ABSTRACT

Background: International attention has been drawn to the physical and emotional violence faced by Aboriginal women in Canada. Vulnerability to HIV and Hepatitis C virus (HCV) infection for Indigenous populations must be contextualized in experiences of current and past trauma from the displacement of families through colonization, the residential school system and child apprehensions.

Purpose: The purpose of this study is to compare sociodemographics, drug use patterns, injection practices, sexual experiences, and HIV and HCV prevalence between young Aboriginal men and women using illegal drugs in two urban settings. A further comparison is made among young Aboriginal women using illegal drugs to compare women who were involved in recent sex work (in the last six months) versus women who were not.

Methods: In a community-based sample of urban Canadian Aboriginal young people (status and non-status First Nations, Inuit and Métis) who reported using street drugs in the past month, 262 female participants were compared with 281 male participants with respect to sociodemographic characteristics, experiences of trauma, sexual risk variables, and drug use patterns. Participants were invited who were between the ages of 14 and 30 years and lived in either Vancouver or Prince George, Canada, and were recruited through word of mouth, posters, and by street outreach. Between October 2003 and July
2005, young people in the study completed a questionnaire administered by Aboriginal interviewers. Trained nurses drew blood samples for HIV and HCV antibodies and provided pre- and post-test counseling.

**Results:** Prevalence of HIV and HCV were significantly higher among young Aboriginal women as compared to Aboriginal men. When the analysis was restricted to young people who reported injection drug use, HIV and HCV prevalence was still significantly higher among women. Multivariate analysis revealed daily injection of cocaine and smoking crack in the previous six months, and lifetime sexual abuse to be independently associated with recent sex work involvement among women.

**Conclusions:** Young Aboriginal women using illegal drugs are experiencing increased prevalence of HIV and HCV infection, harmful injection patterns and increased sex work and sexual abuse. Women involved in sex work are experiencing increased frequent injection and non-injection drug use and sexual abuse. Harm reduction programs that are gender specific and that address historical and individual trauma are urgently required.
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CO-AUTHORSHIP STATEMENT

For the manuscript entitled “Surviving sex work: a comparison of HIV-related vulnerabilities among young Aboriginal women using street drugs in two Canadian cities”, Azar Mehrabadi, Dr. Kevin Craib and Dr. Patricia Spittal were responsible for the design of the analysis. Azar Mehrabadi, Dr. Spittal, Warner Adam, Barb Ward Burkett and Katharina Patterson were responsible for the interpretation of the findings and the literature review. Azar Mehrabadi wrote the manuscript. Azar Mehrabadi, Dr. Schechter, Dr. AKM Moniruzzaman, and Dr. Patricia Spittal conducted the analyses, contributed to the writing of the results and methods section, and were involved in revising the paper.

For the manuscript entitled “Gender differences in HIV and hepatitis C related vulnerabilities among Aboriginal young people involved in illegal drug use in two Canadian cities”, Azar Mehrabadi, Dr. Kevin Craib and Dr. Martin Schechter were responsible for the design of the analysis. Azar Mehrabadi, Dr. Patricia Spittal, Katharina Patterson, Margo Pearce and Sheetal Patel were responsible for the interpretation of the findings and the literature review. Azar Mehrabadi wrote the manuscript. Azar Mehrabadi, Dr. Schechter, Dr. AKM Moniruzzaman, and Dr. Patricia Spittal conducted the analyses, contributed to the writing of the results and methods section, and were involved in revising the paper. All authors approved the final version of the manuscripts.
CHAPTER 1: HIV/AIDS, THE HISTORICAL LEGACY OF COLONIZATION AND SUBSTANCE USE AMONG ABORIGINAL MEN AND WOMEN

1.1 Thesis overview

The purpose of this thesis has been to determine whether being an Aboriginal woman and, further, being an Aboriginal women involved in sex work is associated with increased HIV seropositivity and increased HIV-related risk among young Aboriginal people in two urban settings. The first section of this thesis, Chapter 1, attempts to frame why Indigenous people are disproportionately affected by HIV/AIDS within a historical context. Some of the post-colonial realities of young Aboriginal people living in Canada in the 21st Century are described, including the multigenerational effects of the residential school and child welfare systems. Chapter 1 will continue by introducing the Cedar Project and providing an overview of available HIV surveillance data addressing Aboriginal people, with a particular emphasis on studies focusing on young Aboriginal women. The first manuscript is presented in Chapter 2 and addresses gender disparities in HIV and HCV-related risks among Aboriginal young people who use drugs, while the second manuscript in Chapter 3 compares HIV and HCV-related risks associated with recent sex work involvement among a subset of young women. The papers presented in this thesis are an attempt to contribute to a better understanding of how HIV is impacting Aboriginal young people not only in Vancouver but also in the northern interior of the province. Chapter 4 will summarize the results, outline limitations, and make recommendations for further research.
1.2 Introduction: Colonization, historical and current trauma, and links to HIV infection

Aboriginal scholars refer to historical or intergenerational trauma as a collective emotional and psychological injury over the lifespan and across generations (Yellow Horse & Brave Heart, 2004). Unresolved historical traumatic experiences and unresolved grief are passed from generation to generation and continually acted out and recreated in Aboriginal communities (Wesley-Esquimaux & Smolewski, 2004). As Aboriginal scholars have suggested, understanding HIV infections among Aboriginal people must begin with a consideration of the historical legacy of colonization, including forced removal from traditional lands, cultural genocide and, in particular, the history of the residential school system (Barlow, 2003; O'Neil, 1986; Walters & Simoni, 2002). The pathways of HIV risk experienced by young Aboriginal people reflect certain historical and lifetime conditions that are unique to Aboriginal people’s lives (Barlow, 2003; Walters, Simoni, & Harris, 2000). The high prevalence of HIV/AIDS and HCV among Aboriginal people who use drugs cannot be understood without understanding the historical and present trauma among Aboriginal people in Canada, which has “created lives characterized by risk” (Choosing Life, page 21, RCAP). The task of measuring the impact of colonization on Aboriginal peoples’ health and specifically on HIV risk is, by its nature, complex. By illustrating the individual and combined impact of the residential and child welfare systems in Canada, I hope to put current health issues into perspective. To begin, I will describe the known and emerging impacts of the residential school system in Canada on Aboriginal people’s health, with particular attention to British Columbia (BC) as it is the focus of this thesis.
Officially operating between 1874 and 1986, residential schools institutionalized an attempt to eradicate Aboriginal culture, language, traditions, family bonds, and ways of life (Milloy, 1999). The residential school system removed children as young as three-years-old, often forcibly, from their homes and placed them in Christian schools isolated from parents, siblings and communities (Archibald, 2006). Forcing children into residential schools was part of a church-state partnership that aimed to assimilate and Christianize the youngest generations of Aboriginal people in the absence of their parents and leaders (Archibald, 2006). In all, there were 22 residential schools in BC, more than any other province in Canada (Provincial Health Officer, 2002). In sharp contrast to traditional Aboriginal systems of learning, the missionary-teachers of residential schools utilized “strict discipline, regimented behaviour, submission to authority, and corporal punishment,” (Furniss, 1995, p. 49) and taught students to be ashamed of their languages, cultures, and Aboriginal identity (Hylton, 2002). Moreover, sexual, physical and emotional abuse within the schools was pervasive and has been characterised as systemic in nature: with the effect of degrading the psyche of Aboriginal children and, in turn, devaluing Aboriginal identity on the whole (Hall, 2002). Adult role modeling in residential schools taught children that adults were meant to have absolute control over children and that this control could be exerted through abuse (Milloy, 1999). The range of abuses carried out by some of the staff in residential schools exacerbated and compounded the children’s degradation and pain (Ross, 2006). In fact, the intention of the residential school system, before the schools were constructed, was expressed explicitly to “kill the Indian” in the child for the sake of Christian civilization (Milloy, 1999, p. xv). The last residential school closed in 1984, and there are currently an
estimated 90,000 living survivors in Canada, 35,000 of whom reside in BC (Government of Canada, 2002; Provincial Health Officer, 2002, p. 48). As former students raise their own children and grandchildren, the intergenerational effects of abuse and familial fragmentation are evident among Aboriginal families and communities where suicide, drug dependence, and interpersonal violence are pervasive (Barton, Thommasen, Tallio, Zhang, & Michalos, 2005; Hylton, 2002; Simoni, Sehgal, & Walters, 2004; Strickland, Walsh, & Cooper, 2006; Walters & Simoni, 2002; Wesley-Esquimaux & Smolewski, 2004).

