley, Leserman, Olden, & Barreiro, 1995; Leserman, Drossman, & Hu, 1998; Leserman et al., 1996; Miller, Chen, & Parker, 2011; Rich-Edwards et al., 2010; N. Sachs-Ericsson, Blazer, Plant, & Arnow, 2005; Wilson, 2010; Yampolsky, Lev-Wiesel, et al., 2010). Plus spécifiquement, l'agression sexuelle durant l'enfance est associée à une détérioration de la santé gynécologique des femmes adultes (Golding, Wilsnack, & Learman, 1998; Kirkengen et al., 1993; Yampolsky, Lev-Wiesel, et al., 2010) et des adolescentes (Curry, Perrin, & Wall, 1998; Parker, McFarlane, & Soeken, 1994; Vezina-Gagnon, Bergeron, Frappier, & Daigneault, 2017).

En effet, chez les femmes adultes, un passé d'agression sexuelle durant l'enfance a été associé aux complications de grossesses. Comparativement aux femmes non agressées durant l'enfance, celles qui l'ont été auraient plus de contractions prématurées (Leeners, Stiller, Block, Görres, & Rath, 2010), de plaintes d'inconfort (Grimstad & Schei, 1999) et de plaintes somatiques pendant la grossesse (Lukasse, Henriksen, Vangen, & Schei, 2012; Lukasse, Schei, Vangen, & Oian, 2009).

Elles souffriraient plus fréquemment d'insuffisance cervicale (Leeners et al., 2010), et auraient un taux de grossesse à risque plus élevé (Yampolsky, Lev-Wiesel, et al., 2010). Elles seraient plus nombreuses (43 %) à présenter des facteurs de risques obstétricaux en début de travail, c'est-à-dire des maladies somatiques chroniques telles que le diabète, la pré-éclampsie et l'hydramnios, que les femmes agressées à l'âge adulte ou non agressées (agression sexuelle à l'âge adulte : 23% et contrôle : 20%) (Nerum, Halvorsen, Straume, Sorlie, & Oian, 2013). Il a été démontré que les femmes agressées sexuellement durant l'enfance ont une fréquence d'hospitalisation plus élevée pendant la grossesse (Leeners et al., 2010) et consultent en cliniques sans rendez-vous plus fréquemment que les femmes non agressées (Grimstad & Schei, 1999). En plus d'observer une association entre l'agression sexuelle durant l'enfance et les complications de grossesse, le cumul de différents types de maltraitance (négligence, abus physique) a été associé à une augmentation de la sévérité des complications. En effet, plus les types de maltraitance sont présents en cooccurrence, plus le nombre de plaintes somatiques rapportées par les femmes durant la grossesse est élevé (Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009).

Certaines études obtiennent quant à elles des résultats non concluants, par exemple, eu égard à l'association entre un passé d'agression sexuelle durant l'enfance et les maladies chroniques pendant la grossesse telle que l'hypertension, la thrombose veineuse ou l'embolie pulmonaire (Leeners, Rath, Block, Görres, & Tschudin, 2014), et à l'association entre l'agression sexuelle durant l'enfance et l'accouchement par césarienne (Nerum et al., 2013). Une autre étude auprès de femmes adultes ne trouvait quant à elle pas d'association entre l'agression sexuelle durant l'enfance et les complications durant la durée du travail et à l'accouchement (Benedict, Paine, Paine, Brandt, & Stallings, 1999).

Association entre l'agression sexuelle durant l'enfance et les issues de grossesses

Deux études publiées il y a plus de vingt ans ont documenté prospectivement les issues des grossesses d'une population de femmes adultes (70 %) et adolescentes (30 %) agressées sexuellement ou physiquement durant la grossesse ou l'année précédant la grossesse (Curry et al., 1998; Parker et al., 1994). Elles ont toutes deux indiqué la présence d'une association entre

l'agression vécue durant la grossesse et le faible poids du bébé à la naissance. Or, à notre connaissance, aucune étude ne s'est depuis spécifiquement intéressée à documenter les issues de grossesses chez une population adolescente ayant été agressée sexuellement durant l'enfance.

Sans égard à un passé d'agression sexuelle durant l'enfance, les résultats d'une étude populationnelle (*n* = 320 174) ont révélé que les mortalités néonatales (moins de 28 jours de vie) et postnatales (plus de 28 jours de vie) étaient significativement plus fréquentes chez les jeunes filles de 13 à 15 ans (*RC* = 2.7 et 2.6), ainsi que chez les adolescentes de 16 à 17 ans (*RC* = 1.4 et 2.0), comparativement à des femmes de 24 ans (Olausson et al., 1999). Toujours sans égard à l'agression sexuelle durant l'enfance, une étude a révélé que les taux de mortalité et morbidité néonatale étaient plus élevés chez les adolescentes que chez les jeunes adultes (Gilbert et al., 2004). Ainsi, il semble que lorsque l'accouchement se déroule à l'adolescence, comparativement au début de l'âge adulte, les prévalences des mortalités infantiles néonatales et postnatales soient plus élevées.

Un vaste corpus de recherche a documenté une hausse de grossesses à risque chez les femmes avec un passé d'agression sexuelle durant l'enfance (Leeners et al., 2010; Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009; Möhler et al., 2008; Nerum et al., 2013), en plus de complications médicales chez leurs nouveau-nés (Möhler et al., 2008). Les complications allant de contractions prématurées, d'insuffisance cervicale, d'accouchements prématurés (Leeners et al., 2014), à une plus longue durée du travail (Nerum et al., 2013). Toujours auprès d'adultes, il a été trouvé que les symptômes de grossesses tels que les maux de dos, la fatigue et les crampes musculaires étaient plus sévères chez les femmes agressées sexuellement durant l'enfance que chez celles qui ne l'ont pas été (Lukasse et al., 2012). À notre connaissance, rares sont les études portant sur le lien entre l'agression sexuelle durant l'enfance et les complications de grossesses qui ont été menées auprès d'adolescentes.

Explications de l'association entre l'agression sexuelle durant l'enfance et les complications de grossesses à l'adolescence

Agression sexuelle durant l'enfance et comportements délétères pour la santé

Déjà, en 1992, Koss et Heslet ont indiqué dans une recension des écrits qu'un thème se dégageait dans la littérature voulant que les traitements médicaux auprès de femmes ayant été victimes de tous types de maltraitance soient améliorés par l'attention portée aux causes sous-jacentes de leurs symptômes. Selon elles, afin d'accomplir cet objectif, les professionnels de la santé doivent identifier les antécédents de maltraitance et fournir un accès à des services de soutien appropriés aux femmes les requérant. Depuis, différentes pistes ont été explorées afin d'expliquer l'association entre l'agression sexuelle durant l'enfance et les complications de grossesses. D'abord, l'agression sexuelle durant l'enfance a été identifiée comme un facteur de risque aux comportements défavorables pour la santé pendant la grossesse, tels que le tabagisme, la consommation de drogue et d'alcool (Grimstad & Schei, 1999; Harrison & Sidebottom, 2009; Leeners et al., 2014; Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009; Meschke, Hellerstedt, Holl, & Messelt, 2008; Putnam-Hornstein et al., 2013; J. S. Seng, M. Sperlich, & L. K. Low, 2008; van der Hulst et al., 2006). Des auteurs ont également observé que les femmes agressées sexuellement durant l'enfance rapportaient un indice de masse corporelle plus élevé que les femmes non agressées et l'attribuent notamment à de mauvaises habitudes de santé, telles que la sédentarité et la malnutrition (Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009). De plus, les femmes agressées sexuellement durant l'enfance fréquenteraient moins les établissements de santé ce qui peut nuire à une prise en charge rapide des symptômes afin que ne s'aggrave leur condition (Leeners et al., 2014). Ces comportements défavorables pour la santé peuvent à leur tour influencer la santé physique des femmes pendant la grossesse (Noll et al., 2007; Rodriguez, Bohlin, & Lindmark, 2001). Par exemple, la consommation d'alcool pendant la grossesse expliquait en partie les accouchements prématurés chez les femmes qui rapportaient une agression sexuelle durant l'enfance (Noll et al., 2007), alors que le tabagisme était le

médiateur le plus important de l'association entre une plus courte durée de la période de gestation et un passé d'agression sexuelle durant l'enfance (Smith, Gotman, & Yonkers, 2016).

Différentes études suggèrent que l'adoption de tels comportements délétères pour la santé serait expliquée par la souffrance psychologique reliée aux agressions sexuelles. En effet, de tels comportements pourraient avoir une fonction de mécanisme d'adaptation vis-à-vis des symptômes dépressifs, d'anxiété, de détresse psychologique et de symptômes de stress post-traumatique suite à une expérience de maltraitance durant l'enfance (Yampolsky, Lev-Wiesel, & Ben-Zion, 2010). Par exemple, une étude a observé que la dépression prédisait la consommation d'alcool pendant la grossesse chez les femmes qui ont été victimes d'agression sexuelle durant l'enfance (Harrison & Sidebottom, 2009). Alors, l'identification et le traitement de la dépression chez les femmes enceintes pourraient diminuer leur consommation d'alcool et à son tour prévenir les complications durant la grossesse et à l'accouchement. D'autre part, la consommation d'alcool chez les femmes enceintes qui ont été agressées durant l'enfance a été identifiée comme étant plus fréquente chez les femmes ayant un problème de dépendance à l'alcool (Harrison & Sidebottom, 2009; Meschke et al., 2008). Ainsi, traiter le trouble de dépendance à l'alcool de ces femmes et les informer des effets délétères de la consommation d'alcool sur leur santé physique et sur celle de leur bébé pourrait les amener à réduire leur consommation d'alcool pendant la durée de la grossesse.

Agression sexuelle durant l'enfance et symptômes psychiatriques

Sans égard à la grossesse, l'agression sexuelle durant l'enfance a été associée à une multitude de symptômes psychologiques et de troubles psychiatriques (Ackerman, Newton, McPherson, Jones, & Dykman, 1998; Wilson, 2010), notamment aux symptômes d'anxiété (Leserman et al., 1998; Beth E Molnar, Buka, & Kessler, 2001) de dépression (Drossman et al., 1995; Freshwater, Leach, & Aldridge, 2001; Kendler, Kuhn, & Prescott, 2004; Leserman et al., 1998; Molnar, Berkman, & Buka, 2001; Sachs-Ericsson, Kendall-Tackett, & Hernandez, 2007; Zlotnick, Mattia, & Zimmerman, 2001), au trouble de stress post-traumatique (Ackerman et al., 1998; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003; Seedat, Van Nood, Vythilingum, Stein, & Kamlner, 2000; Wolfe, Sas, & Wekerle, 1994), à des problèmes de consommation d'alcool (Luster & Small, 1997; Beth E. Molnar

et al., 2001; Oshri et al., 2012), des idées suicidaires (Luster & Small, 1997), des tentatives de suicide (Bridgeland, Duane, & Stewart, 2001; Zlotnick et al., 2001), de la détresse émotionnelle (Freshwater et al., 2001; Zlotnick et al., 2001), une plus faible estime de soi (Freshwater et al., 2001), et des symptômes de trouble de personnalité limite (Zlotnick et al., 2001). Bien que le trouble de stress post-traumatique soit le trouble le plus diagnostiqué chez les survivants d'agression sexuelle durant l'enfance, une récente étude longitudinale a montré qu'il y a différents profils de comorbidités psychiatriques chez les jeunes qui ont été agressés sexuellement et qu'il y a une grande hétérogénéité entre les profils (Alie-Poirier, Hébert, McDuff, & Daigneault, 2020).

Spécifiquement à des femmes qui vivent une grossesse, l'agression sexuelle durant l'enfance a été associée à des symptômes et des troubles psychologiques, tels que la détresse émotionnelle (Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009; van der Hulst et al., 2006; Yampolsky, Lev-Wiesel, et al., 2010), l'anxiété (Buist, 1998), l'anxiété vis-à-vis de l'accouchement (Lukasse, Vangen, Oian, & Schei, 2011), aux symptômes du trouble de stress post-traumatique (Julia S. Seng, Mickey Sperlich, & Lisa Kane Low, 2008; Yampolsky, Lev-Wiesel, et al., 2010), à des sentiments conflictuels à propos de la sexualité (van der Hulst et al., 2006), à la préoccupation sexuelle (Noll et al., 2003; Noll & Shenk, 2013), aux idées suicidaires (Leeners et al., 2014) et aux symptômes de dépression (Alvarez-Segura et al., 2014; Benedict et al., 1999; Buist, 1998; Leeners et al., 2014; J. S. Seng et al., 2008; Yampolsky, Lev-Wiesel, et al., 2010) pendant la durée de la grossesse.

Sans égard à un historique d'agression sexuelle durant l'enfance, les facteurs psychologiques ont également été associés à des problèmes de santé physique pendant la grossesse. Par exemple, les symptômes du trouble de stress post-traumatique augmenteraient le risque de problèmes de santé chroniques (Yampolsky, Lev-Wiesel, et al., 2010), alors que la dépression et les idées suicidaires augmenteraient le risque d'accouchement prématuré (Leeners et al., 2014). Les femmes avec une dépression sévère, présente en comorbité avec des symptômes d'anxiété, seraient quant à elles plus à risque d'accoucher prématurément d'enfants avec un faible poids à la naissance (Davis et al., 2004). Enfin, les femmes qui ont des symptômes de dépression et

d'anxiété seraient plus nombreuses à se plaindre de symptômes physiques pendant la grossesse, que celles sans dépression et anxiété (Kelly, Russo, & Katon, 2001).

