Violence Against Women
2015, Vol. 21(3) 313–329

DOI: 10.1177/1077801214568356
vaw.sagepub.com
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The Cedar Project*: Historical Trauma and Vulnerability to Sexual Assault Among Young Aboriginal Women Who Use Illicit Drugs in Two Canadian Cities

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Abstract

This study explored trends of sexual assault and associated risk factors within a cohort of young Aboriginal women who used drugs in Vancouver and Prince George, Canada, between 2003 and 2010. Results demonstrated no change in the trend of sexual assault over time; however, odds of sexual assault were significantly higher for women who had at least one parent who attended residential school, had experienced childhood sexual abuse, were involved in sex work, had been offered money to not use condoms, had used injection drugs, had injected cocaine and opiates daily, had binged with injection drugs, and had difficulty accessing clean syringes. Findings highlight the urgency of interventions addressing the complexity of risk and opportunities for healing.

*For the Cedar Project Partnership: Carrier Sekani Family Services, Healing Our Spirit, Prince George Native Friendship Centre, Positive Living North, Vancouver Native Health Society, Central Interior Native Health Society, Canadian Aboriginal AIDS Network, Red Road Aboriginal AIDS Network, All Nations Hope, Adams Lake Indian Band, Splats'in Secwepemc Nation, and Neskonlith Indian Band.

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Keywords
drug use, sexual assault, young Aboriginal women

Due to complex intersections of historical injustices, racism, and social inequity, urban Aboriginal women in Canada who use drugs are among the most stigmatized and marginalized populations in Canada (Benoit, Carroll, & Chaudhry, 2003). Furthermore, Aboriginal women experience disproportionate levels of intimate partner violence (Brownridge, 2008), sex work involvement, and HIV infection (Public Health Agency of Canada, 2010; Spittal et al., 2007), and are often singled out by sexual offenders ("'Highway of Tears' Crime Cases Double," 2007; Native Women's Association of Canada, 2009; Vancouver Police Department & Women's Memorial March Committee, 2011), but provided scant protection and indifferent justice (Amnesty International, 2004). Research has suggested that the impacts of sexual assault among women who use drugs may be associated with vulnerabilities that increase risks for HIV and hepatitis C virus (HCV) infection, particularly injection drug use (Spittal & Schechter, 2001; Zierler, Witbeck, & Mayer, 1996). Nevertheless, much of the sexual violence experienced by young urban Aboriginal people who use illicit drugs in Canada is under-reported and risk factors are not well understood (Perreault, 2011; Vancouver Police Department & Women's Memorial March Committee, 2011). Aboriginal leadership, scholars, and support organizations are deeply concerned that there may be widespread sexual violence among young Aboriginal women who use drugs that has gone largely unnoticed, and that appropriate public health, harm reduction, and psychosocial support responses are lacking (Assembly of First Nations, 2012; Christian & Spittal, 2008).

Historical and Contemporary Contexts of Sexual Assault Among Aboriginal Women in Canada

Indigenous elders and scholars assert that prior to the European colonization and missionization of Canada, cultural values, traditions, and practices effectively enforced moral codes and protocols that upheld women's status as highly valued members of the community (Gunn Allen, 1986). Young people were taught boundaries of gender relations and sexuality that limited instances of sexual violence and addressed violations of those standards (Hylton, 2002). Aggressive Christianization of Aboriginal people by primarily French and English colonizers in the 17th century rapidly transformed traditional gender relations and introduced the subjugation of Aboriginal women's individual freedom and devaluation of female identity (Anderson, 1991). Moreover, perhaps the most destructive blow to Aboriginal communities since European contact was the forced placement of well over 150,000 Aboriginal children into the residential school system between 1874 and 1996. There are an estimated 80,000 survivors of the residential school system alive today. The atrocities they and their families experienced are still being uncovered, including widespread sexual, physical, psychological, and emotional abuses and persistent devaluation of cultural identity and knowledge (Chansonneuve, 2005).