As the federal government began phasing out residential schools in the 1950s, it devolved responsibilities from the Indian Act (1876) to the provinces for the health, welfare and educational services of Aboriginal people. With guaranteed payment for each Indian child they apprehended, some have accused the provincial child welfare services of capitalizing on the new federal policy and socioeconomic disparity between Aboriginal and non-Aboriginal families by removing Aboriginal children from Aboriginal families (Fournier & Crey, 1997; Sinclair, 2007). Indeed, from the 1950s through the 1960s, citing rationales including poverty and neglect, the proportion of Aboriginal children under care grew from 1% to between 30% and 40% (Fournier & Crey, 1997, p. 83). This period is commonly referred to as the “Sixties Scoop,” as thousands of Aboriginal children were removed from their birth families and placed in non-Aboriginal environments (Sinclair, 2007). Arguably more damaging than the residential school system, the Canadian child welfare system, dubbed “wolves in sheep’s clothing,” was responsible for the dislocation and separation of thousands of Aboriginal children from their parents and communities in the guise of protecting children from
neglect (Fournier & Crey, 1997, pp. 81-114). Whether the damage was intentional or not, the period has been deemed by some to be genocidal according to the UN Convention of Genocide (1948) Article 2 (e) whereby parties are deemed in violation of international law for “forcibly transferring children of the group to another group” (Sinclair, 2007; United Nations, 1948). Today, Aboriginal children continue to be overrepresented within the foster care system. In British Columbia, Aboriginal children account for approximately nine per cent of the child population, but make up 49 per cent of children-in-care and 41 per cent of youth in custody (Latimer & Foss, 2004; Ministry of Health, 2006). Further, Aboriginal young people are seven times more likely to be in government care and five times more likely to be in youth justice institutions as compared to other BC children and youth (Provincial Health Officer, 2002, p. 37).

Painful feelings of hopelessness and isolation resulting from the erosion of “cultural buffers” that mitigate the psychological health of young Aboriginal people are reported as part of what has led to greater vulnerability to HIV and HCV infection among Aboriginal people (Walters, Simoni, & Evans-Campbell, 2002). After the residential school closures, the shame and hatred of Aboriginal culture and identity which was instilled in children at residential schools, combined with the extensive poverty and widespread unemployment in Aboriginal communities, began to turn neighbors and families violently against each other to an unprecedented extent (Adelson, 2005; Mendelson, 2004; Provincial Health Officer, 2002). As Aboriginal community members began to speak out about the abuses at the residential schools, the secrets of abuse became increasingly acknowledged. Among the most hurtful of the secrets was that sexual and physical abuse had spread directly from residential school survivors back to
the community’s children as adults enacted the role modeling they had received as children in these schools (Milloy, 1999, p. 299). A link between sexual abuse and increasing HIV risk or infection has been well documented (Cunningham, Stiffman, Dore, & Earls, 1994; M. Miller, 1999; Zierler et al., 1991). An important focus of this thesis is therefore on the effects of lifetime sexual abuse on HIV-related risk. In addition, the devaluation of Aboriginal identity that has been passed through generations has been described as displacing the collective sense of belonging among Aboriginal people (RCAP, 1996). The multigenerational effects of historical trauma expressed in grief, feelings of abandonment, hostility and anxiety has been passed on to future generations, where they are most felt by children. Often the trauma is acute, and has been associated with symptoms of post-traumatic stress disorder (PTSD), as well as depression and anxiety (Danieli, 1998; Yellow Horse & Brave Heart, 2004). For young Aboriginal people the denigration and pain of historical grief is compounded by stressful lifetime experiences including sexual trauma, thus compelling them to numb their pain with drugs (Walters & Simoni). Suppressing pain, associated with generations of trauma, by using drugs increases vulnerability to HIV among Aboriginal people (Barlow, 2003).

Due to the complex effects of the residential school system on the well-being of young Aboriginal people, the manuscripts address the “multi-generational” effect in the studies that follow in terms of the effect on children of having had parents attend residential schools, in addition to several other measures of trauma. These include the continuation of family dislocation through Aboriginal young people’s involvement with the child welfare system and detention centres, and the grief and pain exemplified in suicide attempts. Each paper was composed amid an issue of immediate concern to
Aboriginal communities, namely the homicides and murders of women in the Downtown Eastside and in British Columbia's northern highway ("the Highway of Tears").

1.3 Paradigms of Research on Aboriginal Health

Walters et al (2002) presented the "Indigenist stress-coping model" to situate sexual and physical abuse among Aboriginal people within the historical legacy of colonization. They identified alcoholism, drug dependence and HIV risk as health outcomes resulting in part from situations where coping options for collective and individual trauma were not available. Their stated use of models are guided by an emphasis on "de-colonizing" research on Aboriginal people as well as the attitudes of Indigenous people towards themselves (Walters et al., 2000). Similar post-colonial perspectives have highlighted the necessity of understanding the current situation of Aboriginal people within the context of historical discrimination. Moreover, the goals of post-colonial approaches are to counter a non-historical perspective that fails to recognize the effects of centuries of injustices and dominant European-based institutions on Aboriginal communities. The post-colonial perspective has additional implications for health care providers, as an acknowledgement of the legacy of colonization has been said to promote positive interactions between Aboriginal patients and health professionals (Browne, Smye, & Varcoe, 2005).

A second and complementary theoretical perspective is the social ecological framework which provides a multilevel approach incorporating individual characteristics and interactions between individuals, couples, families and social networks with institutional, community, and social policy. In this framework, poverty and poor social conditions are viewed as the fundamental driving force behind HIV infection among
Native Americans and other minorities globally (Farmer, Connors, & Simmons, 1996; Vernon, 2001). This perspective draws parallels between the similar HIV risk between poor women in countries as varied as the U.S. and Haiti. One of the key texts on this perspective among Indigenous peoples, is Vernon’s work entitled “Native Americans and HIV/AIDS”. In this book, she has situated poverty in the personal stories of numerous Native American men, women and young people she interviewed, and positioned economic and social disparities as the central aspect of the legacy of colonization responsible for HIV infection. She describes that the people affected by HIV: “are from different tribes but are tied together in the struggle to survive in a society where they are ‘at the bottom’ socially and economically”. Their stories are positioned as common among many disenfranchised and impoverished peoples: “The mere fact that they were born into poverty put them, from the outset, at high risk for HIV/AIDS.” For women, this interpretation illustrates a pathway of commonality among diverse women who have become infected by HIV. These interpretations are similar to previous descriptions of HIV positive women by Zierler & Krieger: “these women were young, between the ages of 15 and 44 years; their neighborhoods were poor and so were they; if they could get work, they were rarely earning wages to meet basic needs for food, child care, clothing, and shelter; mostly they depended on public assistance and men for economic survival”.