À notre connaissance, quelques études rétrospectives ont vérifié si les troubles psychiatriques expliquaient l'association entre l'agression sexuelle durant l'enfance et les problèmes de santé physique pendant la grossesse chez des adultes. Comparativement aux femmes non agressées sexuellement durant l'enfance, celles qui rapportaient avoir vécu une agression souffraient de détresse psychologique sévère et étaient plus à risque de grossesse à haut risque (Yampolsky, Lev-Wiesel, et al., 2010). Plus spécifiquement, le trouble de stress post-traumatique contribuait à l'explication des troubles somatiques chroniques (Yampolsky, Lev-Wiesel, et al., 2010), ainsi que du faible poids à la naissance et une plus courte durée de gestation (Seng, Low, Sperlich, Ronis, & Liberzon, 2011). Par ailleurs, la dépression contribuait à expliquer les problèmes gynécologiques pendant la grossesse (Yampolsky, Lev-Wiesel, et al., 2010) ainsi que les plaintes somatiques pendant la grossesse (H. Littleton, 2015). Par contre, considérant que le devis de l'étude est rétrospectif, les résultats ne permettent pas d'affirmer que les affects dépressifs survenaient avant les problèmes gynécologiques et les plaintes somatiques vécus pendant la grossesse ni d'infirmer que ceux-ci pouvaient survenir avant les affects dépressifs.

Multiples mécanismes en jeux

En somme, de multiples mécanismes semblent contribuer à expliquer l'association entre l'agression sexuelle durant l'enfance et les complications de grossesses chez les adultes. D'abord, les comportements à risque pour la santé (consommation d'alcool et de drogue) durant la grossesse augmentent le risque d'avoir des problèmes de santé physique pendant la grossesse (Noll et al., 2007; Rodriguez et al., 2001; Sneag & Bendo, 2007). Les femmes qui ont un passé d'agression sexuelle durant l'enfance sont aussi plus à risque d'avoir des symptômes ou des troubles psychiatriques pendant la grossesse que les femmes sans passé d'agression sexuelle (Alvarez-Segura et al., 2014; Leeners et al., 2014; Rich-Edwards et al., 2010; J. S. Seng et al., 2008; Yampolsky, Lev-Wiesel, et al., 2010). Cela peut augmenter la vulnérabilité de ces femmes à développer des symptômes physiques et des complications de grossesse par différentes voies sous-jacentes (altération neuroendocrine, altération du fonctionnement du système

immunitaire) (Fagundes, Glaser, & Kiecolt-Glaser, 2013; McEwen, 2003), ou encore augmenter le risque qu'elles s'engagent dans des comportements à risque pour la santé afin de mieux faire face à certains de leurs symptômes psychologiques (Harrison & Sidebottom, 2009; Lukasse, Schei, Vangen, & Oian, 2009; Yampolsky, Lev-Wiesel, et al., 2010). Enfin, les troubles psychiatriques des femmes agressées sexuellement durant l'enfance pourraient exacerber l'attention accordée à certains symptômes physiques pendant la grossesse (Otis, Keane, & Kerns, 2003).

Des modèles explicatifs ont suggéré différentes voies par lesquelles les symptômes psychologiques affectent les symptômes physiques. Par exemple, le modèle théorique de Golding (1994) propose que le stress induit par l'agression sexuelle durant l'enfance soit associé à une réduction du bon fonctionnement du système immunitaire, à son tour associé à une augmentation des problèmes de santé physique. En effet, l'exposition à un stresseur aussi sévère tôt dans la vie peut avoir des altérations durables sur le fonctionnement de l'axe hypothalamique pituitaire adrénal (HPA) (Meaney et al., 1993). De manière alternative, le modèle proposé par Pennebaker and Susman (1988) suggère que absence de divulgation et de confrontation de l'expérience traumatique peut mener à des troubles psychosomatiques par l'entremise de l'inhibition et de l'évitement de certaines pensées et émotions, ce qui augmenterait l'activité du système nerveux autonome.

Limites des études antérieures et apport de la présente étude

Les études citées ci-dessus ont certaines limites auxquelles la présente étude tente de pallier. D'abord, la plupart d'entre elles utilisent un devis rétrospectif et utilisent des questionnaires autorapportés (Benedict et al., 1999; Curry et al., 1998; Fiscella et al., 1998; Kirkengen et al., 1993; Lodico & DiClemente, 1994; Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009; Lynskey & Fergusson, 1997; Parker et al., 1994; Raj et al., 2000; Saewyc et al., 2004; Stock, Bell, Boyer, & Connel, 1997; Yampolsky, Lev-Wiesel, et al., 2010) ou des entrevues (Grimstad & Schei, 1999; Leeners et al., 2014; Nerum et al., 2013) pour évaluer l'historique d'agression sexuelle durant l'enfance, ou pour identifier les grossesses, les complications de grossesses, les problèmes physiques ou les plaintes somatiques durant la grossesse (Lukasse et al., 2012; Noll & Shenk, 2013; Raj et al., 2000; Saewyc et al., 2004; Stock et al., 1997; Yampolsky, Lev-Wiesel, et al., 2010). Ce

type de devis est moins fiable, puisqu'il comporte un risque lié au biais de rappel, qu'il ne permet pas de contrôler pour les variables présignalement et parce qu'il ne permet pas de situer clairement les évènements de manière temporelle, notamment pour s'assurer que l'agression sexuelle est survenue avant la grossesse et déterminer l'âge auquel chaque évènement est survenu (Brewin, Andrews, & Gotlib, 1993; O'Donnell et al., 2010; Straus, 1998). La présente étude s'appuie sur un devis de recherche prospectif longitudinal avec cohortes appariées et utilise des informations médicales objectives provenant de registres administratifs (MSSS et RAMQ) ce qui permet de confirmer la temporalité des événements et le contrôle des grossesses, complications de grossesses et troubles psychiatriques présignalement d'agression sexuelle. De plus, les études antérieures ont principalement été menées auprès de femmes adultes (Benedict et al., 1999; Grimstad & Schei, 1999; Kirkengen et al., 1993; Leeners et al., 2014; Lukasse et al., 2012; Lukasse, Schei, Vangen, & Oian, 2009; Nerum et al., 2013; Saewyc et al., 2004; Yampolsky, Lev-Wiesel, et al., 2010) ; la présente étude a testé les différentes associations auprès d'adolescentes.

De surcroît, la littérature portant sur les explications des risques augmentés de complications de ces grossesses chez les survivantes d'agression sexuelle durant l'enfance est limitée, particulièrement auprès de la population adolescente. En fait, à notre connaissance, aucun modèle explicatif n'a été testé auprès d'un échantillon d'adolescentes. Les études qui ont testé des modèles de médiation de l'association complications et agression sexuelle pendant l'enfance ont été effectuées auprès d'adultes et ont utilisé des devis rétrospectifs qui, tel que mentionné ci-dessus, introduisent des biais de rappel et limitent les conclusions possibles des trajectoires temporelles. Qui plus est, les études précédentes se sont intéressées à des diagnostics spécifiques tels que les troubles de l'humeur, les troubles anxieux ou les troubles de stress post-traumatique afin de tenter d'expliquer l'association entre agression sexuelle durant l'enfance et complications de grossesses (Putnam, 2003). Or si le trouble de stress post-traumatique est le trouble le plus souvent diagnostiqué chez les enfants qui ont été agressés sexuellement, leurs symptômes sont multiples, leurs profils symptomatiques hétérogènes et la comorbidité de troubles psychiatriques très fréquente (Alie-Poirier et al., 2020). En effet, il a été estimé que les enfants qui ont été agressés sexuellement durant l'enfance ont de 3 à 8 diagnostics de troubles psychiatriques

appartenant à différentes catégories diagnostics (Van der Kolk, 2015). S'intéresser à un seul trouble psychiatrique réduit non seulement la portée des résultats, mais limite la compréhension de la portée traumatique de l'agression sexuelle. C'est pourquoi la présente étude s'intéresse à la comorbidité psychiatrique comme variable médiatrice du lien entre agression sexuelle et complications de grossesses à l'adolescence.

Objectifs et hypothèses

En utilisant un devis longitudinal de cohortes appariées et des données médicales provenant de registres administratifs (RAMQ, centre jeunesse), la présente étude vise d'abord à combler certaines lacunes des études antérieures portant sur le lien entre l'agression sexuelle durant l'enfance, les grossesses à l'adolescence et leurs complications. L'échantillon de l'étude est composé de 1322 adolescentes dont 50 % ont fait l'objet d'un signalement corroboré d'agression sexuelle, entre le 1er janvier 2001 et le 31 décembre 2010. Chacune de ces adolescentes a été appariée à une adolescente provenant de la population générale, c'est-à-dire qui n'a pas fait l'objet d'un signalement pour agression sexuelle corroboré par le même centre jeunesse, durant ladite période.

Le premier objectif de la présente étude était de déterminer si les jeunes agressées sexuellement durant l'enfance sont plus nombreuses à avoir au moins une grossesse à l'adolescence et au moins une complication de grossesse que celles de la population générale, l'hypothèse de l'étude étant que ce soit le cas.

Le deuxième objectif de l'étude était de déterminer si la comorbidité psychiatrique permet d'expliquer le lien entre l'ASE et les complications de grossesses, l'hypothèse de l'étude étant que ce soit le cas.

Description de la thèse

La présente thèse inclut deux articles, publié (article 1) ou sous presse (article 2), dans des revues scientifiques internationales avec comité de révision par les pairs. Le chapitre deux est constitué d'un article empirique intitulé « A Matched Cohort Study of the Association Between Childhood Sexual Abuse and Teenage Pregnancy » publié dans *Journal of Adolescent Health*. Cet article

confirme l'association entre l'agression sexuelle durant l'enfance et le risque augmenté 1) des grossesses à l'adolescence, 2) des complications de ces grossesses. De plus, l'article permet de comparer les taux des différentes issues de grossesses (naissances vivantes, pertes fœtales et avortements provoqués) entre le groupe d'adolescentes agressées sexuellement durant l'enfance et le groupe d'adolescentes provenant de la population générale. Le chapitre trois est constitué de l'article intitulé « Childhood sexual abuse, teenager pregnancy and the mediating role of psychiatric comorbidity » sous presse dans *Children and Youth Services Review*. Il présente un modèle de médiation qui explique une partie de l'association entre l'agression sexuelle durant l'enfance et les complications de grossesses par la comorbidité psychiatrique. Enfin, une discussion générale (chapitre quatre) situe les apports théoriques, méthodologiques et cliniques de la thèse dans le contexte des modèles théoriques. Les limites et les pistes de recherches futures sont également discutées.

Je suis la première autrice des deux articles. J'ai effectué la recension de la littérature, participé aux choix d'analyses, aux analyses et à l'interprétation des résultats, à la rédaction et la diffusion des résultats. Ma directrice de recherche Isabelle Daigneault a grandement contribué à chacune des étapes : de la collecte des données, l'élaboration de l'étude, la planification des analyses, la relecture et la supervision des articles de cette thèse. Les coauteurs suivants ont collaboré à l'article par leur relecture, correction, suggestions, bonifications : Pascale Vezina-Gagnon, Julie Achim, Violaine Guérin et Jean-Yves Frappier. Les analyses statistiques ont été supervisées par nul autre que Pierre McDuff qui nous a guidé, corrigé et aidé tout au long du processus. Tous les coauteurs ont donné leur autorisation pour que ces deux articles soient inclus dans cette thèse.

De manière générale, cette étude contribue à la compréhension des facteurs de risque aux grossesses à l'adolescence et leurs complications. Plus spécifiquement, tout en contrôlant pour les troubles psychiatriques pré signalement, son devis permet la confirmation de la temporalité des événements suivants : 1) les agressions sexuelles durant l'enfance, 2) les comorbidités psychiatriques et 3) les complications de grossesse. Enfin, elle réaffirme la portée des conséquences des agressions sexuelles durant l'enfance et souligne l'interinfluence de ses effets délétères sur la santé mentale et la détérioration subséquente de la santé physique.

Chapitre 2 – A Matched Cohort Study of the Association Between Childhood Sexual Abuse and Teenage Pregnancy

Abstract

This matched-cohort study aims to determine whether teenagers with a history of childhood sexual abuse (CSA) are at greater risk of consulting for a pregnancy and related complications than teenagers from the general population. It also aims to compare provoked abortion, live births and fetal losses of participants who were sexually abused in childhood and those of the general population. A total of 661 girls (aged 13-18 years) with a corroborated by Child Protective Services (CPS) CSA report between 2001 and 2010 were matched to 661 girls from the general population upon age, biological sex, urban CPS areas and public drug insurance admissibility at reporting date. Pregnancy consultations and complications during pregnancy and delivery were documented using diagnoses from public health insurance administrative databases from January 1996 to March 2013. Socioeconomic status was controlled. Results indicate that compared to participants from the general population, those with a history of CSA were 4.6 times more likely to consult for at least one pregnancy, 5.3 times more likely to consult for at least one complication during pregnancy or delivery, and on average 5.2 and 3.3 times more likely to consult for at least one live birth and provoked abortion, respectively. There were too few observations to compare fetal losses between groups. Medical interventions for teenage pregnancies and related complications should take into consideration a possible history of CSA in order to reinforce gynecological follow-up and treatment for girls who were sexually abused and to prevent unfavorable outcomes. This matched-cohort study highlights childhood sexual abuse as a risk factor for teen pregnancy and its complications. It compares pregnancy outcomes participants who were sexually abused in childhood and those of the general population. Findings suggest that clinicians should consider the possible detrimental role of sexual abuse in childhood when taking charge of pregnant teenagers as these pregnancies are at higher risk of complications.