Indigenous scholars refer to historical or intergenerational trauma as collective emotional and psychological injury over the life span and across generations (Yellow Horse Brave Heart, 2003). Most residential school survivors faced tremendous difficulty when returning to their communities, reconnecting with family, and raising their own children (Chansonneuve, 2005). Descriptions of subsequent *lateral violence* within Aboriginal families and across communities have helped explain the subsequent intergenerational transmission of anger, grief, shame, emotional detachment, addiction, and other harmful stress-coping responses (Chansonneuve, 2005; Walters & Simoni, 2002). There is increasing acknowledgment that the health, social, and economic impacts of colonization and residential schools have been far reaching and intergenerational at every level (Evans-Campbell, 2008), and younger generations of Aboriginal people are now struggling with the legacies of these traumas (Christian & Spittal, 2008). Moreover, many Aboriginal scholars and advocates argue that familial and community dislocation and cultural oppression are being perpetuated by the Canadian child welfare system; it is currently estimated that three times as many Aboriginal children are in foster care than the peak number of children in residential schools in the 1940s (Blackstock, 2003). Studies in Canada and the United States have indicated that historical trauma and subsequent stress-coping responses are contributing to increased health vulnerabilities among Aboriginal people, including early childhood maltreatment (For the Cedar Project Partnership et al., 2008), interpersonal and gender-based violence (Evans-Campbell, Lindhorst, Huang, & Walters, 2006), addiction (Yellow Horse Brave Heart, 2003), post-traumatic stress disorder (Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997), sex work involvement (Farley, Lynne, & Cotton, 2005), homelessness (Menzies, 2009), and infectious disease (Craib et al., 2009). However, to our knowledge, no study has yet explored the association between historical trauma and sexual assault among young, at-risk Aboriginal women in British Columbia.

Existing population studies from Canada, Australia, and the United States suggest rates of sexual assault among Indigenous women (i.e., women who identify as having historical continuity with pre-colonial societies) are disproportionate to non-Indigenous women. In 2009, Statistics Canada estimated from a nationally representative sample that incidence of sexual assault over the previous 12 months was 70 per 1,000 Aboriginal women compared with 23 per 1,000 non-Aboriginal women, and that 15% of Aboriginal women compared with 6% of non-Aboriginal women had been assaulted by their spouse (Perreault, 2011). In 2003, the 12-month prevalence of sexual assault among Aboriginal women in Australia was 12% versus 4% among non-Aboriginal women (Mouzos & Makkai, 2004). In 1996, the estimated lifetime prevalence of rape among women in the United States was 34% among American Indian/Alaska Native women compared with 18% of White and 19% of African American women (Tjaden & Thoennes, 2000). Existing research suggests that drug use, relationship status, sexual abuse history, sex work involvement, and homelessness may be important contributors to sexual assault among Indigenous women (Shannon et al., 2009; Simoni, Sehgal, & Walters, 2004).

Method

The Cedar Project is a prospective cohort study of young Aboriginal people who use drugs in Vancouver, and Prince George, British Columbia. The methods used for the Cedar Project study have been previously published in detail (Spittal et al., 2007). The eligibility criteria included self-identifying as a descendant of the First Nations Peoples of North America (including Aboriginal, Métis, First Nations, Inuit, and Status and Non-Status Indians), being between 14 and 30 years old, and having smoked or injected illicit drugs (other than marijuana) in the month before enrollment. Drug use was confirmed using saliva screens (ORAL-screen, Avitar Onsite Diagnostics). Participants were recruited through health care providers, street outreach, and word of mouth. Follow-up interviews with participants were carried out every 6 months. Venous blood samples were collected for HIV and hepatitis C antibody tests at each visit. Each participant was given a $20 (CAD) stipend per visit. First Nations collaborators and investigators (the Cedar Project Partnership) governed the entire research process and were involved in the conception, design, and interpretation of this study and approved this manuscript for publication. The University of British Columbia/Providence Health Care Research Ethics Board also approved the study.

Dependent and Independent Variables

The primary outcome in this study was sexual assault among female participants in the last 6 months. Participants were asked, "In the last 6 months, have you been forced to have sex against your will and/or been touched where you weren't supposed to be without your consent?" (yes/no). Participants who answered "yes" were then asked, "How many times did it happen in the last 6 months?" with possible answers being once, 2 to 5 times, more than 5 times, or refused. The identity of the offending person(s) was queried by asking, "Who did this to you?" with possible answers being boyfriend, girlfriend, male known to me, female known to me, stranger, other, can't remember, or refused.