An understanding of the histories of trauma as well as a consideration of the social inequalities faced by Aboriginal young people is necessary to understand how HIV is affecting Aboriginal communities in Canada today (DeBruyn, Chino, Serna, & Fullerton-Gleason, 2001; Duran & Walters, 2004). By neglecting to take into consideration histories of trauma, the contextual factors that contribute to HIV infections
would be forgotten, as would the need for including Aboriginal history and traditional cultural practices in healing strategies. Additionally, a lack of awareness of the effects of social disparities on HIV infection would prevent us from understanding the commonalities in HIV risks, traumatic experiences, and cycles of unresolved grief passed down through generations among Aboriginal people in Canada and other groups of marginalized and oppressed people around the world.

1.4 The establishment of the Cedar Project cohort

1.4.1 HIV/AIDS, and HCV affecting Aboriginal people who use injection drugs

Studies on the rapid rate of HIV infection among Aboriginal people in Vancouver and warning signs that similar patterns could emerge in other areas of the province led to the establishment of the Cedar Project Partnership. In 2003, researchers in Vancouver identified that Aboriginal people who used injection drugs were becoming HIV positive at twice the rate of non-Aboriginal participants. Within the Vancouver Injection Drug User (VIDUS) cohort, between 1996 and 2000, the cumulative incidence of HIV among Aboriginal participants was found to be significantly higher among Aboriginal men compared to non-Aboriginal men (19.4% vs 9.2%, p=0.007) and among Aboriginal women compared to non-Aboriginal women (20.2% vs 12.9%, p=0.115) (Craib et al., 2003). Aboriginal women were particularly vulnerable, comprising 40% of all female participants in VIDUS but 50% of women who became HIV positive. The emerging urban patterns paralleled a marked increase in HIV/AIDS among Aboriginal people in all of Canada where ethnicity data was available. The proportion of Aboriginal people who had AIDS increased from an estimated 1% before 1990 to 12.1% in 2002, while, with
regard to HIV infection, an estimated 2,740 Aboriginal people were living with HIV in 1999, a 91% increase from 1996 (Public Health Agency of Canada, 2000).

The same year the study by Craib et al (2003) was published, researchers from the University of British Columbia travelled to the interior city of Prince George, BC where many participants from VIDUS lived prior to residing in Vancouver. The researchers, including Dr. Patricia Spittal, consulted with Aboriginal organizations about the relevance of VIDUS data to their own work with Aboriginal people in northern communities. Service providers from the Northern Health Authority shared their concerns about signs of an imminent surge in new HIV infections. For example, the majority of clients who accessed the Prince George Needle Exchange and AIDS Prince George were Aboriginal people. Further, AIDS Service organizations were troubled about a lack of access to clean needles on reserve. Indeed, it was a primary concern that if HIV infections were to spread to rural or remote regions, health services were not present to adequately care for families and communities. Another issue of apprehension among community organizations was the over-representation of Aboriginal girls in sex work and the sexual trafficking of young girls. The unsolved and ongoing homicide and missing person investigations involving Aboriginal young women along Highway 97, now called the Highway of Tears, caused increasing concern regarding the well-being of young women across British Columbia. Despite these concerns, the only epidemiological evidence of HIV among Aboriginal people that existed at the time was mostly specific to large city centres, including Vancouver’s Downtown Eastside. While Aboriginal service providers and the Northern Health Authority in Prince George had been observing new HIV infections, they needed their own evidence, specific to a rural-remote context, to
lobby for increased funds and resources. Given this, the Cedar Project study was initiated in both Prince George, a forestry mining town in the northern interior of BC, and in Vancouver’s Downtown Eastside. To our knowledge, from the time of the study’s initiation until now, this study has been the only young and “at risk” Indigenous peoples cohort of its kind in North America where “at risk” is defined as young people (ages 14 to 30) who are currently either smoking or injecting street drugs.

According to the Census of Canada, 170,025 people in British Columbia self-identified as Aboriginal in 2001, approximately 3.6% of the provincial population. In addition, half of the Aboriginal population is less than 25 years old, compared with one third of the non-Aboriginal population. The Northern Health Authority, which includes the City of Prince George, spans almost two thirds of the landscape of British Columbia. Vancouver Coastal Health, which includes the City of Vancouver, covers over 58,560 square kilometers. There are estimated to be 26,890 young Aboriginal people between the ages of 15 and 34 residing in Northern Health and 11,450 in Vancouver Coastal Health. The analyses in this thesis are based on 543 participants who completed the baseline Cedar Project Questionnaire between October 2003 and April 2005 and resided in either Vancouver or Prince George at the time of the first interview. Median age is 23-years-old and the gender composition is 48% female and 52% male; 57% of young women and 54% of young men resided in Vancouver at baseline.

1.4.2 The Cedar Project Partnership: the importance of community-based HIV research specific to Aboriginal young people

The goal of the Cedar Project Partnership was to develop a system for HIV and drug use surveillance that was sensitive to the needs of community members, and would
begin to address the needs of young Aboriginal people in northern British Columbia. Unfortunately, past use of Aboriginal surveillance data portraying pathologized perceptions of Aboriginal peoples has led to resistance by many communities to participate in disease surveillance projects. Some of the concerns expressed by the partnership were related to stigma and discrimination, and that the research would continue to inform discriminatory research of First Nations people struggling with addiction. Failure to account for Indigenous perspectives that acknowledge the colonized or fourth-world positions of First Nations people in Canada has reinforced power-inequities and perpetuated paternalism and perceptions of dependency with regards to HIV and addictions research. In addition, the Cedar Partnership was concerned with ownership of data and wanted to avoid instances where findings from the study would not be under the control of the community. The Cedar Project Partnership was designed to conduct research in a manner that would remain accountable to the communities affected.

Guidelines provided in the Canadian Tri-Council Policy Statement: Ethical Conduct for Research Involving Human Subjects were followed in the development and conduct of this study with particular attention to section 6.0, pertaining to research involving Aboriginal subjects. Accordingly the Tri-Council Policy Statement on the “Ethical Conduct For Research Involving Humans” makes it clear that the obligation to respect human dignity in research involving Aboriginal groups gives rise to both special considerations and to basic ethical duties regarding ethics review, informed consent, confidentiality, conflict of interest and inclusion (Myers et al., 1994). Research involving Aboriginal persons must be conducted via a community-based approach that adequately addresses Aboriginal culture and concerns related to data handling and confidentiality.
Aboriginal investigators and collaborators, including Aboriginal AIDS service organizations, comprise what is now called the Cedar Project Partnership. The partnership is involved in the conception, design and implementation of the cohort study. The Cedar Project Partnership meets quarterly to discuss emerging research concerns, knowledge translation, representation of datasets and emerging ethical challenges over the course of the study. The quarterly occurrence of the meetings is based on the significance of seasons in Aboriginal traditions. A special committee consisting of Cedar Project Partners was created for reviewing all publications and to assure issues are presented sensitively and accurately, including the publication of this thesis and during the defense. The entire research team has been required to incorporate Indigenous perspectives from academic and non-academic literature and in addition, with very few exceptions, a team presentation has been implemented during academic and community presentations under which a Cedar Project partner has taken the lead on data dissemination and related discussions. The Aboriginal partners of the Cedar Project have also been given support to present study findings in their communities and to policy makers. Another special committee has been established to attempt to address intergenerational and lifetime trauma among young Aboriginal people. This committee will address priority areas for further research, including trauma assessments and post-traumatic stress disorder (PTSD) related to intergenerational trauma. The Cedar Project has received approval by the University of British Columbia/Providence Health Care Research Ethics Board. The studies undertaken for this Master's thesis have further received approval from the University of British Columbia/Providence Health Care Research Ethics Board (see appendix A).
As a collaborative, participatory initiative the Cedar project was designed first and foremost to provide the partnership with analyses and studies of relevance to their communities in a manner that best allowed them to advocate for themselves. For instance, in 2003, the partnership decided to release to the press important baseline data among young Aboriginal people in Prince George and Vancouver. The data regarding HIV and HCV prevalence along with demands for action were published immediately in the Vancouver Sun, Province, and the National Post, based upon the decision of the partnership. In addition, this thesis began in response to the expressed need by the partnership to address the HIV related vulnerabilities of young women. Despite this community involvement, the recommendations from each of these manuscripts do not intend to take the place of ongoing consultations with Aboriginal young people involved in street drug use regarding the services they require. In addition, these papers are based on surveys which cannot take the place of qualitative analysis, where young Aboriginal people describe their experiences in their own words. This qualitative work is part of the second phase of the Cedar Project.