Keywords: childhood sexual abuse; teen pregnancy; pregnancy complication; adolescent health; pregnancy

Introduction

Considering the negative individual and public health consequences associated with teenage pregnancy, a better understanding of its risk factors is necessary in order for prevention and medical intervention strategies to be better adapted and more efficient. In comparison to adult pregnancies, teenage pregnancies are associated with increased physical, psychological and social risks, including increased risk for anemia, hypertension, pre-eclampsia, depressive moods and repeated pregnancies (Boardman et al., 2006; Paranjothy et al., 2009). Furthermore, teen mothers are more susceptible to rely on social services, reach lower educational levels, and experience poverty (Mirowsky & Ross, 2002). Among the more than 30,000 Canadian teenagers (19 years and younger) with yearly recorded pregnancies, 52.61 % of pregnancies have resulted in provoked abortion, 45.51 % in live births and 1.88 % in fetal losses (Statistiques Canada, 2016).

A large body of research recognizes childhood sexual abuse (CSA) to be associated with precocious sexual activity initiation in girls (Draucker & Mazurczyk, 2013; Senn, Carey, & Vanable, 2008), and with increased teenage pregnancies (Madigan et al., 2014; Noll et al., 2003; Noll et al., 2009). Although other forms of maltreatment, namely physical abuse and negligence, have also been associated with increased teenage pregnancies (Blinn-Pike et al., 2002; Madigan et al., 2014), a meta-analyse identified CSA as a more salient predictor with a higher risk ratio (Madigan et al., 2014). According to the Ministry of Health and social services (2011), CSA is defined as any sexual gesture, with or without physical contact (including exhibitionism or voyeurism), committed without consent or through emotional manipulation or blackmail towards a child.

A number of research results have indicated that pregnant women sexually abused in childhood report more problems during pregnancy than women who do not report childhood sexual abuse. Fear of labor, somatic complaints and non-scheduled contact with prenatal care for discomfort during pregnancy have been reported more often in victims (Lukasse et al., 2012; Lukasse, Schei, Vangen, & Øian, 2009), as well as increased risks of hospitalization, premature contractions and premature deliveries (Leeners et al., 2010). Moreover, they are more susceptible to engage in behaviours that may negatively affect pregnancy, such as being less physically active, more

inclined to smoke and drink alcohol, and to have an unhealthy diet (Curry et al., 1998; Leeners et al., 2014; Parker et al., 1994; Julia S. Seng et al., 2008).

Although a growing number of studies delve into the association between CSA and women's physical health during pregnancy, the majority of studies have been based on retrospective designs and self-report questionnaires, introducing memory biases and limiting conclusions regarding the mental and physical health outcomes of women who experienced childhood sexual abuse. Moreover, to our knowledge only two prospective studies have been conducted with adolescent populations. Findings suggest that pregnant adolescent victims of abuse (physical and sexual) during pregnancy or in the preceding year were at greater risk of bleeding during first and second semesters of pregnancy and gained significantly less maternal weight than women who were not sexually abused (Curry et al., 1998; Parker et al., 1994). However, in both studies, physical and sexual abuse during pregnancy were studied indistinctly and assessed using self-report questionnaires in a sample of both women (70 %) and adolescents (30 %).

The first goal of the present matched-cohort study is to determine whether teenagers who have been sexually abused in childhood have an increased risk of consulting for at least one pregnancy in comparison to teenagers from the general population. The second goal is to determine whether teenagers who have been sexually abused in childhood have an increased risk of consulting for related pregnancy complications. The third goal is to describe the rates of provoked abortion, live birth and fetal losses and determine whether there are differences in rates between teenagers with a history of CSA and those from the general population. Hypotheses are as follows: teenagers with a history of CSA will have an increased risk of consulting for pregnancy and their related complications before their 18th birthday, in comparison to those of the general population. There was no a priori hypothesis for goal 3.

Method

Participants and procedures

Required authorization certificates for obtaining administrative data have been accordingly granted by the ethical committee of the Child Protection Services (CPS), the information commissioner's office, the health insurance agency and University of Montreal's ethical review board (2014-15-110-D). The data sets used in this matched-cohort study comes from a larger study where mental and physical health problems of children who were sexually abused compared with those from a general population group were documented over a ten year period following the sexual abuse report (Daigneault, Hébert, Bourgeois, Dargan, & Frappier, 2017). The present study sample is comprised of 661 girls from the aforementioned study for whom a CSA report made to CPS was corroborated and 661 girls from the general population with whom they were matched. These 1322 girls represent 75% of the original sample (25% were boys). The average age at the first sexual abuse report in the group of participants who were abused in childhood is 11.42 (standard deviation = 4.21, ranges 1-17 years) - for more details on initial sample characteristics see aforementioned larger study (Daigneault et al., 2017).

Corroborated CSA report

In the Canadian province where the data came from, according to CPS law, any person who has reasons to believe that a child is sexually abused (as defined above) has the obligation to report it to the director of CPS (Gouvernement du Québec, 2001). After a report has been made, a chain of procedures follows and an evaluation team composed of social workers determines whether the report is founded and if the child's security or development is compromised. In the affirmative, the CSA report is corroborated by CPS and protective measures are taken.

Data linkage and general population controls

Every corroborated CSA report made to the CPS of a large urban city between January 1, 2001, and December 31, 2010, was considered. From 955 children who were reported, 92 % (882) were later identified by name, surname, address, date of birth or health insurance numbers in the province's health insurance administrative databases. Every child from the corroborated CSA

group was then matched to a single child with the same month and year of birth, biological sex, urban CPS area and public drug insurance admissibility at reporting date using the same public health insurance databases. Children from the comparison group had not been the subject of a corroborated CSA report to the participating CPS between January 1, 2001, and December 31, 2010.

Independent measure

The independent variable is divided into two levels: 1 = the group composed of 661 girls with a corroborated report of CSA to the participating CPS during the aforementioned period, and 2 = the matched-control group composed of 661 girls without a corroborated report of CSA at the same period of time and region. Criteria for matching were same month and year of birth, biological sex, urban CPS areas and public drug insurance admissibility at reporting date.

Dependant measures

Teenage pregnancies and their outcomes

All consultations for teenage pregnancies were documented using the public health administrative databases that contain information on all in-patient and out-patient medical consultations (thereafter, consultations refer to both paired), including diagnoses associated with every medical over a 16-year period (from 1996 to 2013). Three pregnancy "outcomes", which occurred after the date of the corroborated report of sexual abuse and before the age of 18 years old, were documented and dichotomously scored (0 = "no abortion", "no live birth" and "no fetal loss" and 1 = "at least one abortion," "at least on live birth" and "at least one fetal loss"). A dichotomous Pregnancy variable was then computed by summing the three types of pregnancy outcomes were 0 = "no pregnancy outcome" and 1 = "at least one pregnancy outcome". The outcome "abortion" refers to provoked termination of pregnancy, and the outcome "fetal loss" refers to spontaneous abortion or miscarriage. All teenage pregnancies were retained for analyses and only one twin pregnancy was observed. A list of the diagnoses used to create the aforementioned variables is presented in Table 1, in the Appendix (World Health Organization, 2011).

Complications

All consultations for teenage pregnancy complications were also documented using diagnoses registered in the administrative databases (World Health Organization, 2011). The diagnoses used to create the dichotomous variable “Complications” were a) Complications during pregnancy, b) Complications at delivery, c) Puerperium complications and d) High risk surveillance during pregnancy (0 = “no complication” and 1 = “at least one complication”), which occurred after the date of the corroborated report of abuse and before the age of 18 years old (see Table 1, in the Appendix).

Statistical analyses

In order to compare the incidence of a) pregnancies, b) their complications and c) the three pregnancy outcomes between participants who have been sexually abused in childhood and those from the general population, conditional generalized linear mixed models with binomial distribution and log function were conducted. This method is recommended for matched cohort studies (Niven, Berthiaume, Fick, & Laupland, 2012) and takes into account the individual matching between groups (biological sex, month/year of birth and region). Moreover, socioeconomic status was controlled using a material and social deprivation index documented in administrative databases (Pampalon, Gamache, & Hamel, 2010). All analyses were conducted with SPSS 24 Mac OS and a 5 % significance level. Considering the sample size of 1322 participants, the statistical power to detect a small difference is .95.

Results

Conditional generalized linear mixed models’ results are presented in Table 2. They indicate that participants with a corroborated CSA report were on average 4.6 times more likely to consult at least once for pregnancy and 5.3 times more likely to consult at least once for related complications than those from the general population.

Descriptive results presented in Table 3 reveal that, for both groups, the majority of participants who had at least one pregnancy consultation also consulted for at least one complication (age ranged from 13 to 18 years). In both groups, among those consulting at least once for pregnancy,

provoked abortion is mostly prevalent. In teenagers who carried the pregnancy to term, live birth is the most prevalent outcome and fetal loss occurred for a minority. There were too few fetal losses in the general population; this outcome was hence dropped from further comparison analyses.

All pregnancy outcomes are more frequent among youth with a history of CSA because they have more pregnancies overall. However, when comparing the proportion of each outcome among youth who has had at least one consultation for teenage pregnancy between both groups, results indicate that there is a higher proportion of provoked abortions in the general population group than in the group of teenagers with a history of CSA (63 % and 47 %, respectively; $P < .05$). However, there were too few live births and fetal losses in the general population group to conduct comparison analyses.

Discussion

To the best of our knowledge, this is the first matched-cohort study assessing the risk of pregnancy and their complications in a teenage population with corroborated sexual abuse reports. In accordance with our hypotheses, the current results indicate that participants with a history of CSA were at heightened risk of consulting for at least one pregnancy and at least one pregnancy complication than those from the general population. Results are consistent with those of previous studies and with adult samples (Curry et al., 1998; Madigan et al., 2014; Noll et al., 2009; Parker et al., 1994). However, the association between teenage pregnancy consultations and a history of CSA appears to be stronger in the current study (*RR* = 4.6) than in previously cited meta-analyses (*OR* = 2). This could be explained by the strength of the study design. For example, studies using self-report questionnaires often underestimate the incidence and prevalence of sexual violence in general populations (O'Donnell et al., 2010), which would in turn diminish the strength of the associations. Behavioral explanations have been suggested linking CSA with teenage pregnancy through at-risk sexual behaviors: being more likely to be sexually active and being younger at first intercourse (Draucker & Mazurczyk, 2013; Senn et al., 2008). However, these don't elaborate further on the underlying mechanisms by which CSA may affect physical health during pregnancy to explain complications or outcomes.

Our study is the first to describe consultations for three pregnancy outcomes in teenagers with a history of CSA in comparison to teenagers from the general population. Comparing outcome proportions between groups, results suggest that teenagers from the general population were more likely to terminate their pregnancy than teenagers with a history of CSA who were more likely to carry their pregnancy to term. As suggested by previous research results, this may indicate, in both groups, at-risk sexual behaviors such as a lack of contraception utilisation despite the absence of pregnancy planning, and in turn resulting in a heightened rate of abortion in the case of teenagers from the general population. Further study should explore a possible heightened desire for motherhood, which may explain the higher rate of pregnancies in the group of teenagers with a history of CSA, at least in part, in addition to unplanned or "at-risk" behaviors. Indeed women who have been sexually abused in childhood have reported more cognitive distortions regarding sexuality and expressed greater pregnancy desire than women who have not been sexually abused (Noll et al., 2003).

On the other hand, it is worth noting that, although regression analyses could not be conducted, 22 % of participants with a history of CSA consulted for one or more fetal loss, which is more than 10 times higher than the fetal losses reported in the general Canadian teenage pregnancy population (1,9%) (Statistiques Canada, 2016). Participants with a history of CSA were also more likely to consult for pregnancy complications. Why is CSA associated with increased pregnancy complications and fetal losses? A number of behavioural or psychological pathways may explain this relationship and should be studied further. For example, CSA is more generally associated with post-traumatic stress disorder, depression, eating disorders and somatic disorders (Lukasse et al., 2012), and the pregnancy itself is often cited as a trigger for new or recurring abuse-related post-traumatic stress reactions, depression or toxic stress, which may then be associated with more complications, such as preterm births, physical complications during pregnancy and puerperium complications (Cardwell, 2013; Kelly et al., 2001; Leeners et al., 2014; Yonkers, Smith, Forray, & et al., 2014). Fear of childbirth is also more common among women abused in childhood than those who were not and may explain some complications (Lukasse et al., 2011). Finally, a number of other pathologies, such as obesity, urinary and genital health problems, fibroids in connexion with luteal insufficiency, STIs, hypertension or diabetes are more prevalent after CSA

(Boynton-Jarrett, Rosenberg, Palmer, Boggs, & Wise, 2012; Vezina-Gagnon et al., 2017; Wise, Palmer, & Rosenberg, 2013) and are associated with higher risks of complications during pregnancy (Matuszkiewicz-Rowińska, Małyszko, & Wieliczko, 2015). Thus, further research exploring underlying mechanisms may shed light on the heightened risk of pregnancy and delivery complications, including fetal loss, in teenagers with a history of sexual abuse.