The independent variables of interest were chosen based on empirical studies of sexual assault. The following baseline time-invariant variables were used in the analysis: location; identifying as gay, bisexual, lesbian, transgender, or queer (LGBTQ); having a parent who attended residential school; ever having been placed in foster care; and ever having experienced sexual abuse in childhood. Childhood sexual abuse was defined as having any type of forced sex or molestation before age 15. Time-varying (occurred in the last 6 months) independent variables of interest included age, relationship status (single vs. married/common law), having slept on the streets for more than three consecutive nights, involvement in sex work, having a regular sexual partner who used injection drugs, frequency of smoking crack, any injection drug use, access to addiction treatment, and HIV and HCV serostatus. Sex work was defined as having received money, shelter, food, or drugs in exchange for sex. Participants who reported involvement in sex work were also asked if they had been offered money to not use a condom. Frequency of smoking crack was dichotomized into less than daily

versus daily or more. For those participants who reported injection drug use, time-varying independent variables included frequency of cocaine injection, frequency of opiate injection (including heroin, morphine, methadone, Talwin, or Dilaudid), binge injection drug use, difficulty accessing clean needles, injecting drugs in public, and accessing methadone maintenance treatment (MMT). Frequency of injection was dichotomized into less than daily injection versus daily or more injection. Binge injection drug use was defined as periods when drugs were injected more often than usual.

Statistical Analysis

Descriptive statistics measured the frequency of sexual assault across the study period, the average number of times those participants had been sexually assaulted, and the identity of the offending person. A descriptive model for the trend of the outcome was fitted with generalized linear mixed model (GLMM), where the elapsed time from baseline to each visit was included as an independent variable. GLMM models estimated the effect of each study variable on the likelihood of sexual assault, with the odds ratio being the measure of association. The outcome variable measured whether participants had been sexually assaulted within the past 6 months (yes = 1) or not (no = 0). Models were fit by the adaptive Gaussian Hermite approximation with logit link to account for the binomial distribution of the study outcome. Model selection was based on Akaike Information Criteria (AIC) to choose between a fixed effect or random effect handling of study variables. The association of a study variable with sexual assault was tested in unadjusted analyses and those significant at the $p < .10$ level were further tested in adjusted (multivariate) models that controlled for confounders. Confounders specific to each model were chosen because of theoretical and empirical importance in the relationship between study variables and sexual assault. Time-varying age was included in each model because of its potential importance as a confounder relative to a time-induced cohort effect adjustment in this study, as recommended for longitudinal studies (Korn, Graubard, & Midthune, 1997). Loss to follow-up occurred in this sub-cohort, as is common in most longitudinal studies of this nature. The analysis was carried out with completed data focusing on conditional inference of those participants who were not lost to follow-up. SAS statistical software package (Version 9.1) was used for all analyses.

Results

In total, 605 participants enrolled in the Cedar Project study, of whom 296 (49%) were women. Only female participants who returned for at least 1 of 10 follow-up interviews between October 2003 and January 2010 were eligible, yielding a final sample of $n = 259$ participants. The mean age of participants at baseline was 23 years ($SD = 4$ years; range = 16-30 years). Half (51%) of the participants were located in Vancouver and half in Prince George (49%). Table 1 presents the frequency of sexual assault over the entire study period and the general identity of the offending person(s) as well as a sub-group analysis of only participants who reported injection drug use.

Table 1. Frequency of Sexual Assault Between 2003 and 2010 Among Female Cedar Project Participants Who Returned for At Least One Follow-Up Visits (Summarized for All Participants and Those Who Reported Injection Drug Use).