1.5 Literature review

While Aboriginal communities are extremely concerned about the increasing rates of HIV and HCV infections, particularly among women and young people, and the harms faced by Aboriginal women in survival sex work, the extent of the burden in Aboriginal communities remains unclear. The purpose of this review is to (1) determine the prevalence and incidence of HIV/AIDS, and HCV among Aboriginal women in Canada,
(2) examine the gender differences in injection drug use patterns, and (3) examine the sex and drug related harms related to sex work among Indigenous women.

1.5.1 HIV/AIDS and HCV prevalence among Aboriginal Canadians: effects on women and young people

At the time these papers were being composed, the Public Health Association of Canada had highlighted the continuous disproportionate impact of HIV/AIDS on Aboriginal people, particularly on young people and women. National surveillance data estimated that 3,600 to 5,100 Aboriginal people were living with HIV in Canada in 2005 (Public Health Agency of Canada, 2006). This represents approximately 7.5% of all prevalent HIV infections, while Aboriginal people comprise only 3.3% of the Canadian population in provinces where HIV is reportable. These figures have been projected to all of Canada; however, data on ethnicity has not been available for the provinces of Quebec or Ontario. In provinces where ethnicity is reportable, between 1998 and 2005, 32% of new positive HIV test reports were among Aboriginal people under thirty, as compared to 21% among non-Aboriginal people. Approximately sixty percent of new infections among these young Aboriginal people were attributable to injection drug use (IDU), higher than among non-Aboriginal young people. Similarly, women represented 47.3% of new positive HIV test reports among Aboriginal people, as compared to 20.5% among non-Aboriginal people. New cases of HIV infection among Aboriginal women was attributed to IDU (65%) followed by heterosexual sex (34%). In regards to AIDS, there has been a steady increase in the proportion of Aboriginal people with AIDS, from 1.6% in 1995, to 10% in 1999, and 16% in 2005. Women comprised 12% of AIDS cases.
among Aboriginal people before 1995, but by 2005, Aboriginal women comprised 39% of cases.

National surveillance on HCV infection among on Aboriginal populations in Canada is far less extensive, despite the fact that HCV is the leading cause of liver transplants in the developed world, and the virus can have chronic effects such as liver disease and cancer which are exacerbated by alcoholism and HIV co-infection (Sullivan, Hanson, Teshale, Wotring, & Brooks, 2006; Szabo et al., 2006; Tsui et al., 2007; Zhang, Li, & Ho, 2006). Health Canada estimates that the HCV prevalence among Aboriginal people in Canada is seven times higher than among non-Aboriginal Canadians, while the prevalence among the general population is thought to be around 0.8% (Forrester et al., 2004). These estimates are based upon data from four sites in Canada which account for 11% of the Canadian population during 1999 to 2000. However other studies have reported variations in reported HCV prevalence among Aboriginal populations in different regions of Canada ranges of between 0.4% to 29.3% (Riben et al., 2000). This may be accounted for by differences in reporting and inclusion criteria. For instance certain regions included Aboriginal people on reserves only, while others included Aboriginal persons both on and off reserves (Riben et al., 2000). In 2001, Status Indian people in British Columbia were found to be infected with HCV at a rate three-times higher than non-Status people from British Columbia (3.8% of British Columbia is status Indian, as compared to 4.4% of BC that identified as Aboriginal in 2001) (Buxton, 2005). Researchers warn that high HCV rates serve as predictors of future HIV infection in populations where the prevalence of both infections are high, such as among people who use injection drugs in Vancouver’s Downtown Eastside (Patrick et al., 2001). The
potential link between HCV and HIV is especially apparent in Canada where the most common way of contracting HCV infection has been through the sharing of used injection needles (63%) (Forrester et al., 2004). In addition, a constant rate of HCV reports across the province of BC in 2003 in health service delivery areas across the province which do not include Vancouver (Buxton, 2005) suggests that injection drug use is not restricted to large urban centres.

Targeted studies which focus on HIV infection among Aboriginal women involved in drug use have been limited to the Vancouver injection drug user study (VIDUS) and certain cross-sectional studies where HIV infection is self-reported. Regarding people who inject drugs in Vancouver, a key study in the VIDUS cohort found Aboriginal people were twice as likely to become HIV positive as compared to non-Aboriginal people, with a cumulative incidence at 42 months of 21% vs 11% among Aboriginal vs non-Aboriginal participants, and 20% vs 13% in Aboriginal vs non-Aboriginal women. The factors independently associated with seroconversion among women was frequent speedball injection, frequent cocaine injection, and going on binges with injection drugs (Craib et al., 2003). Aboriginal women comprised 40% of the sample of female participants but 50% of women who became HIV positive. Among a sample of young people in VIDUS (ages 13 to 24 years), Aboriginal young people were about four times more likely to be HIV infected at enrolment and more than twice as likely to become HIV-infected during follow-up (C. L. Miller, Strathdee, Spittal et al., 2006). HIV among Aboriginal as compared to non-Aboriginal young people was 20% vs 7%, while HCV prevalence was 66% vs 38%. In addition, sexual abuse, sex work involvement, and
more than daily use of injection cocaine were significantly higher among Aboriginal young people.

Overall, there are far fewer targeted studies in Canada published on HCV prevalence by gender and Aboriginal status. In Vancouver, data from the BC Centre for Disease Control reports that new HCV cases among males exceeds that in females in all age groups with the exception of ages 15-19 and 20-24 years-old, where newly identified HCV infections were higher among females. Unfortunately, it is not known to what extent this increased prevalence among young women represents testing bias in young women as compared to young men. In British Columbia targeted studies provide evidence that high rates of HCV transmission have occurred among Aboriginal people who inject drugs in Greater Vancouver. More than 80% of VIDUS participants had been found to be infected with HCV, with prevalence among Aboriginal people who inject drugs estimated at over 90% (Patrick et al., 2001). Among young VIDUS participants (ages 13-24), 37% of HCV positive young people were Aboriginal (Cari L. Miller et al., 2002). Further, among young VIDUS participants, baseline HCV prevalence was independently associated with having a partner who uses injection drugs, requiring help injecting, and injection of cocaine more than once per day. Among VIDUS participants aged 29 years or younger, 16% of participants were HIV and HCV co-infected, of which 45% were Aboriginal. Frequent cocaine use, Aboriginal ancestry and being female were each independently associated with HCV and HIV co-infection among participants (C. L. Miller et al., 2004). In a study on Aboriginal patients admitted to an inpatient detoxification treatment centre which serves the majority of northern BC, self-reported HCV prevalence was found to be significantly higher among Aboriginal women...
compared to men (29% vs 21%) (Callaghan, Cull, Vettese, & Taylor, 2006).

Unfortunately HCV prevalence based on self-report is likely to be an under-estimate due to the false negative bias in reporting seroprevalence, where some patients may report that they are negative when they knew they were positive (particularly as the study was based on patient files), or because they are not aware of their positive status. Gender differences in HCV risk have generally been inferred based on studies addressing gender differences in injection drug use patterns due to the gendered roles in drug acquisition, preparation, and injection (Public Health Agency of Canada, 2004). Gender differences in drug use patterns will therefore be further addressed as part of the next section of this chapter.