The present matched-cohort study design overcomes certain limitations of prior studies. Namely, it documents all given diagnoses linked to provoked abortions, fetal losses, live births and complications during pregnancy on a lengthy period of time (2001 to 2013). This provides reliable evidence that can inform and guide teenage pregnancy healthcare practice (Dube, 2018). Moreover, this relatively inexpensive design (MacMillan et al., 2007; Roos et al., 2008) ensures access to teenagers who have been identified by governmental instances (Brownell & Jutte, 2013), which created a relatively large sample with adequate statistical power. This matched-cohort design also limits attrition over time and remediates the social desirability and memory biases associated with self-reports and retrospective designs (Brewin, Andrews, & Gotlib, 1993; O'Donnell et al., 2010; Strauss & Corbin, 1994).

The current study results must, however, be carefully interpreted in light of certain limitations. First, the documented outcomes were limited to those found in public health insurance administrative databases. Thus, other variables of interest such as primipara pregnancy, pregnancy intendedness, current relationship status, intimate partner violence associations and whether pregnancy resulted from the abuse, could not be documented, which limits our understanding of the association between CSA and teen pregnancies (Leach, Baksheev, & Powell, 2015). For example, previous studies specified that the pregnancy was not a result of the abuse, which could not be documented in the current study. However, pregnancy consultations occurred on average 3.5 years post CSA report, which indicates that on average pregnancies were not the direct result of the officially reported CSA. Furthermore, there was no information regarding the severity of the abuse. Consequently, it was impossible to link teenage pregnancy to a specific type of sexual abuse. Because this study design is limited to teenagers with a history of sexual abuse who received CPS services, representing about 10 % of all children abused during childhood, they may only represent the most severe cases of CSA (Afifi et al., 2015; Brownell & Jutte, 2013), mostly

intrafamilial, chronic abuses in family environments where neither of the parents are able to protect the child who has associated behaviour problems, and are thus not representative of all girls and teenagers with a history of CSA. Furthermore, the group representing the general population may have experienced CSA without a report being corroborated or a report may have been corroborated but in another CPS agency or outside the targeted period of this study, which underestimates the strength of the studied associations. Finally, we did not have access to other risk factors for teenage pregnancy in both groups, such as other types of maltreatment, family dysfunction, behavior problems, and so on.

To the best of our knowledge, this is the first matched-cohort study revealing that childhood sexual abuse is associated with an increased risk during pregnancies in teenagers. The results indicate that teenagers who have been sexually abused in childhood have a higher rate of pregnancy complications and their pregnancies more often result in live births than those from the general population. Hence, clinicians should consider the possible role of sexual abuse in childhood when treating pregnant teenagers in order to identify CSA victims, reinforce gynecological follow-up and treatment for teenagers with a history of CSA and prevent pregnancy complication and unfavorable outcomes, such as fetal losses. Further research should consider differentiating the nature of pregnancy complications and causes for fetal losses. Furthermore, medical treatment may be improved from identifying underlying causes of increased pregnancies in the first instance as well as pregnancy complications. This may help tailor more adapted family planning services, such as closer follow-ups or more efficient contraception. Thus, further research should explore a number of explanatory factors including other pathologies (diabetes, etc.), psychological factors (anxiety, depression, etc.), behavioral/lifestyle problems (smoking, etc.) and family dysfunction. As well, new studies are needed to assess the links between the nature of obstetric complications and cumulative childhood trauma, including sexual and physical abuse and neglect. Lastly, primary care clinicians working with teenage patients must identify CSA and recognize CSA as a risk factor for pregnancy in order to give better counseling and support services.

	Constant	Regression coefficient	*P* value	Relative risk (95% CI)
Pregnancy				
Group effect (CSA vs. GP)	0.26	1.52	0.001	4.57 (2.74 - 7.61)
Complication				
Group effect (CSA vs. GP)	0.36	1.66	0.001	5.26 (2.62 – 10.56)
Live birth				
Group effect (CSA vs. GP)	0.45	1.65	0.003	5.21 (2.15 – 12.65)
Provoked abortion				
Group effect (CSA vs. GP)	0.34	1.19	0.001	3.31 (1.71 - 6.39)

Note. Material and social deprivation were controlled in all models.

Table 1. – Results from generalized conditional linear models using logistic and binomial density links function with the group effect to predict the prevalence of consulting for at least one pregnancy, complication, provoked abortion and live birth (*n* = 1322).

		Teenagers with corroborated CSA	Teenagers from the general population
At least one pregnancy	Total sample [a]	12.9 %	2.9 %
At least one pregnancy complication	Total sample [b]	62.3 %	47.3 %
Live birth	Total sample [b]	42.3 %	31.5 %
Provoked abortions	Total sample [b]	47.1 %	63.2 %
Fetal losses	Total sample [b]	16.5 %	-[c]

a: n = 661 for total sample in each group

b: n = 126 for the group of teenagers with a corroborated CSA; n = 35 for the group of teenagers from the general population

c: n < 5

Note. CSA = childhood sexual abuse

Table 2. – Percentage of teenagers having at least one pregnancy-related consultation, complications, provoked abortion, live birth and fetal losses after a corroborated report of sexual abuse and before 18 years old, according to the group.

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Chapitre 3 – Childhood sexual abuse, teenager pregnancy and the mediating role of psychiatric comorbidity

Abstract

This prospective cohort study aims to determine the mediating role of psychiatric comorbidity in the association of a history of childhood sexual abuse and teenage pregnancy. A total of 661 girls with a corroborated sexual abuse report in a Quebec City youth center between 2001 and 2010 were matched to 661 girls from the general population. Pregnancy consultations, complications during pregnancy and psychiatric comorbidity were documented using diagnoses from public health insurance administrative databases from January 1996 to March 2013. Results indicate that psychiatric comorbidity carries 25 % of the association between childhood sexual abuse and pregnancy complications in teenagers. The psychological state of pregnant teenagers has to be assessed and addressed by healthcare workers especially when they have suffered child sexual abuse.

Keywords: childhood sexual abuse; teenage pregnancy; pregnancy complication; comorbidity; psychiatric disorder.

Introduction

Childhood sexual abuse: a risk factor to teenage pregnancies

Teenage pregnancies are an important societal problem as they present considerable risks for teenagers' physical and psychological health (Boardman, Allsworth, Phipps, & Lapane, 2006; Briggs, Hopman, & Jamieson, 2007; Jolly, Sebire, Harris, Robinson, & Regan, 2000; Konje et al., 1992; Paranjothy, Broughton, Adappa, & Fone, 2009). Childhood sexual abuse was identified as a risk factor for teenage pregnancies and contributes to explaining their persisting high rates (Fortin-Langelier et al., 2019; Madigan, Wade, Tarabulsy, Jenkins, & Shouldice, 2014; Noll, J. G., Shenk, & Putnam, 2009). The rationale behind the association between sexual abuse in childhood and teenage pregnancies include engaging in risky sexual behaviors namely the non-utilization of

contraceptives, earlier sexual initiation, and having multiple sexual partners (Black et al., 2009; Draucker & Mazurczyk, 2013; Senn, Carey, & Vanable, 2008).

Childhood sexual abuse: a risk factor to teenage pregnancy complications

Furthermore, an important body of literature has documented the increased risk of pregnancy complications in adult women who reported childhood sexual abuse (Leeners, Stiller, Block, Görres, & Rath, 2010; Lukasse, Henriksen, Vangen, & Schei, 2012; Lukasse, Schei, Vangen, & Oian, 2009; Möhler et al., 2008; Nerum, Halvorsen, Straume, Sorlie, & Oian, 2013), as well as postnatal medical complications in their infants (Möhler et al., 2008). Complications range from premature contractions, cervical insufficiency, premature birth (Leeners et al., 2010) and longer labour duration (Nerum et al., 2013). Pregnancy-related symptoms such as backaches, tiredness, and leg cramps lasted longer in women who were sexually abused in childhood than in women who weren't (Lukasse et al., 2012). Although fewer studies have documented pregnancy health consequences in a population of adolescents who have been sexually abused, results of a recent matched-cohort study indicate that teenagers who have been sexually abused in childhood are more than five times more likely to present pregnancy complications than teenagers from the general population (Fortin-Langelier et al., 2019). Complications ranged from hypertensive disorders in pregnancy and childbirth to labour and delivery problems.

Factors involved in the childhood sexual abuse - teenage pregnancy complications association

Age at pregnancy

The age at pregnancy seems to play a role in the increased likelihood of pregnancy complications. Regardless of sexual abuse, the age at pregnancy was associated with unfavourable pregnancy outcomes. For example, preterm birth is more frequent in younger (aged 20-24) than in older mothers (aged 30-34) (Fuchs, Monet, Ducruet, Chaillet, & Audibert, 2018). Neonatal and postnatal mortality are also more frequent in precocious pregnancies than in adult pregnancies (Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004; Olausson, Cnattingius, & Haglund, 1999). Indeed, a populational study's results (*n* = 320 174) comparing mothers from 4 different age

groups (13-15 years, 16-17 years, 18-19 years, and 20-24 years) have shown that neonatal mortality (28 days or less) and postnatal mortality (more than 28 days) rates increased as maternal age decreased: they were significantly more frequent in teenagers aged from 13 to 15 years (*RC* = 2.7 and 2.6), compared to all other groups (Olausson et al., 1999). Mortality and morbidity rates were also shown to be higher in teenage pregnancies than in young adult pregnancies (Gilbert et al., 2004). Hence, preterm birth, neonatal and postnatal mortality seem to be more frequent for deliveries occurring at a younger age. Moreover, mothers with a history of sexual abuse were found to be younger than mothers from the general population (Fiscella, Kitzman, Cole, Sidora, & Olds, 1998; Lukasse et al., 2012; Lukasse et al., 2009).

Unhealthy lifestyles

Unhealthy lifestyles could also contribute to the heightened risk of pregnancy complications in teenagers who report sexual abuse. In samples of adult women, sexual abuse in childhood has been described as leading to at-risk behaviors during pregnancy such as smoking, alcohol, and drug use (Leeners, Rath, Block, Görres, & Tschudin, 2014; Putnam-Hornstein, Cederbaum, King, Cleveland, & Needell, 2013). Furthermore, women who were sexually abused in childhood were more likely to have higher body mass indexes than women from the general population, which may suggest that they are more likely to adopt a sedentary lifestyle and unhealthy diets (Lukasse & al., 2012). These unhealthy behaviors in turn affect women's physical health during pregnancy (Noll, J.G. & al., 2007; Rodriguez, Bohlin, & Lindmark, 2001). For example, the general alcohol usage during pregnancy, self-reported at the time of delivery, contributed to explaining preterm birth in women who had a corroborated report of sexual abuse in childhood (Noll, J. G. & al., 2007), whereas smoking was the strongest mediator of the association between shorter gestational age and self-reported sexual abuse in childhood (Smith, Gotman, & Yonkers, 2016). Those results shed light on the rationale for behaviors taken on by certain women who were sexually abused in childhood that are counter-indicated during pregnancy. Indeed, different studies suggest that survivors of childhood sexual abuse engage in unhealthy behaviors because they suffer from psychological difficulties related to their abuse, such as heightened psychological distress, depression, anxiety, and post-traumatic stress (Yampolsky, Lev-Wiesel, & Ben-Zion, 2010). For example, alcohol and drug use were suggested to be coping mechanisms used to

reduce stress and cope with depressive symptoms in samples of women who were sexually abused in childhood (Harrison & Sidebottom, 2009; Leeners et al., 2014).

Psychiatric disorders

In addition to leading to unhealthy behaviors, psychiatric disorders have been associated with a reduced immune system response and increased physical health problems in adult women reporting childhood sexual abuse (Yampolsky et al., 2010). For example, in a sample of pregnant women who were sexually abused in childhood, it was observed that as the number of psychological symptoms increased, the number of physical symptoms also increased (Lukasse et al., 2012). Hence, their results led the authors to hypothesize that mental health and physical health are correlated. However, the pathways in which one set of symptoms influenced the other was not determined as the study, like most others investigating the impact of sexual violence, relied on retrospective self-reporting with the risk of recall bias.

Explanatory models for the association between psychological and physical symptoms

Explanatory models have suggested pathways to the association between psychological and physical symptoms. For example, Golding's stress and illness theory (1994) suggests that stress resulting from sexual abuse is associated with weakened immune systems, which is associated with increased physical symptoms. Indeed, exposure to severe and chronic stress early in life can produce lasting alterations of the hypothalamic-pituitary-adrenal axis (HPA axis) (Meaney et al., 1993). The experience of childhood sexual abuse exemplifying severe and chronic stress in early life like few others. Alternatively, Pennebaker and Susman's inhibition-disease model (1988) suggests that failure to disclose, discuss, and confront trauma can lead to psychosomatic diseases through inhibition and avoidance of thoughts and emotions, which increases the autonomic nervous system activity.