Population	Question	Category	Count (%)
All participants	Experienced one or more sexual assaults in last 6 months (n = 259)	Yes	73 (28.2)
		No/refused	186 (71.8)
	Maximum number of occurrences of sexual assault within a 6-month period[a] (n = 73)	Once	23 (31.5)
		2 to 5 times	30 (41.1)
		More than 5 times	0 (0.0)
		Refused	20 (27.4)
	Did you receive counseling that dealt with the assault(s)?[a] (n = 73)	Yes	15 (20.5)
		No/refused	58 (79.5)
	Who did this to you? (n = 108)	Boyfriend/spouse	27 (25.0)
		Girlfriend/spouse	0 (0.0)
		Date/client	14 (12.9)
		Male known to me	18 (16.7)
		Female known to me	0 (0.0)
		Person known to me (sex not specified)	7 (6.50)
		Stranger	5 (4.60)
		Can't remember	2 (1.90)
		Refused	35 (32.4)
Participants who reported injection drug use	Experienced one or more sexual assaults in last 6 months (n = 124)	Yes	56 (45.2)
		No/refused	68 (54.8)
	Maximum number of occurrences of sexual assault within a 6-month period[a] (n = 56)	Once	15 (26.8)
		More than once	25 (44.6)
		Refused	16 (28.6)
	Did you receive counseling that dealt with the assault(s)?[a] (n = 56)	Yes	12 (21.4)
		No/refused	44 (78.6)
	Who did this to you? (n = 84)	Boyfriend/spouse	22 (26.2)
		Girlfriend/spouse	0 (0.0)
		Date/client	12 (14.3)
		Male known to me	7 (8.3)
		Female known to me	0 (0.0)
		Stranger	6 (7.1)
		Person known to me (sex not specified)	6 (7.1)
		Can't remember	1 (1.2)
		Refused	30 (35.7)

[a]Frequency is calculated as an average across 10 follow-up interview visits.

The average proportion of participants per visit who reported sexual assault in the previous 6 months was 4.8%, which did not change significantly over time (data not shown). Over the study period, 28.2% ($n = 73$) of all participants reported at least one sexual assault. Among these participants, 41% ($n = 30$) reported having been sexually assaulted more than once (range = 1-4 times), yielding an overall total of 108 incidents over the study period. "Refusal to answer" (32%) and "boyfriend or spouse" (25%) were the most common responses for the identity of the sexual offender(s). Among participants who reported injection drug use ($n = 124$), 45% reported being sexually assaulted. Among those participants, 45% ($n = 25$) were sexually assaulted more than once (range = 1-4 times), with a total of 84 incidents. Again, among participants who reported injection drug use, the most frequently identified offender was refusal (36%), followed by "boyfriend or male spouse" (26%). Only 21% of participants accessed any subsequent counseling that dealt with the sexual assault(s).

Unadjusted and adjusted models are presented in Table 2. Historical trauma remained significantly associated with sexual assault. Participants reporting that at least one parent attended residential school were 2.35 times as likely to have been sexually assaulted compared with participants whose parents did not attend (95% confidence interval [CI] = [1.05, 5.30]). Childhood sexual abuse also remained a strong predictor of sexual assault later in life, with odds for sexual assault 9.74 times as high compared with participants who had not been sexually abused as children (95% CI = [3.39, 27.96]). For time-variant risks, participants who slept on the street for more than three nights in a row had 1.92 higher odds of sexual assault compared with participants with shelter (95% CI = [1.14, 3.22]). The odds for sexual assault were 3.39 times as high among participants involved in sex work compared with participants who were not (95% CI = [1.92, 5.99]). In the sub-group of women who were involved in sex work, the odds of sexual assault were 7.34 times as high among participants who had also been offered money to not use a condom (95% CI = [2.29, 23.50]). Participants who reported injection drug use were 2.19 times as likely to be sexually assaulted compared with non-injectors (95% CI = [1.03, 4.65]), and within the sub-group of participants who used injection drugs most risk factors remained strong predictors of sexual assault. The odds for sexual assault were 3.76 times as high for participants who reported daily or more cocaine injection (95% CI = [1.76, 8.06]), 2.98 times as high for those who reported daily or more opiate injection (95% CI = [1.43, 6.21]), 3.24 times as high for those who reported binge injection (95% CI = [1.60, 6.55]), and 2.95 times as high for participants who had difficulty accessing clean needles (95% CI = [1.45, 5.99]).