1.5.2 Gender differences in drug use patterns, and HIV- and HCV-related vulnerability: focus on Indigenous people

Scholars specializing in social epidemiology and women’s health suggest the proper use of the concepts of sex and gender in epidemiologic discussion is key to a clear interpretation of research findings (Johnson, Greaves, & Repta, 2007; Krieger, 2003; Phillips, 2005). Societal roles which place women at increased risk for HIV have been termed gender relations or attributed to “gender”, while biological factors have been termed sex-linked biology or attributed to “sex” (Krieger, 2003). HIV risk attributed to gender relations among women include women’s roles as primary caretakers, their increased economic hardships, and their power differences in negotiating safer sexual practices (Farmer et al., 1996; Vernon, 2001). HIV risk attributed to sex-linked biology among women includes the increased rate of male-to-female, compared to female-to-male, heterosexual transmission as a result of vaginal tears and cervical receptor cells.
The following are important examples of effects of gender relations on HIV infection, although in certain scenarios biological determinants play a role. Among Canadians using injection drugs, approximately one-third have been estimated to be women (Poole & Dell, 2005). However, when analyses have been restricted to young people, the proportion of women to men has been reported to be approximately equal (C. L. Miller, Strathdee, Spittal et al., 2006). Among men and women involved in IDU, women have been found to be younger than their male counterparts (C. L. Miller, Strathdee, Kerr, Li, & Wood, 2006).

**Aboriginal women and Injection drug use**

Women across the U.S. have been found to become HIV positive earlier than men, in part as a result of sexual relationships with older sexual partners (Hader, Smith, Moore, & Holmberg, 2001). Women have been found to be involved in more frequent and harmful injection drug use, and to be more likely to be come HIV positive as compared to men among people who use injection drugs (Spittal et al., 2002). Women, when compared to men, have been reported to receive used needles more often, require more help injecting, and to be more likely to be involved in survival sex work than men among people who use injection drugs (C. L. Miller et al., 2002; Spittal et al., 2002). In addition, violence is more often experienced by women who inject. A recent study in Vancouver found that between 1996 and 2006 young women under the age of 30 who used injection drugs were 54.1 times (95%CI 29.6-90.8) more likely to die compared to a non-IDU population of the same age; in the same study young men who injected drugs were 12.9 times (95%CI 5.5-25.3) more likely to die compared to a non-IDU population of the same age (C. L. Miller, Kerr, Strathdee, Li, & Wood, 2007). The leading cause of
death among young women in this study was homicide, which highlights the predation and risk facing drug dependent women.

Women have often been demonized and portrayed as 'vectors' of transmission in terms of both sex work involvement and drug use and the transmission of HIV to their unborn fetus in pregnancy (Poole & Dell, 2005). Both academic and community based literature suggests that Aboriginal women have been additionally demonized and targeted as well, as is evident from the reports of racism experienced by Aboriginal women in the Downtown Eastside from the police and by hospital staff (Pivot Legal Society, 2004). Many of the women addressed in both these discussions used illegal drugs or were involved in sex work. Browne & Fiske have further reported experiences of discrimination, racism and structural inequities as shaping the experiences of many Aboriginal women with their health care providers (Browne & Fiske, 2001). Additionally problematic is that treatment programs have not always considered women's pressing needs for childcare and their fear and concerns with child apprehension when asking for drug treatment help (Poole & Dell, 2005). The fear of many women that their children will be apprehended if they seek treatment is reported to be particularly high if they are involved in sex work (C. Benoit, Carroll, & Chaudhry, 2003). It is unknown to what extent childcare needs during drug treatment differ for men and women. One study of patients at a detoxification centre in Prince George reports that over half (56%) of Aboriginal men in treatment also have at least one dependent child, as compared to 65% among Aboriginal women (Callaghan et al., 2006). A study by Callghan et al (2006) on gender differences among Aboriginal people admitted to an inpatient, hospital-based substance abuse detoxification program reported that women received proportionately
higher rates of cocaine or opiate detoxification diagnosis compared to men, despite similar proportions of injection drug use among Aboriginal men and women, suggesting more problematic use for Aboriginal women as compared to men (Callaghan et al., 2006). Women were twice as likely as men to report a history of both sexual and physical abuse (31% and 29% respectively), and were on average four years younger than men (35 years-old vs 39 years-old).

Overall, there are few studies which have focused on gender differences in HIV and HCV related vulnerabilities of Indigenous people as it relates to the legacy of grief and trauma among Aboriginal people. Qualitative studies have found that experiences of early childhood sexual abuse among HIV positive Aboriginal women have had striking effects on women's abilities to make safe sexual choices for themselves and to value themselves; in this context alcohol and drugs were often used as coping strategies to "forget" their childhood experiences (Bucharski, Reutter, & Ogilvie, 2006). The work of a team of researchers based in New York City provides some of the first empirical evidence linking traumatic life events with HIV risk behaviour among Aboriginal people (Walters et al., 2000). In addition, the research team provides a strong theoretical basis for the contextualization of HIV risk within experiences of physical and sexual abuse linked to the legacy of colonialism among Indigenous people (Duran & Walters, 2004; Simoni et al., 2004; Walters & Simoni, 2002). In a study published in 2000, one hundred Aboriginal men and women were surveyed at an Indian gathering near New York City; the survey found that trauma variables (in this case domestic violence and non-partner sexual assault) were significantly associated with HIV risk, including unsafe sex (Walters et al., 2000). Besides this limited research, there is an overall paucity of research which
addresses the impact of multi-generational trauma on HIV risk or HIV prevalence among Aboriginal people. This is despite the fact that HIV infection and the health effects of the multi-generational legacy of trauma are key concerns of Aboriginal community members. Although these researchers in New York did not provide a comparison of men and women, they published a further analysis on Aboriginal women which found injection drug use mediated the relationship between non-partner trauma and HIV risk (Simoni et al., 2004).

1.5.3 Aboriginal women involved in survival sex work in Canada:

There is a paucity of academic literature on Aboriginal women’s involvement in sex work, however reports from non-governmental organizations suggest that Aboriginal women are over-represented in survival or visible street-based sex work in Canada. Widespread experiences of violence have been reported both empirically and anecdotally. While much has been speculated in the press, in government, and NGO reports on this topic, the intersecting epidemics of drug use, violence and HIV infection among Aboriginal women involved in sex work remains poorly understood. A recent review has named the lack of distinction between sex workers and their work environments as one of the greatest flaws of research on sex work (Vanwesenbeeck, 2001). It is important to note that the majority of published studies include women or young people in visible or street-based sex work and cannot therefore be generalized to all women involved in sex work. While street based women involved in sex work have been demonstrated to experience increased violence and difficulty in negotiating safer sex, experts report that only a minority of women involved in sex work are involved in street-based sex work (Pivot Legal Society, 2006). While there is a paucity of literature in Canada, studies from
Australia and New Zealand highlight the great disparities among women involved in sex work, with Indigenous women involved in sex work experiencing disproportionate marginalization. These studies have been designed with sex work as an inclusion criteria rather than drug use, and therefore have allowed for comparisons between drug dependent and non drug dependent women.

International literature has shown that while indoor settings of sex work can include exploitative settings, particularly for migrant women, comparative studies have found fewer minors in these venues, less illegal drug use, and fewer experiences of violence (Harcourt, van Beek, Heslop, McMahon, & Donovan, 2001; Plumridge & Abel, 2001). There are few studies in Canada this regard, however a cross-sectional survey of 303 sex workers in New Zealand revealed considerable segmentation among sex workers in indoor and street settings, with particular relevance to Indigenous women (Plumridge & Abel, 2001). Street-based women involved in sex work were more likely to identify Maori ancestry (Indigenous people of New Zealand), to be younger, have fewer years of formal education, and more likely to use street drugs as compared to indoor workers. In addition, drug use was more likely to be cited to deal with the adversity of sex work in street-based settings. Overall, Maori women comprised a fifth of participants (18.5%) while only constituting 7.4% of the population by region and age group. This study in New Zealand is one of the few studies to show that Indigenous women are over-represented among street based sex workers. Although academic literature is not available in Canada, reports in Canada suggest similar over-representation of Indigenous women in more dangerous sex work (Pivot Legal Society, 2004). In particular, profiles of missing or murdered women who had been involved in sex work strongly suggest that
Aboriginal women in Canada are disproportionately represented in more precarious sex work environments (Amnesty International, 2004), however no comparative surveys have been conducted.