Purpose of this study

To our knowledge, few cross-sectional retrospective studies have tested whether psychiatric disorders mediated the heightened rates of high-risk pregnancy or medical complications in a

population of pregnant adults sexually abused in childhood. Those who did, found results supporting the mediating role of mental health: compared to women who had not been sexually abused in childhood, women reporting such abuse suffered higher psychological distress levels and were more at risk of high-risk pregnancies (Yampolsky et al., 2010). More specifically, post-traumatic stress symptoms contributed to explaining chronic illnesses (Yampolsky et al., 2010) as well as reduced birth weight and shorter gestational age (Seng, Low, Sperlich, Ronis, & Liberzon, 2011), whereas depression contributed to explaining gynecological problems in pregnant women sexually abused in childhood (Yampolsky et al., 2010) as well as their increased somatic complaints (Littleton, 2015).

The literature about explanations of higher rates of pregnancy complications in women who were sexually abused in childhood is limited, and this is especially true for teenagers. To the best of our knowledge, explanatory models have not yet been tested with pregnant teenagers exposed to childhood sexual abuse to shed light on their heightened likelihood of pregnancy complications. Studies that have tested explanatory models did so with adult women and used a retrospective design, which introduces recall biases and limit conclusions regarding temporal pathways. Furthermore, previous studies have focused on specific diagnoses such as mood, anxiety disorders, or PTSD among the most studied, to explain the association between sexual abuse in childhood and pregnancy complications (Putnam, 2003). However, if PTSD is the most common disorder among sexually abused children (Choi et al., 2017), results from a recent longitudinal study have shown different comorbidity profiles of sexually abused youth and great heterogeneity within profiles (Alie-Poirier, Hébert, McDuff, & Daigneault, 2020).

Using a longitudinal design, the goal of the present study is to determine whether the cumulation of psychiatric disorders contributes to explaining increased pregnancy complications observed in teenagers who were sexually abused in childhood while controlling for confounding factors, namely the age at first pregnancy and socio-economic status. We hypothesize that in comparison to teenagers from the general population, teenagers who were sexually abused will present more psychiatric disorder comorbidities, which in turn will explain their increased risk for pregnancy complications.

Method

Study design and ethical consideration

Required authorization certificates for obtaining administrative data have been granted by four ethical committees: the child protection agency, the information commissioner's office, the health insurance agency, and the first author's university's ethical review board.

Corroborated childhood sexual abuse report

The definition of childhood sexual abuse retained in this study is based upon that of the Ministry of Health and social services (2011), as any sexual gesture, with or without physical contact (including voyeurism or exhibitionism), committed without consent or through emotional manipulation or blackmail towards a child. In Quebec, according to Child Protection Services (CPS) law (article 38.d), any person who has reason to believe that a child is sexually abused must report it to the director of CPS (Gouvernement du Québec, 2001). After a report has been made, a chain of procedures follows, and an evaluation team composed of social workers determines whether the report is founded. In the affirmative, the sexual abuse report is corroborated by CPS and protective measures are taken.

Participants

The data sets used in this matched-cohort study comes from a larger study in which Daigneault, Hébert, Bourgeois, Dargan, and Frappier (2017) l compared mental and physical health problems of abused children with those from the general population over ten years following the sexual abuse report. Every corroborated childhood sexual abuse report made to the CPS of a large urban city between January 1, 2001, and December 31, 2010, was considered. Of 955 children who were reported, 92 % (882) were later identified by name, surname, address, date of birth, or health insurance numbers in the Quebec health insurance administrative databases. Every child from the corroborated childhood sexual abuse group was then matched to a single child with the same month and year of birth, sex, urban CPS area, and public drug insurance admissibility at reporting date using the same administrative databases. Children from the comparison group had not been

the subject of a corroborated childhood sexual abuse report to the participating CPS agency between January 1, 2001, and December 31, 2010.

The present study sample is comprised of 661 girls from Daigneault et al. (2017) study who have been the subject of a corroborated childhood sexual abuse report and 661 girls with whom they were matched from the general population, who represent 75% of the original sample as 25 % were boys. The average age at the first sexual abuse report in the abused group was 11.42 (*SD* = 1⁄4 4.21, ranges 1-17 years). The independent variable hence represents the presence or absence of a corroborated childhood sexual abuse report during the given period. It is divided into the abused group consisting of 661 girls with a corroborated report of childhood sexual abuse to the participating child protection services agency between January 1, 2001, and December 31, 2010, and the matched-control group consisting of 661 girls without a corroborated report of childhood sexual abuse at the same period and region.

Variables

Teenage Pregnancies

All consultations for teenage pregnancies were documented using administrative medical databases that contain information on all in-patient and out-patient medical consultations (thereafter, consultations refer to both paired), including diagnoses from the *ICD-10* (World Health Organization, 2011) associated with every medical act. Three pregnancy outcomes, which occurred after the date of the corroborated report of sexual abuse and before the age of 18 years old, were documented and dichotomously scored (0 = “no abortion”, “no live birth” and “no fetal loss” and 1 = “at least one abortion”, “at least one live birth, or “at least one fetal loss”). The outcome “abortion” refers to provoked termination of pregnancy, and the outcome “fetal loss” refers to spontaneous abortion and miscarriage. A dichotomous Pregnancy variable was then computed by summing the three types of pregnancy outcomes where 0 = “no occurring pregnancy” and 1 = “at least one occurring pregnancy”. A list of the diagnoses used to create the aforementioned variables is presented in Table 1, in the Appendix.

Age at first pregnancy was also used as a control variable and created for each participant by subtracting dates of birth from dates of first pregnancy present in the administrative databases. At the time of pregnancy, teenagers who were sexually abused (*n* = 126) were on average 17.03 years old and teenagers from the general population (*n* = 35) were on average 16.50 years old, adjusted means showed slightly different means, 17.04 and 16.48 respectively. Adjusted means considered pairing index and socioeconomic index.

Complications

All consultations for teenage pregnancy complications were documented using diagnoses registered in the administrative databases (World Health Organization, 2011). The diagnostic categories used to create the dichotomous dependent variable "Complications" listed in Table 1 include those a) during pregnancy, b) at delivery, c) puerperium, and d) high-risk surveillance during pregnancy (0 = "no complication" and 1 = "at least one complication"), which occurred after the corroborated report of abuse and before the age of 18 years old (listed in Table 1, in the Appendix).

Psychiatric Comorbidity

All consultations for psychiatric disorders were documented using diagnoses from the *ICD-10* registered in the administrative databases (World Health Organization, 2011). The eight diagnostic categories used to create the mediator variable were: 1) Organic, including symptomatic, mental disorders (F00-F09), 2) Mental and behavioral disorders due to psychoactive substance use (F10-F19), 3) Schizophrenia, schizotypal, and delusional disorders (F20-F29), 4) Mood (affective) disorders (F30-F39), 5) Neurotic, stress-related, and somatoform disorders (F40-F48), 6) Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59), 7) Disorders of adult personality and behavior (F60-F69), and 8) Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98). All categories were transformed into eight dichotomous variables (0 = "no diagnosis in this category" and 1 = "presence of at least one diagnosis in this category"), which was received after the date of the corroborated report of abuse and before the date of the first pregnancy outcome (see Table 1 for details, in the Appendix). Those categories were then computed into a psychiatric

comorbidity variable for which scores from 0 to 8 represented the presence of cumulated diagnostic categories (0 = no diagnosis in any of the categories to 8 = at least one diagnosis in each of the eight categories). The psychiatric diagnoses that occurred before the corroborated report of the abuse were also summed and controlled for in subsequent analyses.

Socioeconomic status

Socioeconomic status was controlled using a material and social deprivation index derived from six socio-economic indicators (e.g., average income, the proportion of people with no high school diploma, the proportion of single parent living families) and based on the participant's postal code at the report date. Material and social deprivation indexes were calculated as percentiles for all participants and are documented in administrative databases (Pampalon, Gamache, & Hamel, 2010).

Statistical Analyses

Descriptive statistics were obtained using IBM SPSS Version 27.0 for psychiatric comorbidity and pregnancy complications (sums, means, standard deviation). To assess the difference in proportions of participants from each group in each of the psychiatric categories, Chi-square tests were performed, whereas to compare means of psychiatric comorbidities in each group, T-tests were performed. To assess the independence of scores for pregnancy complications despite the matching process during recruitment (forming 661 dyads), intraclass correlations (mixed models) were conducted, with a 95 % confidence interval. Interclass correlation's coefficient showed no association between scores of pregnancy complications in the abuse group and the general population group (*ICC* = .019 *CI* = -.143, .158). Hence, mediation analyses could be performed without being conditioned on pairing (Kenny, Kashy, Cook, & Simpson, 2006). To determine whether psychiatric disorders mediated the association between childhood sexual abuse and pregnancy complications, path analyses with negative binomial regressions were performed using MPlus Version 8.2 (Muthen & Muthen, 1998-2015), with 95% CI. All aforementioned control variables were included in the model.

Results

Descriptive results

In the abused group, 126 participants (19 %) consulted at least once for pregnancy after a corroborated report of sexual abuse and before age 18, and 95 (75.4 %) of them had pregnancy complications. In the general population, 35 participants (5.3 %) consulted for pregnancy before age 18 and 23 (65.7 %) of them had pregnancy complications. The numbers and proportions of girls with a corroborated report of sexual abuse and girls from the general population with at least one psychiatric diagnosis after the date of the report and before the age of 18 years, in each mental and behavioural category, are presented in Table 1. In the group of teenagers from the general population, there were too few observations to report the proportions for most of the categories.

Numbers and proportions of girls with at least one psychiatric diagnosis after the date of the report and before the age of 18 years, in 0 - 8 of the different categories are presented in Table 2, illustrating psychiatric comorbidities by the group. On average, girls with a corroborated report of sexual abuse had at least one psychiatric diagnosis in 1.4 category (*SD* = 1.14, range from 0 – 7), whereas girls who experienced teenage pregnancy from the general population had at least one psychiatric diagnosis in 0.4 categories (*SD* = 0.67, range from 0 – 6). T-test suggests a statistically significant difference between means ($P < .001$) and medium effect size (Cohen's d = 1.14).

Results from the mediation model

As can be seen in Figure 1, the indirect effect from childhood sexual abuse to pregnancy complications through psychiatric comorbidity was significant (*b* = .231 95% CI [0.096, 2.412], *p*

= .02), supporting the mediator role of psychiatric comorbidity. The ratio of indirect to total effect of childhood sexual abuse on complications indicates that psychiatric comorbidity carried 25 % of the sexual abuse total effect on complications. This indicates that, regardless of their age, material and social deprivation, and pre-existing psychiatric comorbidity, sexually abused girls have an increased risk of high psychiatric comorbidity, which in turn is associated with a higher risk of subsequent complications during pregnancy, delivery and the perinatal period.

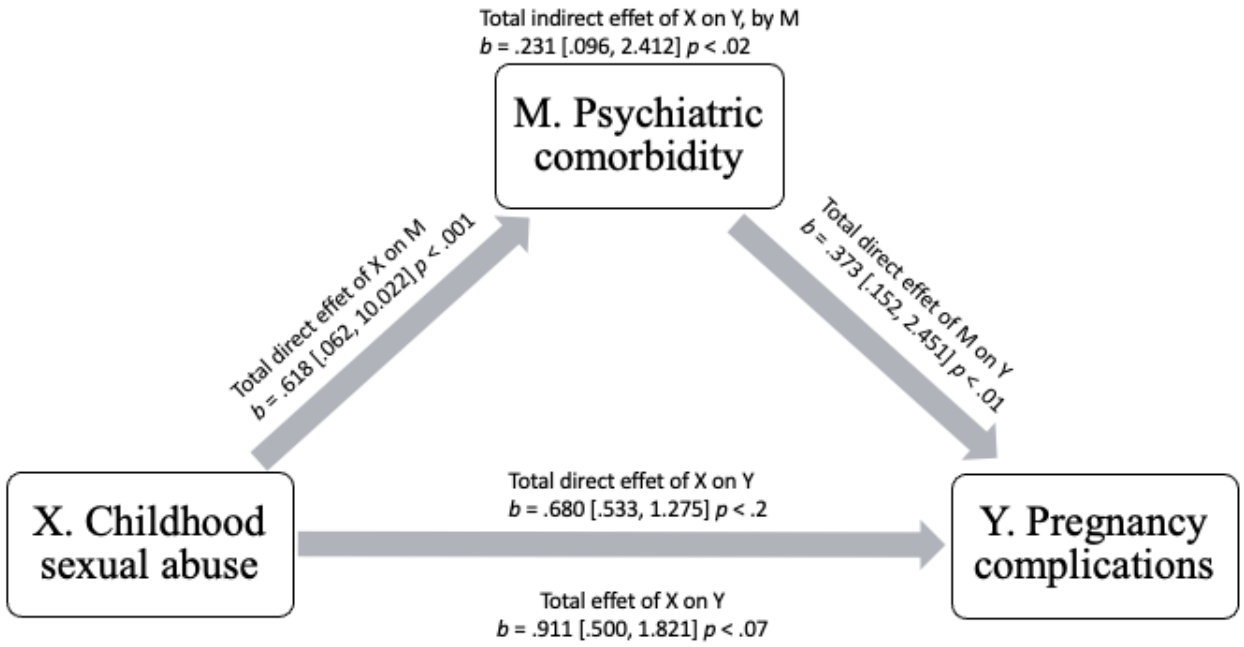

Figure 1. – Results of mediation analysis testing the link between childhood sexual abuse and number of pregnancy complication diagnoses through psychiatric comorbidity, while controlling for age at first pregnancy, socioeconomic levels, and psychiatric disorders that occurred before the corroborated report of sexual abuse. The b represents the unstandardized regression coefficient. The 95% confidence intervals for total, direct, and indirect effects were created with robust standard errors as our outcome is a count variable.