Discussion

Sexual violence among Indigenous women is a critical human rights and public health issue rooted in colonialism, historical trauma, racism, discrimination, and gender inequality (Amnesty International, 2006). This study underscores the reality that young, urban Aboriginal women who use drugs in Canada continue to be severely impacted by childhood sexual abuse, historical trauma, and insufficient harm

Table 2. Unadjusted and Adjusted Odds Ratios (and 95% CIs) of Factors Associated With Sexual Assault Among Cedar Project Participants.

Explanatory study variables	Unadjusted odds ratio (95% CI)	*p* value	Adjusted odds ratio (95% CI)	*p* value
Age	0.99 [0.93, 1.04]	.617	—	—
Baseline location				
Prince George	1.00			
Vancouver	0.75 [0.44, 1.29]	.297	—	—
Sexual identity				
Heterosexual	1.00			
LGBTQ	1.43 [0.71, 2.88]	.320	—	—
At least one parent attended residential school				
No	1.00		1.00	
Yes	2.38 [1.06, 5.34]	.035	2.35 [1.05, 5.30]	.039
Ever in foster care				
No	1.00			
Yes	0.88 [0.52, 1.49]	.629	—	—
Ever childhood sexual abuse				
No	1.00		1.00	
Yes	10.49 [3.54, 31.09]	<.001	9.74 [3.39, 27.96]	<.001
Relationship status				
Single	1.00		1.00	
Married/common-law	1.67 [1.05, 2.66]	.029	1.15 [0.72, 1.83]	.560
Slept on the streets for more than three nights				
No	1.00		1.00	
Yes	1.88 [1.11, 3.19]	.019	1.92 [1.14, 3.22]	.014
Involved in sex work				
No	1.00		1.00	
Yes	3.85 [2.17, 6.84]	.044	3.39 [1.92, 5.99]	<.001
Offered money to not use condoms[a]				
No	1.00		1.00	
Yes	2.71 [1.17, 6.30]	.020	7.34 [2.29, 23.50]	.001
Regular sex partner uses injection drugs				
No	1.00			
Yes	1.07 [0.51, 2.26]	.857	—	—
High-frequency crack smoking				
No	1.00			
Yes	1.56 [0.85, 2.85]	.152	—	—
Inject drugs				
No	1.00		1.00	
Yes	1.83 [0.95, 3.56]	.073	2.19 [1.03, 4.65]	.041
High-frequency cocaine injection[b]				
Less than daily	1.00		1.00	
Daily or more	4.20 [2.03, 8.68]	<.001	3.76 [1.76, 8.06]	<.001

(continued)

Table 2. (continued)

Explanatory study variables	Unadjusted odds ratio (95% CI)	*p* value	Adjusted odds ratio (95% CI)	*p* value
High-frequency opiate injection[b]				
Less than daily	1.00		1.00	
Daily or more	2.56 [1.28, 5.14]	.008	2.98 [1.43, 6.21]	.004
Binge injection drug use[b]				
No	1.00		1.00	
Yes	3.13 [1.72, 5.71]	<.001	3.24 [1.60, 6.55]	.001
Difficulty accessing clean needles[b]				
No	1.00		1.00	
Yes	2.10 [1.15, 3.81]	.015	2.95 [1.45, 5.99]	.003
Injection in public[b]				
No	1.00			
Yes	1.24 [0.69, 2.22]	.477	—	—
Accessed methadone treatment[b]				
No	1.00			
Yes	0.83 [0.43, 1.60]	.580	—	—
Accessed any addiction treatment				
No	1.00		1.00	
Yes	0.49 [0.27, 0.88]	.018	0.96 [0.55, 1.67]	.115
HIV serostatus				
Negative	1.00			
Positive	1.04 [0.53, 2.03]	.915	—	—
HCV serostatus				
Negative	1.00			
Positive	1.65 [0.91, 3.01]	.102	—	—

Note. CI = confidence interval; LGBTQ = lesbian, gay, bisexual, transgender, and queer; HCV = hepatitis C virus; — = variable was not included multivariate analyses because $p>0.10$ in unadjusted analysis.
[a]Variable includes only the sub-group of participants who reported involvement in sex work.
[b]Variable includes only the sub-group of participants who reported injection drug use.

reduction services. Moreover, these experiences are associated with increased risk for rape and/or unwanted sexual contact. These results highlight the urgent need for public health and human rights responses to sexual assault, including reducing drug-related risks for Aboriginal women who use drugs and acknowledging the profound grief rooted in historical and lifetime traumas.