Further studies found that not only were Aboriginal women over-represented among street based sex workers, but that these street based sex workers experienced injection drug use, traumatic life events including early childhood abuse, and psychological problems to a greater extent. For instance, a recently published study on Vancouver’s poorest neighbourhoods, focusing on violence, PTSD, and sexual abuse in prostitution, compared 52 First Nations women with 38 European-Canadian women involved in street based sex work in Downtown Eastside and several other locations (Farley, Lynne, & Cotton, 2005). Childhood physical and sexual abuse was significantly higher for Aboriginal women, with 81% of women reporting physical abuse and 96% reporting sexual abuse. Seventy-two percent of Aboriginal women met the DSM-IV criteria for PTSD. Another sample of street based sex workers in Australia found that women who were Aboriginal and/or Indigenous people of the Torres Strait Islands composed approximately one quarter of the sample, a clear over-representation (Roxburgh, Degenhardt, & Copeland, 2006). In this study, nearly all women had experienced trauma, while just under half met the DSM-IV criteria for PTSD. A comparative study in Australia found that Aboriginal participants were over-represented among street based sex workers in two separate surveys (20.8% and 13.6% respectively) compared to a sample of indoor sex workers (0.3%) (Harcourt et al., 2001). Street based sex workers were much more likely to be currently using injection drugs (77%) compared to indoor workers (8%).
A large proportion of Aboriginal women have comprised both samples of women who inject drugs and street-based sex workers recruited from Vancouver's poorest neighbourhood, with estimates of Aboriginal women involved in sex work ranging from 24%-49% (K. Shannon, Bright, Duddy, & Tyndall, 2005; Kate Shannon et al., 2007; Spittal et al., 2003). In a cross-sectional study comparing cohorts of participants from Vancouver and Montreal who use injection drugs, Spittal et al (2003) found that the factors independently associated with sex work involvement were: more than daily use of heroin, smokeable crack cocaine, and borrowing used syringes. Overall, 24% of women involved in sex work identified themselves as Aboriginal. In a longitudinal study by Kuyper on the VIDUS cohort published in 2005, between 1996 and 2003, the factors independently associated with sex work involvement were incarceration, daily use of injection cocaine, daily crack use, borrowing syringes, lending syringes, and being unable to access treatment during the previous six months (Kuyper et al., 2005). The proportion of Aboriginal women among sex workers in this study was not reported. The definition of sex work in the VIDUS surveys were similar to the definition used in the manuscripts that follow: sex work was defined as “exchanging sex for money, goods, drugs, shelter or anything else”.

Benoit & Millar (2001) studied indoor and street-based sex workers in Victoria, B.C. and its surrounding municipalities (18% male, 79% female, 3% transgender), and found that 61% of respondents currently or most recently worked in indoor settings. In their study, Aboriginal people comprised 15% of respondents; however they did not specify whether the conditions of sex work were worse or better for Aboriginal women. They also differentiated indoor work conditions from conditions where sex workers had
little control of their choice of clients and where a large portion of their earnings were
given to management, similar to “sweat-shop” or minimum wage work conditions.
Aboriginal sex workers were more likely to report injuries which required hospitalization
during sex work, to consume alcohol daily, and to have been in formal or adoptive care.
Aboriginal sex workers were also less likely to experience mental illness or report
depression. In regards to attempted suicide, Aboriginal women involved in sex work had
similar rates of attempt when compared to non-Aboriginal sex workers (approximately
10%).

In addition to over-representation in street-based sex work, Aboriginal people also
appear be over-represented among minors involved in sex work. A report on the sexual
exploitation of young people, noted that the proportion of sexually exploited Aboriginal
young people in communities across British Columbia ranged from 14 to 60 percent and
the average age was 15-years-old (Assistant Deputy Ministers' Committee, 2001). These
estimates were based on consultation with service providers recruited by Aboriginal
consultants through snowball methodology. Community members noted that Aboriginal
young people were more likely to be sexually exploited for a number of reasons,
including unstable life circumstances, substance use and abuse in families, and a lack of
roots and strong Aboriginal identities due to living in foster care (Assistant Deputy
Ministers' Committee, 2001, p. 17). Although girls were more likely to be sexually
exploited, service providers stated that the extent of sex work involvement among
Aboriginal boys was much less visible and therefore difficult to assess.
1.5.4 Conclusion

In summary, based on national data from the Public Health Association of Canada and data from the Vancouver Injection Drug User Study, Aboriginal men and women are more likely to be HIV and HCV positive as compared to non-Aboriginal men and women in Canada. While previous research comparing frequent injection patterns, the sharing of injection equipment and unsafe sexual practices, suggest that young women may be more at risk for HIV and HCV infection, few studies have assessed differences between Aboriginal men and women in HIV and HCV-related risk. In addition, Indigenous women appear to be over-represented in sex work situations which involved younger women, greater street drug use, and more violence, although further research in this area is necessary to clarify these associations. However, in this literature review no studies were found which focused specifically on HIV risk factors among Aboriginal women involved in sex work.

1.6 Purpose of the study

The manuscripts in this thesis had the following objectives.

Objective 1: To compare socio-demographics, drug use patterns, injection practices, and sexual experiences during the previous six months, and current HIV and HCV prevalence, between young Aboriginal men and women who use illegal injection and non-injection drugs in two urban settings.

Hypothesis 1: Based on previous studies, we predict that young Aboriginal women will experience increased drug and sex-related HIV harm compared to Aboriginal
young men, possibly through greater sex work involvement, frequent drug use, needle sharing and needing help injecting.

**Objective 2:** To compare socio-demographic characteristics, drug use patterns, injection practices, and sexual experiences during the previous six months, and current HIV and HCV prevalence between young Aboriginal women who use illegal drugs who are involved in recent sex work (in the last six months) in Vancouver and Prince George, with those Aboriginal women who are not.

**Hypothesis 2:** Based on previous research, we predict that young Aboriginal women involved in recent sex work will experience significantly higher frequent drug use and drug sharing in the last six months compared to Aboriginal women not having recently been involved in sex work.
1.7 References


Bucharski, D., Reutter, L., & Ogilvie, L. (2006). You Need to Know Where We're Coming From: Canadian Aboriginal Women's Perspectives on Culturally


CHAPTER 2: GENDER DIFFERENCES IN HIV AND HEPATITIS C RELATED VULNERABILITIES AMONG ABORIGINAL YOUNG PEOPLE INVOLVED IN ILLEGAL DRUG USE IN TWO CANADIAN CITIES

2.1 Introduction

HIV/AIDS advocates in Canada are deeply concerned about increasing rates of HIV and HCV among young Aboriginal men and women and the role of historic trauma in heightening their vulnerability (Barlow, 2003). Determining the differences in how Aboriginal men and women cope with historic and current traumatic events is essential to understanding the HIV related vulnerability of young Aboriginal people, particularly among those young Aboriginal people who use illegal drugs. As Indigenist scholars suggest, any discussion regarding the HIV related vulnerability of Aboriginal young people, particularly girls and women, must be informed by discussion of the historical legacy of colonization, including forced removal from traditional lands, economic and social deprivation, cultural genocide and, in particular, the histories of the residential school and child welfare systems (Red Road HIV/AIDS Network, 2006; Simoni, Sehgal, & Walters, 2004; Wesley-Esquimaux & Smolewski, 2004).