Discussion

This study aimed to explore psychiatric comorbidity as a mediator of the association between a corroborated childhood sexual abuse and subsequent pregnancy complications in teenagers. While controlling for age at pregnancy, material and social deprivation, and pre-existing psychiatric comorbidity, the results confirm that psychiatric comorbidity carries 25 % of the relative risk for pregnancy complications in sexually abused teenagers. Sexually abused teenagers presented more psychiatric comorbidity within eight categories of the ICD-10, than teenagers from the general population. This is coherent with others' observations that children who suffer from abuse are diagnosed with an average of 3-8 comorbid disorders (Van der Kolk, 2015), present different comorbidity profiles, and great heterogeneity within profiles (Alie-Poirier, Hébert, McDuff, & Daigneault, 2020). Moreover, the more they presented psychiatric comorbidities after the corroborated report of sexual abuse, the higher was the subsequent risk of presenting pregnancy complications. Indeed, the results show that the severity of the psychological distress or its pervasiveness explained subsequent pregnancy complications later in life.

Those results corroborate results obtained from cross-sectional studies that found psychiatric disorders, namely psychological distress, post-traumatic stress symptoms, and depression were mediators of the association between sexual abuse and a range of pregnancy complications and high-risk pregnancy factors in adult women (Littleton, 2015; Seng et al., 2011; Yampolsky et al., 2010). Our results are also consistent with those of Vezina-Gagnon and colleagues' (2019) longitudinal study, which showed that sexual abuse was associated with more post-abuse psychiatric comorbidity, which in turn explained 23% of the variance in subsequently occurring genitourinary diseases.

This vast spectrum of psychiatric disorder manifestations is likely to perturb abused children's functioning through different mechanisms increasing risks of teenage pregnancy and their complications. On a physiological level on a physiological level, life stress resulting from traumatic events, such as sexual abuse in childhood, has been associated with a weakening of the immune system, poor physical health, and increased physical symptoms (Golding, 1994). For example,

post-traumatic stress and avoidance symptoms following sexual abuse, have led to poor health and thereafter explained chronic illnesses in a sample of pregnant adults (Yampolski, 2010). Alternatively, from a behavioral standpoint, experiencing psychological distress, such as that some experienced following sexual abuse, increases the likelihood of engaging in poor health practices, namely substance use and alcohol (Harrison & Sidebottom, 2009; Nagahawatte & Goldenberg, 2008). Psychological distress can also exacerbate somatic symptoms via multiple mechanisms including attentional biases to these symptoms, reduced physical activity, catastrophic interpretation of symptoms, and interference with the utilization of adaptive coping (Otis, Keane, & Kerns, 2003). Moreover, childhood sexual abuse was found to be a specific risk factor for pregnancy-related stress (Brunton, Wood, & Dryer, 2020). Different reactions to stress can be envisioned whereas some people exhibit avoidance strategies, such as pregnant women who try to avoid triggers of painful memories of the trauma by not attending prenatal care and gynecological exams (Seng et al., 2011). Although the intention may be to deal with trauma-induced memories, avoidance could delay necessary care or prevention interventions and lead to worsened complications. Others may, on the contrary, have multiple prenatal visits because of hypervigilance and exacerbation of attention to physical symptoms also because of acute stress induced by a traumatic experience, which could overestimate the pregnancy complications.

The psychological outcomes of the traumatic experience of childhood sexual abuse vary in nature, and, by complex interactions of behavioral, physiological, and psychological components, have long-lasting consequences in teenagers' health. If 25 % of the association was explained by psychiatric comorbidity, 75 % of the variance in complications is left unexplained by the variables included in the current mediational model.

Other studies have offered alternative explanations that might be complementary, namely at-risk behaviors and pregnancy intendedness. For example, one theoretical model suggests that a preoccupation with sexuality induced by sexual trauma could lead to at-risk sexual behaviors (Finkelhor & Brown, 1985). At-risk sexual behaviors such as the non-utilization of contraception are associated with poorer physical health, namely urinary and genital diseases (Trigg, Kerndt, & Aynalem, 2008), which could then lead to complications during pregnancy in sexually abused teenagers.

At-risk sexual behaviors such as having unprotected sex have also been associated with pregnancy intendedness (Bartz, Shew, Ofner, & Fortenberry, 2007), and teenagers' attitude towards teenage pregnancy and motherhood was found to be a predictor of pregnancies (Jaccard, Dodge, & Dittus, 2003). While a majority (80 %) of sexually active teenagers from the general population report that their pregnancy was not intended (Clear, Williams, & Crosby, 2012; Lau, Lin, & Flores, 2014), as much as 35 % of young mothers involved with child protective services reported wanting to become a mother (Dworsky & Courtney, 2010). Some teenagers who were sexually abused in childhood might seek sexual intimacy leading to precocious pregnancies to fulfill unmet emotional needs such as reducing isolation, finding purpose in a new role, being important for somebody else, and having somebody to love or to be loved by unconditionally (Aparicio, 2017; Aparicio, Pecukonis, & O'Neale, 2015; Connolly, Heifetz, & Bohr, 2012; Macutkiewicz & MacBeth, 2017).

However, further studies should test mediation models that better reflect the complexity and variety of sexual abuse consequences by including concurrent or sequential mediators to the model and by widening symptom constellations to better represent the complexity of trauma. Furthermore, studies should incorporate other forms of trauma into their models to reflect the poly-victimization observed in maltreatment studies (Hamby, Elm, Howell, & Merrick, 2021).

Importantly, identifying individual strengths and other factors of resilience that might mitigate the association between sexual abuse and pregnancy complications is also needed to construct a more complete model reflecting the complexity of adversity and psychological health pathways (Hamby et al., 2021). Studies assessing the reaction to disclosure have shown a trend towards higher PTSD symptoms when participants perceived childhood sexual abuse-specific invalidation (Hong & Lishner, 2016), negative reactions by others (Crouch et al., 1999), negative reactions to disclosure as a child (Roesler, 1994), non-supportive responses (Glover et al., 2010), and hurtful reactions to disclosure (Palo & Gilbert, 2015). Moreover, few patients visiting gynecological clinics spontaneously disclose a history of abuse (Wijma et al., 2003). Brunton and colleagues have argued that resilience and social support mediate the association between sexual abuse and pregnancy-related stress, lowering the effect (Brunton et al., 2020). Coherent with those findings, Aparicio et al. (2015) shared in a qualitative study that the support of foster care families or a

partner's family could make a positive difference in the life of teen mothers who have been maltreated. Hence, offering specific trauma-informed care to survivors, and providing a safe environment to establish a trusting relationship between caregiver and patient could potentially mitigate outcomes of pregnancy complications. Consistent with Pennebaker and Susman's inhibition-disease model (1988) disclosing, discussing, and confronting trauma might reduce psychosomatic diseases, minimizing consequences of inhibition and avoidance of thoughts and emotions related to trauma.

Strength and limitations

The present study's major strength is the use of a longitudinal design which, strongly supporting the clinical causal hypothesis, clarifies the temporal pathways among variables: 1) reports of childhood sexual abuse, 2) later development of psychiatric comorbidity and 3) subsequently higher rates of complications at first pregnancy. Moreover, controlling for psychiatric diagnoses before the corroborated report of sexual abuse enabled to control for pre-existing conditions. It is also, to our knowledge, the first study to examine a model of mediation to explain the association between sexual abuse in childhood and pregnancy complications within a population of teenagers. Furthermore, previous studies have tried to pinpoint specific diagnoses to explain the association between sexual abuse in childhood and pregnancy complications (Putnam, 2003), while neglecting their cumulative comorbidity effects. Although seemingly distinct, the cumulation of diagnoses in distinct categories can represent the complexity of the trauma consequences (Alie-Poirier et al., 2020). Consistently with what precedes, our model took into consideration that sexual abuse in childhood leads to multiple distinct psychiatric diagnoses and confirmed that the more a teenager is impaired by a complex cumulation of psychological diagnostics, the more she is at risk of pregnancy complications later on.

That being said, results should be interpreted in light of certain limitations. Our results represent developmental trajectories of teenagers whose sexual abuse was disclosed to government instances and corroborated. However, only 10 % of all victims encounter such institutions in Canada (Afifi et al., 2015), which limits the generalizability of our results to the abused teenagers who were in contact with protection services. Also, sample sizes limited analyses to a summary

cumulative variable representing distress severity. Indeed, we were not able to conduct analysis testing each category separately to determine which psychiatric category influenced the risk of complications, because the samples were too small. Moreover, although a relative risk is observed in the mediation model, analyses conducted on larger sample sizes are needed to confirm our results, as statistical significance is weak ($p < 0.02$). Furthermore, the nature of administrative data used did not enable to take into consideration the severity of the abuse. That prevented us to consider whether the severity of abuse predicts the number of psychiatric diagnoses and the severity of later pregnancy complications. We can however hypothesize that from the childhood sexual abuse definition used, the nature of corroborated reported cases of sexual abuse in youth centers represent more severe cases. Although we know that individuals experience multiple forms of victimization, co-occurring childhood maltreatment could not be taken into consideration in our design, limiting conclusions about the specific influence of sexual abuse vs other forms of maltreatment on psychiatric disorders. Moreover, the psychological symptoms that were not reported to a medical doctor could not be considered in this design, which underestimates the presence of psychiatric comorbidity and its effect on later pregnancy complications. Furthermore, the group from the general population may have experienced childhood sexual abuse without a report being corroborated, or a report may have been corroborated but in another CPS agency, or outside the targeted period of this study, which underestimates the strength of the studied associations. At last, as much as temporal pathways of the events are clarified by the longitudinal design and preexisting conditions taken into consideration, the observational design doesn't allow a confirmation of causal pathways. Hence, even though psychiatric comorbidity seems to explain part of the association between sexual abuse in childhood and pregnancy complications, those might not be caused by the psychiatric comorbidity, and psychiatric comorbidity might not be entirely caused by sexual abuse in childhood. That being said, the observed temporal associations are coherent with the theorized causal pathways and one of the best designs when experimental studies cannot ethically be conducted.

Recommendations

Teenagers who were sexually abused in childhood are more likely to be pregnant as teenagers than their peers. They are also more likely to experience complications during pregnancy. Their psychological state, following sexual trauma, makes them more vulnerable to physical health problems during pregnancy. Health professionals who assist them during their pregnancy follow-up must assess or request an assessment of their psychological state to prevent physical health deterioration and must maintain closer medical follow-up and offer psychological support. Therefore, health professionals must be better informed about the impact of sexual abuse in childhood on psychological and physical health, including knowledge about sexual abuse being a risk factor for early pregnancies and pregnancy complications, through the cumulation of psychiatric disorders. Health professionals must prioritize a holistic approach to care for psychological and physical health, as it is intimately linked. Teams must work from a multidisciplinary perspective to better meet the needs of sexually abused patients and monitor the development of both psychological and physical symptoms during pregnancy and childbirth to prevent pregnancy complications.

Conclusion

More generally, society must give due weight to psychological care, by 1) prioritizing early psychological assessment and treatment of psychiatric symptoms and disorders of children reported to child welfare services, both to prevent psychiatric disorders worsening and to prevent physical health problems; 2) taking into account the multitude of symptom manifestations and the heterogeneity of clinical presentations; 3) including both physical and psychological aspects of health in care to more accurately reflect the interaction between the two; 4) acting upstream to preserve the health of children, adolescents and the adults they will become, as well as to reduce social and health care costs. Finally, government policies must provide more funding for psychological care and prevention.

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planning the study. Everyone who contributed significantly to the work has been listed in the Acknowledgments.

	Teenagers with corroborated CSA	**Teenagers from the general population**
(1) Organic, including symptomatic, mental disorders	11 (1.7 %)	-
(2) Mental and behavioral disorders due to psychoactive substance use	51 (7.7 %)	11 (1.7 %)
(3) Schizophrenia, schizotypal, and delusional disorders	15 (2.3 %)	-
(4) Mood (affective) disorders	117 (17.7 %)	39 (5.9 %)
(5) Neurotic, stress-related, and somatoform disorders	305 (46.1 %)	136 (20.6 %)
(6) Behavioral syndromes associated with physiological disturbances and physical factors	34 (5.1 %)	15 (2.3 %)
(7) Disorders of adult personality and behavior	75 (11.3 %)	11 (1.7 %)
(8) Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	195 (29.5 %)	77 (11.6 %)

Table 1. – Numbers and proportions of girls with a corroborated report of sexual abuse (*n* = 661) and girls from the general population (*n* = 661) with at least one psychiatric diagnosis after the date of report and before age 18, in each mental and behavioural category, (International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)).