Although sexual assault risk did not significantly change over time, we found that on average nearly 5% of the young Aboriginal women in this study were sexually assaulted within each 6-month period. In contrast, the General Social Survey estimated that 3% of women in Canada aged 15 to 44 experienced sexual assault in 2004 (Brennan & Taylor-Butts, 2008). Furthermore, 28% of participants reported they had

been raped or molested at least once. For women who had injected drugs, the proportion who reported sexual assault was 45%. Comparison with other studies can be problematic because of variations in definitions or terminology and time frames in which events are measured (Dartnall, 2012). However, the proportion of women in this study who had experienced at least one sexual assault within the 7-year study period is higher than the lifetime prevalence of rape among American Indian women from six Tribes in the United States (14%; Yuan, Koss, Polacca, & Goldman, 2006), and lifetime prevalence of sexual assault among young American Indian women in a residential substance use treatment program in the United States (20%; Deters, Novins, Fickenscher, & Beals, 2006). It is troubling that most participants had either been sexually assaulted multiple times or refused to state how many times, and that so few received any counseling to deal with the assault(s). In addition, most women reported having been sexually assaulted by either their male intimate partner or refused to state the general identity of the offender, despite assurances of confidentiality by experienced Aboriginal study staff. These results are consistent with recent national and police studies in Canada demonstrating that most sexual offenders are either known males or male spouses (Sinha, 2013) and with reports describing Aboriginal women's reluctance to speak about sexual assault(s) (Native Women's Association of Canada, 1992). In November 2012, the report of the Missing Women Commission of Inquiry highlighted the reality that Aboriginal women are at increased risk for sexual violence as a consequence of existing within a "society that poses a risk to their safety" (Oppal, 2012, p. 7). Indeed, the social, political, and economic efforts to silence and denigrate Aboriginal women's power within Canadian society have been consistent since European colonization and missionization (Anderson, 1991). The results of the present study suggest that these efforts continue and highlight the subsequent elevated risk for sexual violence among young Aboriginal women struggling with substance dependence.

Young women in this study with a parent who attended residential school were at twice the risk of sexual assault over the study period, a finding that to our knowledge has not been previously demonstrated in an epidemiological study. In addition, participants who were sexually abused in childhood had a ninefold increased risk for sexual assault, an effect size that is exceptionally high but consistent with earlier research on sexual revictimization (Classen, Palesh, & Aggarwal, 2005). Two previous studies have indicated that historical trauma and sexual abuse are important social determinants of HIV and HCV risk among, at-risk young Aboriginal people (Craib et al., 2009; For the Cedar Project Partnership et al., 2008). Further research is required for better understanding of the psychological processes that may be on the causal pathway between historical trauma and sexual assault among young Aboriginal women. Options for low-threshold, culturally safe counseling for both childhood and adulthood sexual violence are urgently required for young Aboriginal women in Canada. Indigenous psychologists and researchers argue that therapeutic environments specifically tailored to bring a deeper understanding of the role of intergenerational trauma in the lives of young Aboriginal women may be beneficial for those who have experienced childhood sexual abuse, rape, and intimate partner violence (Evans-Campbell et al.,

2006). Therapeutic interventions are urgently required because of cumulative layers of both trauma and susceptibility to internalize blame and powerlessness (Filipas & Ullman, 2006).