Arguably the most destructive Canadian legislation imposed upon Aboriginal communities and families was the residential school system. Operating from 1874 to 1996, the state-church partnership forcibly removed more than 100,000 children from

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1 A version of this chapter will be submitted for publication. Mehrabadi A.; Patterson, K.; Pearce, M.; Patel, S.; Craib K.J.P.; Moniruzzaman, AKM; Schecter M.T.; Spittal P.M. (2007) Gender Differences in HIV and hepatitis C related vulnerability among Aboriginal young people involved in illegal drug use in two Canadian cities. Women & Health.
their homes in order to “kill the Indian” in the child for the sake of Christian civilization (Milloy, 1999, p. xv). Sexual, physical and emotional abuse within residential schools was pervasive. Aboriginal children who attended residential schools were taught to hate themselves and their culture, history, languages and ways of life (Milloy, 1999, p. 299). The residential school system directly disrupted the transference of parenting skills from one generation to the next, which led many survivors of the system to struggle to raise their own children (Milloy, 1999, p. 299). Three or four generations of students were subjected to an official policy which called for the isolation of students from their families and communities, and within the schools, from their friends and siblings (Fournier & Crey, 1997, p. 56). Currently, there are an estimated 35,000 survivors of the residential school system living in British Columbia (Provincial Health Officer, 2002).

Today intergenerational trauma, defined as the transmission of a collective emotional and psychological injury over the lifespan and across generations among Aboriginal people, continues to affect the health and well-being of young men and women (RCAP, 1996, vol 3, ch 2; Yellow Horse & Brave Heart, 2004).

Residential schools, the child welfare system and HIV risk

The era of the residential school system was intersected by another era of assimilationist strategy aimed at Aboriginal children. This period is referred to as the “Sixties Scoop,” as tens of thousands of Aboriginal children were removed from their families and placed in non-Aboriginal homes (Sinclair, 2007). Beginning in 1951, the federal government delegated the health, welfare and educational services of Aboriginal people to each province. Economic incentives were provided to child welfare agencies for each child apprehended; conversely, basic housing and childcare were not available to
Aboriginal families (Fournier & Crey, 1997, pp. 82-84). By the late 1960s Aboriginal children comprised 30 to 40 percent of all legal wards, as compared to one percent in the late 1950s at a time when Aboriginal children comprised only 4 percent of the national population (Fournier & Crey, 1997, p. 83). Currently in BC, an estimated 49% of children under government care and 41% of youth in detention centres are estimated to be Aboriginal (Latimer & Foss, 2004; Ministry of Health, 2006), leading to further experiences of loss, confusion and abandonment among Aboriginal young people (Fournier & Crey, 1997, p. 81).

It has yet to be determined to what extent the intergenerational effects of the residential school and foster care systems relate to the rate of HIV infection among young Aboriginal men and women. It is apparent that the rapidly increasing rates of HIV and HCV infection among Aboriginal young people in Canada must be seen as a reflection of the complex effects of social dislocation, poverty, addiction, and human rights violations that began over a century ago.

HIV prevalence among Aboriginal men and women in Canada and gender differences

National HIV/AIDS surveillance data (2005) indicated Aboriginal people in Canada were becoming infected with HIV at a rate 2.8 times higher than non-Aboriginal people (Public Health Agency of Canada, 2006). Further, although Aboriginal people compose only 3.3% of the population in Canada, about 7.5% of all prevalent HIV cases were among Aboriginal persons (3,600 to 5,100 cases). The main HIV exposure category for Aboriginal people was 59% intravenous drug use (IDU), compared to 27% attributed to IDU among non-Aboriginal people. What is more, Aboriginal youth were infected with HIV at a younger age than non-Aboriginal people. Between 1998 and 2005, 32% of
new positive HIV test reports were among Aboriginal youth (under thirty years), as compared to 21% among non-Aboriginal people. In a recent study conducted in Vancouver, Aboriginal young people (ages 13 to 24 years) who used injection drugs, Aboriginal young people became HIV positive at more than twice the rate of non-Aboriginal participants during the same time period (C. L. Miller et al., 2006).

National HIV/AIDS surveillance data is also indicating that Aboriginal women in Canada are disproportionately affected by HIV when compared to non-Aboriginal women. Between 1998-2005, Aboriginal women in Canada comprised 47.4% of all HIV positive test reports among Aboriginal people, compared to 20.5% among non-Aboriginal peoples in the Canadian provinces where ethnicity is reportable (excluding the provinces of Quebec and Ontario) (Public Health Agency of Canada, 2006). For Aboriginal women, injection drug use (IDU) was reported as the main mode of HIV transmission (65%), followed by heterosexual transmission (34%). Whereas some factors related to the transmission of HIV to women are known, basic and behavioural research efforts addressing sex and drug related vulnerabilities among young Aboriginal women who use drugs are seriously lacking. At a time when Indigenous women’s vulnerability to HIV infection is becoming known worldwide (CDC, 2005; Wright, Giele, Dance, & Thompson, 2005), a better understanding of the processes and factors that cause drug related harm among young Aboriginal women in industrialized countries is urgently required.

**Purpose of Study**

Concerns over the lack of available data prompted the initiation of a new two-city cohort study to address the specific HIV-related vulnerabilities of Aboriginal young
people who use injection and non-injection illegal drugs (defined here as “at-risk”). The study is now called the Cedar Project. To our knowledge, this is the only prospective study of young “at risk” Indigenous peoples of its kind in North America. The study is located in Prince George, a forestry and mining town in the northern interior of British Columbia, and in Vancouver’s Downtown Eastside. Historically much of HIV research, particularly with people who use drugs, has assumed a sex and gender blind stance. Therefore the following study was also driven by a need to better understand the relationship between gender (defined in this paper as female vs male) and HIV infection. The purpose of this study is to compare sociodemographics, drug use patterns, injection practices, sexual experiences, and HIV and HCV prevalence between young Aboriginal men and women using illegal drugs in two urban settings. In this study, Aboriginal ethnicity is based upon self-reported identification as a descendent of the First Peoples of Canada, and is inclusive of status and non-status First Nations, Métis and Inuit (for details on the definitions see RCAP, 1996, pp. 1-22, Vol.1).

2.2 Methods

Ethics

The Cedar Project study followed the guidelines provided in the Canadian Tri-Council Policy Statement: Ethical Conduct for Research Involving Human Subjects, and paid particular attention to section 6.0 pertaining to research involving Aboriginal subjects. According to the 2001 census, nearly one million Canadians, or 3.3% of the Canadian population, identified themselves as Aboriginal; a category the Canadian government uses to identify all descendents of the first people of Canada, including status and non-status First Nations, Métis and Inuit (Statistics Canada, 2001). Our Aboriginal
collaborators, including Aboriginal AIDS Service Organizations, were involved in the conception, design and implementation of the Cedar project. The Cedar Project Partnership reviewed the results of this analysis and approved this manuscript for publication. The study was further approved by the University of British Columbia/Providence Health Care Research Ethics Board.

**Study design and sample**

This analysis used baseline data from the Cedar Project, an ongoing prospective cohort study involving Aboriginal young people who reside in Vancouver and in Prince George and who reported recently either smoking or injecting illegal drugs. Eligibility criteria stipulate that participants were between 14 and 30 years of age, identify as Aboriginal, and have smoked illegal drugs in the last week or injected illegal drugs in the last month, including crystal methamphetamine, crack-cocaine, heroin or cocaine. Saliva screens (ORALscreen®, Avitar Onsite Diagnostics) were used to confirm drug use. Participants were eligible to participate if they had reported residing in the Vancouver or Prince George regions respectively, and provided written informed consent. Aboriginal ethnicity is based upon self-reported identification as a descendent of the First Peoples of Canada, and is inclusive of status and non-status First Nations, Métis, and Inuit (for details on the definitions see RCAP, 1996, pp. 1-22, Vol.1). Participants in both cities were recruited through referral by health care providers, community outreach, and by word of mouth. The majority of participants in the study were recruited by word of mouth (39%) and outreach staff (32%).