	Teenagers with corroborated CSA	Teenagers from the general population
0 – No diagnosis in any categories	255 (86.5 %)	471 (71.3 %)
1 – at least one diagnosis in one of the categories	203 (30.7 %)	115 (17.4 %)
2 – at least one diagnosis in two of the categories	96 (14.5 %)	54 (8.2 %)
3 – at least one diagnosis in three of the categories	51 (7.7 %)	14 (2.1 %)
4 – at least one diagnosis in four of the categories	34 (5.1 %)	5 (0.8 %)
5 – at least one diagnosis in five of the categories	15 (2.3 %)	- [a]
6 – at least one diagnosis in six of the categories	5 (0.8 %)	- [a]
7 – at least one diagnosis in seven of the categories	- [a]	-
8 – at least one diagnosis in eight of the categories	-	-

Note. CSA = childhood sexual abuse; a = too few observations (<5) to report prevalence.

Table 2. – Numbers and proportions of girls with a corroborated report of sexual abuse (*n* = 661) and girls from the general population (*n* = 661) with at least one psychiatric diagnosis after the date of the report and before age 18, in 0 – 8 of the categories, (International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)).

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Chapitre 4 – Discussion générale

Rappel de la problématique

Cette thèse, avec ses deux articles, est la première étude longitudinale de cohortes appariées constituées d'adolescentes à déterminer grâce à des données médicales administratives la prévalence des grossesses à l'adolescence et la prévalence de leurs complications survenant à la suite d'un signalement corroboré d'agression sexuelle durant l'enfance. Il s'agit également de la première étude utilisant ce devis rigoureux à tester les comorbidités psychiatriques dans un modèle de médiation auprès d'adolescentes pour tenter d'expliquer le risque augmenté de complications de grossesses à la suite d'une agression sexuelle, tout en contrôlant pour l'âge et le statut socio-économique.

Principaux résultats obtenus

Conformément à nos hypothèses, les adolescentes qui ont vécu une agression sexuelle durant l'enfance sont plus à risque de vivre une grossesse à l'adolescence que les adolescentes qui proviennent de la population générale. Ces résultats sont cohérents avec les résultats d'études antérieures menées avec des devis rétrospectifs, mais les risques relatifs sont plus élevés dans notre étude (*RR* = 4.6 VS *OR* = 2). Notre devis plus rigoureux, limitant l'attrition et les biais de rappel, pourrait contribuer à expliquer une association plus forte. Pourtant, étant donné les lacunes de notre devis qui seront présentées ci-dessous, nous sommes d'avis que nos résultats sous-estiment tout de même la force véritable de l'association. Conformément aux hypothèses ainsi qu'aux études antérieures, les adolescentes qui ont vécu une agression sexuelle durant l'enfance sont également plus à risque de vivre des complications de grossesses. À nouveau, nos résultats montrent un risque plus élevé que ce qui avait été trouvé antérieurement avec des devis rétrospectifs (*RR* = 5 VS *OR* = 2).

Les résultats de l'analyse de médiation, confirmant notre hypothèse, démontrent que les adolescentes agressées sexuellement durant l'enfance présentent en moyenne plus de comorbidités psychiatriques que celle provenant de la population générale, et que la présence de

comorbidités psychiatriques dans le groupe d'adolescentes agressées explique jusqu'à 25 % de l'association entre les agressions sexuelles durant l'enfance et les complications de grossesses à l'adolescence.

Implications théoriques

À ce jour, les explications données de la prévalence plus élevée de grossesses à l'adolescence chez les survivantes d'agressions sexuelles durant l'enfance sont majoritairement de nature comportementale. C'est-à-dire que les adolescentes qui ont été agressées ont plus souvent une multitude de partenaires sexuels, sont plus souvent actives sexuellement à un plus jeune âge et utilisent moins souvent la contraception que leurs paires provenant de la population générale (Carpenter et al., 2001; Fergusson et al., 1997; Fiscella et al., 1998; Grimstad & Schei, 1999; Hillis, Anda, Felitti, & Marchbanks, 2001; Houck, Nugent, Lescano, Peters, & Brown, 2010; Lodico & DiClemente, 1994; Negriff et al., 2015; Polit, White, & Morton, 1990; Raj et al., 2000; Richter et al., 2014; Stock et al., 1997).

Les explications de la prévalence plus élevée des complications de grossesses chez les adolescentes qui ont été agressées sexuellement durant l'enfance sont moins connues. Bien que des associations avec des mesures psychiatriques, comportementales et physiologiques aient été trouvées (Yampolsky et al., 2010), les devis des études antérieures ne permettaient pas de statuer sur la temporalité de chaque événement et aucun modèle de médiation n'avait impliqué des échantillons d'adolescentes. Les résultats obtenus dans la présente étude corroborent les résultats d'études transversales qui ont révélé que des troubles psychiatriques, notamment la détresse psychologique, les symptômes de stress post-traumatique et la dépression étaient des médiateurs de l'association entre l'agression sexuelle et les complications de grossesses chez les femmes adultes (maladies chroniques, problèmes gynécologiques, troubles somatiques, poids à la naissance et âge gestationnel) (Heather Littleton, 2015; Seng et al., 2011; Yampolsky, Lev-Wiesel, et al., 2010).

Nos résultats indiquent que les comorbidités psychiatriques contribuent à expliquer jusqu'à 25 % de l'association entre l'agression sexuelle et les complications de grossesses chez les adolescentes. De plus, plus une adolescente avait un nombre élevé de diagnostics dans

différentes catégories de troubles psychiatriques différentes, plus elle était à risque de vivre des complications de grossesses. C'est donc dire qu'un vaste spectre de troubles psychiatriques est susceptible de perturber le fonctionnement des jeunes filles agressées par l'entremise de différents mécanismes menant ultérieurement à des complications de grossesse adolescentes. Par exemple, sur le plan physiologique, le stress résultant d'événements traumatisants comme l'agression sexuelle durant l'enfance a été associé à un affaiblissement du système immunitaire, à une mauvaise santé physique et à une augmentation des symptômes physiques (Golding, 1994).

D'un point de vue comportemental, le fait d'éprouver de la détresse psychologique à la suite d'une agression sexuelle augmente la probabilité que les femmes adoptent de mauvaises habitudes de vie, notamment la consommation de drogue et d'alcool et la réduction de l'activité physique (Harrison & Sidebottom, 2009). La détresse psychologique peut également exacerber les symptômes somatiques au moyen de multiples mécanismes, tels que l'attention attribuée à ces symptômes et l'interprétation catastrophique des symptômes (Otis et al., 2003). En raison du stress, certaines femmes peuvent éviter les visites prénatales, ce qui peut à son tour retarder les soins ou les interventions de prévention nécessaires et mener à une aggravation des complications. De manière alternative, certaines femmes ont plusieurs visites prénatales en raison de l'hypervigilance et de l'exacerbation de l'attention accordées aux symptômes physiques (Seng et al., 2011). Bien qu'ils puissent sembler contraires, ces comportements sont tous les deux des comportements liés au stress (Seng et al., 2011), tantôt une stratégie de gestion du stress, tantôt une réaction au stress.

Après l'agression sexuelle durant l'enfance, les trajectoires menant aux complications de grossesses sont complexes et multifactorielles, car les composantes comportementales, physiologiques et psychologiques interagissent. Si 25 % de l'association est expliqué par les comorbidités psychiatriques, 75 % de la variance demeure inexpliquée par les variables incluses dans le modèle de médiation actuel. D'autres études ont offert des explications alternatives qui pourraient être complémentaires, notamment en ce qui concerne le rôle des comportements sexuels à risque et de la désirabilité de la grossesse. Par exemple, un modèle théorique suggère qu'une préoccupation pour la sexualité induite par le traumatisme sexuel pourrait mener à des comportements sexuels à risque (Finkelhor & Browne, 1985). Les comportements sexuels à

risque, comme la non-utilisation de la contraception, sont associés à une mauvaise santé physique, notamment les maladies urinaires et génitales (Trigg, Kerndt, & Aynalem, 2008), qui pourraient alors entraîner des complications pendant la grossesse chez les adolescentes agressées sexuellement durant l'enfance.

Des comportements sexuels à risque, comme des relations sexuelles non protégées, ont également été associés à l'intention de vivre une grossesse (Bartz, Shew, Ofner, & Fortenberry, 2007), et à l'attitude favorable des adolescentes vis-à-vis de la grossesse (Jaccard, Dodge, & Dittus, 2003). Bien qu'une majorité (80 %) des adolescentes sexuellement actives de 19 ans ou moins de la population générale aient déclaré que leur grossesse n'était pas prévue (Clear, Williams, & Crosby, 2012; Lau, Lin, & Flores, 2014), 35 % des jeunes mères impliquées auprès d'un centre jeunesse ont déclaré vouloir devenir mère (Dworsky & Courtney, 2010). Certaines adolescentes agressées sexuellement durant l'enfance pourraient rechercher l'intimité sexuelle afin de combler des besoins émotionnels non satisfaits tels que réduire l'isolement, trouver un nouveau sens à leur vie dans un rôle de mère, aimer et être aimées inconditionnellement (Aparicio, 2017; Beers & Hollo, 2009; Macutkiewicz & MacBeth, 2017).

L'identification des forces individuelles et d'autres facteurs de résilience qui pourraient atténuer le lien entre la violence sexuelle et les complications de grossesses est également nécessaire pour construire un modèle plus complet reflétant la complexité des conséquences de la maltraitance et des facteurs de protection qui coexistent (Hamby, Elm, Howell, & Merrick, 2021). Par exemple, les études évaluant la réaction de l'entourage à la suite de la divulgation d'une agression sexuelle ont montré une tendance à des symptômes de trouble de stress post-traumatique plus sévères lorsque les personnes percevaient une réaction négative ou d'invalidation (Hong & Lishner, 2016; Palo & Gilbert, 2015). De plus, peu de patients visitant des cliniques gynécologiques divulguent spontanément des antécédents de violence sexuelle (Wijma et al., 2003), ce qui limite le soutien qu'elles pourraient recevoir à cet égard au moment de la grossesse. Pourtant, Brunton et ses collègues ont fait valoir que la résilience et le soutien social réduisent l'association entre l'agression sexuelle et le stress lié à la grossesse (Brunton et al., 2020). Par conséquent, évaluer les traumatismes antérieurs lors de l'accompagnement d'une femme enceinte, offrir un environnement sécuritaire pour établir une relation de confiance entre le soignant et la patiente

en vue d'offrir des soins adaptés aux survivantes d'agression sexuelle pourrait potentiellement réduire les complications de grossesses. Conformément au modèle de maladies et d'inhibition de Pennebaker et Susman (1988), la divulgation, la discussion et la confrontation des traumatismes pourraient réduire les maladies psychosomatiques en diminuant les conséquences associées à l'inhibition et l'évitement des pensées et des émotions liées aux traumatismes.

Forces de l'étude

Ce qui distingue principalement la présente étude est la rigueur de la méthodologie utilisée afin de tester les hypothèses basées sur les associations démontrées par des devis transversaux et rétrospectifs. En effet, en utilisant des données corroborées par un centre jeunesse, l'étude permet de statuer sur la temporalité de l'agression sexuelle durant l'enfance afin de s'assurer qu'elle soit survenue avant la grossesse, que les répercussions psychiatriques soient survenues à la suite de l'agression ainsi que permet d'identifier les dates des complications de grossesse. Le fait que soit corroboré le signalement suggère de la sévérité de l'agression sexuelle puisque les agressions signalées et corroborés sont souvent les plus sévères. Le devis permet également l'accès à un échantillon d'une taille suffisante pour de mener des analyses de régression et de médiation. Grâce à l'accès aux données de la RAMQ et du MSSS, le devis permet l'accès aux diagnostics précis octroyés ainsi qu'aux dates de services et d'hospitalisations. Qui plus est, le devis a permis de contrôler pour le statut socio-économique grâce à l'indice de défavorisation matérielle et sociale. Il permet en outre le contrôle des diagnostics de grossesses, de complications de grossesses et de troubles psychiatriques avant le signalement d'agression sexuelle, ce qui permet de s'assurer de la temporalité des événements et renforce les associations trouvées suggérant un niveau de causalité entre les variables. Enfin, le devis utilisé a permis que chaque adolescente qui avait fait l'objet d'un signalement d'agression sexuelle durant l'enfance soit appariée à une autre adolescente provenant de la population générale. Cela permet de contrôler pour l'âge et la région entre les paires, de même que pour la durée d'observation des données. L'appariement permet également l'utilisation d'un proxi de statut socio-économique par l'admissibilité au régime d'assurances maladie.