Previous studies have described the complex intersections between drug use, sexual violence, and homelessness among urban women and the elevated psychological and emotional sequelae in the aftermath of rape when no basic structures for personal security and privacy are available, such as a door with a lock (Tucker, Wenzel, Straus, Ryan, & Golinelli, 2005). Risk for sexual assault was 90% higher among the young Aboriginal women in this study who slept on the street for three nights or more. This finding contributes to the body of literature detailing the structural risk factors associated with rape and interpersonal violence among women who are homeless (Fisher, Hovell, Hofstetter, & Hough, 1995). Aboriginal people are greatly over-represented among the homeless in Vancouver and Prince George, where at last count they comprised 27% and 66% of the homeless populations, respectively (Kutzner & Ameyaw, 2010; Metro Vancouver, 2012). This study is also in line with others describing the common and frequent danger of sexual assault among women involved in sex work from either their intimate partners, pimps, or clients, that is often a consequence of insecure housing and condom negotiation (Shannon et al., 2009). The participants in this study who had been involved in sex work had over 3 times the increased risk for sexual assault, and among those women, being offered money to not use condoms was associated with over 7 times the increased risk. Available studies have indicated that Aboriginal women comprise over half of the population of women in street-based sex work in Vancouver and experience staggering levels of violence, drug-related harms, and HIV risk in addition to coercive pressure for unprotected sex and reliance on pimps for security (Farley et al., 2005). Taken together, these findings support the critical need for structural reforms for sexual assault prevention that afford Aboriginal women who use drugs access to safe, low-threshold housing in British Columbia. Our results reiterate calls for expansion of housing programs that empower women with the option of having safer sex work transactions (Krusi et al., 2012). For optimal benefit, young Aboriginal women who use drugs must be meaningfully involved in the development of these programs and they must be made available in urban centers in the north of the province.

These results emphasize the severe threat of rape among Aboriginal women that can arise in high-intensity drug-use environments, in addition to concomitant HIV risk. Although HIV and HCV infections were not significant predictors of sexual assault, the majority of new infections among young Aboriginal women in Canada are injection drug use–related (Public Health Agency of Canada, 2010). Despite the legal and policy infrastructure for drug harm reduction programming in British Columbia, most programs fail to address the historical and social injustices unique to Aboriginal people. These otherwise successful programs may therefore reinforce the marginalization of Aboriginal women, including mistrust of governmental authorities and reluctance to engage with health or sexual assault services. Indeed, 79% of participants who used injection drugs and had been sexually assaulted had not accessed any sexual assault counseling services. Health services providers must consider the cumulative

impacts of young Aboriginal women's post-colonial experiences, childhood sexual abuse, and sexual assault histories while building upon their strength, resilience, and hope in the face of these realities. Sexual assault prevention and intervention strategies for young Aboriginal women who use drugs must therefore be client-driven and specifically tailored to establish trust-based relationships within culturally safe settings.

The limitations of this study must be acknowledged. The Cedar Project study is based on self-reported behavioral data obtained from a non-probabilistic sample of street-involved young women. While we cannot rule out selection bias and its impact, we are confident from our recruitment methods and rigorous eligibility criteria that our sample is representative of Aboriginal young women who use drugs in both Vancouver and Prince George. Nevertheless, there is potential for recall bias, socially desirable reporting and misclassification of exposure (except for HIV and HCV serostatus), and outcome variables. Responses to historical questions may be influenced by the participant's ability to recall the event(s). The effect of memory on these study variables is difficult to assess. In addition, although these data were analyzed using repeated measures over 7 years, we cannot make conclusions regarding causality between risk factors and sexual assault. Nevertheless, this study demonstrates alarming trends of sexual assault risk among young Aboriginal women who use drugs in Vancouver and Prince George. Despite these limitations, we believe this study provides important epidemiological evidence regarding sexual assault that has not been previously reported.

In conclusion, there is evidence of a high prevalence of sexual assault among young Aboriginal women who use drugs in urban British Columbia. Furthermore, historical, structural, and drug-related factors are strongly associated with increased risk for sexual assault. The link between the legacy of residential schools with sexual assault signifies the continuing impact of historical trauma on the safety of young Aboriginal women. There is a clear need to address the complex intersections of historical, structural, and social processes that continue to influence risk. Furthermore, the disastrous effect of childhood sexual abuse on the risk for revictimization cannot be understated. Indigenous scholars suggest that meaningful interventions must mediate the impacts of historical and lifetime trauma on the health of young Aboriginal women who use drugs, while also fostering self-determination and reclamation of Aboriginal identity (Pauly, 2008). Such interventions should be emotionally and culturally supportive, and facilitate health and healing at the individual, family, organizational, community, and policy levels (Oetzel & Duran, 2004).