Limites de l'étude

Ceci étant dit, les résultats doivent être interprétés à la lumière des limites de l'étude. Nos résultats représentent la trajectoire de santé physique et psychologique d'adolescentes dont l'agression sexuelle durant l'enfance a fait l'objet d'un signalement auprès d'une instance gouvernementale. Or seulement 10 % des agressions sexuelles sont rapportées à de telles instances au Canada (Afifi et al., 2015), ce qui limite la généralisation des résultats à ce sous-groupe de jeunes agressées. Nous n'avons pas de détails concernant les caractéristiques de l'agression notamment quant à la sévérité de l'agression. Cette information nous permettrait par exemple de déterminer si la sévérité de l'agression sexuelle prédit l'ampleur de la comorbidité psychiatrique subséquente, et si ceci prédit ensuite la sévérité des complications de grossesses. Par contre, nous savons que les cas signalés aux centres jeunesse sont majoritairement perpétrés par un adulte dans la famille ou l'entourage de l'enfant. Ce qui limite les associations de cette étude à cette caractéristique de l'agression.

Dans le même sens, bien qu'on sache que les individus vivent plus souvent plusieurs formes de maltraitance qu'une seule durant l'enfance, la cooccurrence des expériences de maltraitance n'a pas été prise en compte. On ne sait donc pas quels sont les portraits de maltraitance réels des adolescentes qui avaient un signalement corroboré d'agression sexuelle. Ainsi, il est impossible de savoir si les associations trouvées sont spécifiques à l'agression sexuelle durant l'enfance ou à leur cumul. Or, c'est le cas également pour les adolescentes provenant de la population générale.

De plus, les troubles psychiatriques non rapportés aux médecins ne pouvaient pas être pris en compte avec ce devis, ce qui sous-estime donc la présence de la comorbidité psychiatrique chez les adolescentes et ensuite son effet sur la présence de complications de grossesse. De surcroît, on ne peut pas s'assurer que les adolescentes formant le groupe d'appariement provenant de la population générale n'aient pas été agressées sexuellement durant l'enfance. En effet, l'agression a pu ne pas être rapportée, avoir été rapportée dans un autre centre jeunesse, ou encore au même centre jeunesse, mais en dehors des dates ciblées par l'étude. Cela, à nouveau, sous-estime l'ampleur des associations entre les variables de l'étude. C'est donc dire que la rigueur du type de devis et la provenance des données bien que permettant de statuer sur la temporalité

des événements, sous-estiment la force des associations; les résultats eu égard aux diverses associations entre les variables ainsi que le pourcentage de la variance de la médiation sont affectés à la baisse.

Enfin, bien que les trajectoires temporelles soient précisées par le devis longitudinal, le contrôle des événements et des troubles psychiatriques présignalement d'agression sexuelle, le devis n'étant pas expérimental, il ne permet pas de confirmer des liens de causalité entre les variables. Par exemple, bien que l'agression sexuelle durant l'enfance soit associée aux grossesses à l'adolescence, on ne peut pas affirmer qu'elle cause les grossesses à l'adolescence, au même titre que l'on ne peut ni affirmer que les agressions sexuelles durant l'enfance causent la comorbidité des troubles psychiatriques, ni que celle-ci cause les complications de grossesses. Comme le devis expérimental est impossible à mettre en place pour des raisons évidentes, le devis observationnel actuel, contrôlant pour un ensemble de facteurs et pour la temporalité des événements et diagnostics, est un de ceux permettant le mieux de tester des hypothèses causales sous-jacentes aux données observées.

Implications pratiques

La présente thèse réitère la magnitude des conséquences de l'agression sexuelle durant l'enfance, tant sur le plan psychologique que physique. Qui plus est, elle souligne l'interinfluence de ces deux aspects que l'on traite trop souvent de manière distincte. Les résultats obtenus par la présente étude indiquent que les enfants agressés sexuellement durant l'enfance vivent une grande variété des conséquences délétères immédiates, à moyen terme et à plus long terme. Les jeunes filles agressées sexuellement durant l'enfance sont beaucoup plus à risque de vivre une grossesse à l'adolescence que leurs paires. Elles sont aussi beaucoup plus à risque de vivre des complications durant leurs grossesses. Leur état psychologique, suite au trauma sexuel, les rend plus vulnérables aux problèmes de santé physique au cours de la grossesse. Les professionnels de la santé qui les évaluent durant leur suivi de grossesses doivent absolument évaluer l'état psychologique des adolescentes afin de prévenir une détérioration de la santé physique et maintenir un suivi médical et un soutien psychologique plus serrés auprès d'elles. Les professionnels de la santé doivent donc d'abord être mieux informés des impacts de l'agression

sexuelle durant l'enfance sur la santé psychologique et physique, notamment que l'agression sexuelle durant l'enfance est un facteur de risque aux grossesses précoces et aux complications de grossesses, et ce, via le cumul des troubles psychiatriques. Les soins de santé octroyés doivent prioriser une approche aux soins holistique, et non pas dissocier la santé psychologique de la santé physique, étant donné qu'ils sont intimement liés. Les équipes de soins doivent travailler dans une perspective multidisciplinaire afin de mieux répondre aux besoins de leurs patientes agressées sexuellement durant l'enfance et surveiller l'évolution des symptômes tant psychologiques que physiques durant la grossesse et à l'accouchement afin de prévenir les complications de grossesses.

Conclusion

De manière plus générale, la société doit accorder l'importance qui lui est due aux soins psychologiques, en 1) priorisant une prise en charge psychologique précoce d'évaluation et de traitement des symptômes et des troubles psychiatriques des enfants dont un signalement est rapporté aux services de protection de la jeunesse, tant pour éviter que ne s'aggravent les troubles psychiatriques que pour prévenir des problèmes de santé physique ; 2) prenant en considération la multitude de symptômes possibles et l'hétérogénéité des présentations cliniques ; 3) incluant d'emblée l'aspect physique et l'aspect psychologique dans les soins de santé afin de refléter plus justement la réelle interinfluence entre les deux ; 4) agissant en amont afin de préserver la santé des enfants, des adolescents et des adultes qu'ils deviendront, ainsi que de réduire les coûts sociaux et ceux associés aux soins de santé, il est impératif que les politiques gouvernementales octroient davantage des fonds dédiés aux soins psychologiques et préventifs.

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Annexes

Variables	Broader diagnostic categories and numbers	Specific diagnostic categories and numbers
Provoked abortion	Pregnancy with abortive outcome (O00-O08)	Medical abortion (O04), Other abortion (O05)
Live births	Delivery (O80-O84)	Single spontaneous delivery (O80), Single delivery by forceps and vacuum extractor (O81), Single delivery by caesarean section (O82), Other assisted single delivery (O83), Multiple delivery (O84)
Fetal losses	Pregnancy with abortive outcome (O00-O08)	Ectopic pregnancy (O00), Hydatidiform mole (O01), Other abnormal products of conception (O02), Spontaneous abortion (O03), Unspecified abortion (O06), Failed attempted abortion (O07), Complications following abortion and ectopic and molar pregnancy (O08)

Complications	Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium (O10-O16)	Pre-existing hypertension complicating pregnancy, childbirth and the puerperium (O10), Pre-existing hypertensive disorder with superimposed proteinuria (O11), Gestational [pregnancy-induced] oedema and proteinuria without hypertension (O12), Gestational [pregnancy-induced] hypertension without significant proteinuria (O13), Gestational [pregnancy-induced] hypertension with significant proteinuria (O14), Eclampsia (O15), Unspecified maternal hypertension (O16)
	Other maternal disorders predominantly related to pregnancy (O20-O29)	Haemorrhage in early pregnancy (O20), Excessive vomiting in pregnancy (O21), Venous complications in pregnancy (O22), Infections of genitourinary tract in pregnancy (O23), Diabetes mellitus in pregnancy (O24), Malnutrition in pregnancy (O25), Maternal care for other conditions predominantly related to pregnancy (O26), Abnormal findings on antenatal screening of mother (O28), Complications of anaesthesia during pregnancy (O29)
	Maternal care related to the fetus and amniotic cavity and possible delivery problems (O30-O48)	Multiple gestation (O30), Complications specific to multiple gestation (O31), Maternal care for known or suspected malpresentation of fetus (O32), Maternal care for known or suspected disproportion (O33), Maternal care for known or suspected fetal abnormality and damage (O35), Maternal care for other known or suspected fetal problems (O36), Polyhydramnios (O40), Other disorders of amniotic fluid and membranes (O41), Premature rupture of membranes (O42), Placental disorders

	(O43), Placenta praevia (O44), Premature separation of placenta [abruptio placentae] (O45), Antepartum haemorrhage, not elsewhere classified (O46), False labor (O47), Prolonged pregnancy (O48)
Complications of labor and delivery (O60-O75)	Preterm labor and delivery (O60), Failed induction of labor (O61), Abnormalities of forces of labor (O62), Long labor (O63), Obstructed labor due to malposition and malpresentation of fetus (O64), Obstructed labor due to maternal pelvic abnormality (O65), Other obstructed labor (O66), Labor and delivery complicated by intrapartum haemorrhage, not elsewhere classified (O67), Labor and delivery complicated by fetal stress [distress] (O68), Labor and delivery complicated by umbilical cord complications (O69), Perineal laceration during delivery (O70), Other obstetric trauma (O71), Postpartum haemorrhage (O72), Retained placenta and membranes, without haemorrhage (O73), Complications of anaesthesia during labor and delivery (O74), Other complications of labor and delivery, not elsewhere classified (O75)

	Complications predominantly related to the puerperium (O85-O92)	Puerperal sepsis (O85), Other puerperal infections (O86), Venous complications in the puerperium (O87), Obstetric embolism (O88), Complications of anaesthesia during the puerperium (O89), Complications of the puerperium, not elsewhere classified (O90), Infections of breast associated with childbirth (O91), Other disorders of breast and lactation associated with childbirth (O92)
	Other obstetric conditions, not elsewhere classified (O94-O99)	Sequelae of complication of pregnancy, childbirth and the puerperium (O94), Obstetric death of unspecified cause (O95), Death from any obstetric cause occurring more than 42 days but less than one year after delivery (O96), Death from sequelae of obstetric causes (O97), Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (O98), Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (O99)
Psychiatric categories	Organic, including symptomatic, mental disorders (F00-F09)	Dementia (F01-F03), Organic amnesia syndrome, not induced by alcohol and other psychoactive substances (F04), Delirium, not induced by alcohol and other psychoactive substances (F05), Other mental disorders due to brain damage and dysfunction and to physical disease (F06), Personality and behavioural disorders due to brain disease, damage and dysfunction (F07)

Mental and behavioral disorders due to psychoactive substance use (F10-F19)	Mental and behavioural disorders due to use of alcohol (F10), Mental and behavioural disorders due to use of opioids (F11), Mental and behavioural disorders due to use of cannabinoids (F12), Mental and behavioural disorders due to use of sedatives or hypnotics (F13), Mental and behavioural disorders due to use of cocaine (F14), Mental and behavioural disorders due to use of other stimulants, including caffeine (F15), Mental and behavioural disorders due to use of hallucinogens (F16), Mental and behavioural disorders due to use of tobacco (F17), Mental and behavioural disorders due to use of volatile solvents (F18), Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances (F19)
Schizophrenia, schizotypal, and delusional disorders (F20-F29)	Schizophrenia (F20), Schizotypal disorder (F21), Persistent delusional disorders (F22), Acute and transient psychotic disorders (F23), Induced delusional disorder (F24), Schizoaffective disorders (F25), Other nonorganic psychotic disorders (F28), Unspecified nonorganic psychosis (F29)
Mood (affective) disorders (F30-F39)	Manic episode (F30), Bipolar affective disorder (F31), Depressive episode (F32), Recurrent depressive disorder (F33), Persistent mood [affective] disorders (F34), Other mood [affective] disorders (F38), Unspecified mood [affective] disorder (F39)

Neurotic, stress-related, and somatoform disorders (F40-F48)	Phobic anxiety disorders (F40), Other anxiety disorders (F41), Obsessive-compulsive disorder (F42), Reaction to severe stress, and adjustment disorders (F43), Dissociative [conversion] disorders (F44), Somatoform disorders (F45), Other neurotic disorders (F48)
Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59)	Eating disorders (F50), Nonorganic sleep disorders (F51), Sexual dysfunction, not caused by organic disorder or disease (F52), Mental and behavioural disorders associated with the puerperium, not elsewhere classified (F53), Psychological and behavioural factors associated with disorders or diseases classified elsewhere (F54), Abuse of non-dependence-producing substances (F55), Unspecified behavioural syndromes associated with physiological disturbances and physical factors (F59)
Disorders of adult personality and behavior (F60-F69)	Specific personality disorders (F60), Mixed and other personality disorders (F61), Enduring personality changes, not attributable to brain damage and disease (F62), Habit and impulse disorders (F63), Gender identity disorders (F64), Disorders of sexual preference (F65), Psychological and behavioural disorders associated with sexual development and orientation (F66), Other disorders of adult personality and behaviour (F68), Unspecified disorder of adult personality and behaviour (F69)

Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)	Hyperkinetic disorders (F90), Conduct disorders (F91), Mixed disorders of conduct and emotions (F92), Emotional disorders with onset specific to childhood (F93), Disorders of social functioning with onset specific to childhood and adolescence (F94), Tic disorders (F95), Other behavioural and emotional disorders with onset usually occurring in childhood and adolescence (F98)

Table 1. – Diagnoses of pregnancy, complications and psychiatric disorders included in this study variable from the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10 CA).