Acknowledgments

We are indebted to the study participants for their participation in the Cedar Project. Special thanks are due to the Cedar Project Partnership for their conviction and for holding us accountable to the voices of young Aboriginal people. To the Elders who support our study, particularly Violet Bizokoi and Earl Henderson, thank you for your continued wisdom and guidance. Our study staff, Vicky Thomas, Sharon Springer, Amanda Wood, Nancy Laliberte, Randy Dodginghorse, Tanisha Solomans, and Matt Quennville, must be thanked for their conviction and contributions.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The Cedar Project receives ongoing support from the Canadian Institutes of Health Research (Application No. 272441), which has no role in the preparation of data or manuscripts.

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Mary Teegee has a history of advocacy in various roles for her Nation of Takla Lake, and has has long espoused that for Nations to be successful, they have to heal from the atrocities that have occurred through colonization. She has worked as a chief negotiator for her Nation and currently works for Carrier Sekani Family Services as the executive director of Child and Family Services. She is also the president of the British Columbia Aboriginal Child Care Society and sits on the Ministry Advisory Council for Aboriginal Women and on the Board of the First Nations Child and Family Caring Society of Canada.

Stephen W. Pan is a PhD candidate at the School of Population and Public Health at the University of British Columbia. His research interests include HIV and sexually transmitted infection prevention and social determinants of health among people who use drugs, men who have sex with men, and ethnic minority populations.

Vicky Thomas is a member of Wuikinuxv Nation. For the past 15 years, she has strived to live her life by the teachings of an elder, learning the values and belief systems of the ancestors. She has participated in sweats, healing circles, smudge ceremonies, and as a helper in fasting ceremonies. She has lived in Prince George since 1992 and has worked downtown with street-involved youth for 18 years. Currently, she works as the study coordinator for the Cedar Project and works casually with the Needle Exchange.

Hongbin Zhang (PhD candidate in statistics) has been working in biostatistics for many years. He worked with researchers in subject areas such as radiology, SCI (spinal cord injury) surgery, and HIV epidemiology. He is good at formulating scientific research questions in a statistical framework. He is familiar with SAS and R and has deep understanding of statistical inferences

with a variety of statistical modeling, for example, regression models and survival models. His interests and research areas include longitudinal and survival data analysis with data complications such as missing data, losses to follow-up, measurement errors, and outliers.

Martin T. Schechter is a professor in and founding director of the School of Population and Public Health at the University of British Columbia. He combines interests in clinical epidemiology with HIV and addiction research. He has authored more than 330 peer-reviewed publications and has received approximately $90 million in grants as principal investigator. He has been awarded the Order of British Columbia, a Tier I Canada Research Chair in HIV/AIDS and Urban Population Health, the Science Council of British Columbia Gold Medal, and fellowship in the Royal Society of Canada and the Canadian Academy of Health Sciences.

Patricia M. Spittal is a professor in the School of Population and Public Health, Faculty of Medicine at the University of British Columbia. She holds a Canadian Institutes for Health Research New Investigator award. She is an experienced anthropologist in the conduct and implementation of complex research/prevention programs among marginalized and hard-to-reach populations in Canada and Uganda. She is the principal investigator in the Cedar Project, a community-directed study designed to provide evidence for prevention programming based upon Indigenous worldviews. She is also the principal investigator of a similar study addressing HIV vulnerability among conflict-affected populations in Uganda.

The Cedar Project Partnership is an independent body of Aboriginal community knowledge holders, health and social services experts, researchers, and elected leaders. The Partnership has governed the entire research process since the study's inception. The primary purposes of the Partnership are to provide protection, leadership, and support for the Cedar Project, and to ensure both that the self-determining principles of OCAP (Ownership, Control, Access, and Possession) are followed and Indigenous knowledge is respected.