All participants met with one Aboriginal study coordinator who explained procedures, sought informed consent and confirmed study eligibility. In the consenting
process, all participants were informed of the limitations of research confidentiality including communicable disease reporting, in cases of self-harm, and child welfare legislation regarding current sexual abuse. From the inception of the research process it was made clear by all involved that study participants must have the opportunity to be interviewed by an Aboriginal person. Since confidentiality issues are a concern, particularly in smaller communities, participants are always given a choice to be interviewed by someone they trust from the research team. Aboriginal study personnel were involved in the design and pilot of the research instrument, including addressing sensitivities related to historical trauma. Venous blood samples were drawn and tested for HIV and hepatitis C antibodies and interviewers were blinded to the HIV and hepatitis C status of the subjects. All eligible participants had private interviews including pre- and post-test counseling with trained nurses; participants were requested to return for their HIV/HCV sero-status test result at which time referral for HIV/AIDS and hepatitis C care was provided.

We actively encouraged young people to return for their results, however receiving a result was not a requirement of participating in the study. If a young person indicated in the pre-test counseling process that they wanted their test result back, we let the research nurse makes an appointment around the approximate date when the results were in. Personnel did extensive street based outreach to let participants know when to return for their test results. Participants were given a twenty dollar stipend at each study visit as compensation for their time and to facilitate transportation. Study personnel worked actively with the young people involved in the study in securing the kinds of physical and emotional support they requested. Requests for help included access to
traditional healing support, addictions treatment and secure housing. All participants who completed the baseline questionnaire from October 2003 to July 2005 were included in this analysis.

**Measures**

Point estimates of HIV and HCV prevalence and 95 percent confidence intervals were obtained for females vs males, and estimates were stratified by injection drug use. Variables of interest included socio-demographic characteristics, sexual experiences, drug use patterns, and utilization of services. We obtained information related to the legacy of abuse and intergenerational trauma (Fournier & Crey, 1997) such as ever having been in the foster care system (yes vs. no) and having biological parents attend residential schools (yes vs. no/unsure). “Sexual abuse” was defined for participants as any sexual activity that participants were forced or coerced into (including childhood sexual abuse, molestation, rape and sexual assault). Interviewers gave this definition to participants prior to asking the question: “Have you ever been forced to have sex against your will and/or been molested” (yes vs. no, unsure/can’t remember classified as missing). Participants were also asked if they had attempted to commit suicide in their lifetime and/or in the prior six months (yes vs. no).

Stable housing was defined as living in a house or apartment. Unstable housing was defined as living arrangements that included single room occupancy hotels (SROs), transitional living arrangements (‘couch surfing’), and homelessness. Living on the street was defined as having lived on the streets for at least three nights during your lifetime (yes vs. no), and ever being incarcerated was defined as ever being placed in prison or jail overnight or longer (yes vs. no). Sexual risk variables included unsafe sex with regular
and casual sex partners, and with clients. Regular partners were defined as those partners with whom the sexual relationship lasted for over three months. Casual partners were defined as those partners with whom sexual relationships lasted less than three months. Unsafe sex was defined as not always using a condom during anal and/or vaginal sex. Clients were defined as those partners with whom sex was traded for drugs, food, or money.

As our sample contained a greater proportion of females who reported injecting drugs, injection drug use variables were restricted to 298 participants who reported injecting drugs in their lifetimes (yes vs. no). Opiate use was defined by the use of any of the following injection drugs: morphine, heroin, methadone, Talwin® (Pentazocine with Naloxone) and/or Dilaudid® (hydromorphone hydrochloride). Bingeing was defined for users as periods where drugs were injected more frequently than usual. All participants were asked if they had ever overdosed (yes vs. no) and if they had ever injected drugs (yes vs. no). High risk injection variables included ever needing help injecting, having needed help injecting in the past 6 months, ever having used a syringe someone else had already used, and using a syringe someone else had used in the past six months (each yes/no).

**Univariate Analysis**

Initially a descriptive analysis was performed for the entire study population. Pearson's chi-square and Fisher's exact test (if one or more expected counts were less than five) were applied to compare categorical variables, while Wilcoxon rank sum test was used to compare continuous variables. SPSS (Windows 11.0 version) and S-plus (Windows 6.2 version) statistical software were used to run these analyses. Unadjusted
estimates and 95% confidence intervals (CIs) were obtained using logistic regression analysis for the association of females vs males.

Multivariable Analysis

The multivariable analysis was restricted to participants who reported ever injecting. Stepwise logistic regression was utilized to model independent variables associated with HIV infection. To investigate the role of gender, the gender variable was forced into the models which were then built in a stepwise fashion. The other variables included: being located in Vancouver as opposed to Prince George, duration of injection (as a continuous variable), and sexual abuse. Interaction terms were explored, but none were significant in the multivariable model.

2.3 Results

Demographics and traumatic experiences

The median age at study enrollment was 23 years for both men and women (Table 1). More females were found to be married/common law rather than single, 30% vs. 15% in males, p<0.001, and females were nearly twice as likely to identified as bisexual or gay, 15% vs. 8% in males, p=0.007. Legally paid employment in the last six months was lower among females, 7% as compared to 24% among males (p<0.001), although employment was low overall. Having been on welfare was 53% among women and 45% among men, p=0.045.

In terms of traumatic life events, a higher proportion of women had ever attempted suicide, 42% compared to 31% among men (p=0.008), although the proportion was remarkably high overall. A significantly higher proportion of men had been in prison or detention centre overnight or longer in the previous six months, 29% vs. 16% in
females, \( p<0.001 \), and significantly more males had been detained in their lifetime, 89% as compared to 70% of females (\( p<0.001 \)). As shown in table 1, 70% of women had been at some point been sexually abused, while the same was true for 29% of young men (\( p<0.001 \)). The median age of first sexual abuse was six years old for both young men and women.

**Sex work, unsafe sex, regular vs casual partners**

More women had been paid for sex at one point in their lives, 71% compared to 18% for men (\( p<0.001 \)), and the median age for first paid sex was 16 years old for females, range = (1-15) as opposed to 17 for males, range = (1-19). Sex work in the last six months was also significantly higher among young women (Table 2). The median number of clients in the last six months was more than six times higher for young women than for young men reporting sex work (Table 2). Significantly more women had regular partners of the opposite sex, while unprotected sex with regular partners was high for both men and women, 84% for women and 81% for men (\( p=0.534 \)). Significantly more men had casual partners of the opposite sex, 50% vs 37% in females (\( p<0.001 \)), while the proportion who had unsafe sex with either casual or regular partners was not significantly different between men and women.

**Injection drug use**

Table 3 shows drug use patterns related to injection drug use, and was therefore restricted to participants who reported that they had ever injected (\( n=298 \)). Among drug use patterns we found that frequent use of any injection category was higher among females than among males (58% in females as compared to 37% in males, \( p<0.001 \)). The single drug category where young men reported significantly higher drug use was
frequent intravenous (IV) crystal methamphetamine, although use was low overall at 11% as compared to 4%, p=0.013. Frequent opiate use was significantly higher among females at 47% as compared to 19%, p<0.001, as was frequent speedball use (15% compared to 2%, p<0.001). Frequent injection cocaine use was found to be slightly higher among females (29% as compared to 22%, p=0.160) although no statistically significant difference was detected.

There was no significant difference in needle borrowing, lending, reported barriers to access, or use of fixed needle exchange sites in the last six months between men and women (Table 3). Use of the mobile needle exchange in the past six months was found to be higher among young women, 50% as compared to 31% in males (p=0.004). Significantly more women reported drug overdose in the last six months, and significantly more women had ever been on methadone maintenance treatment or were currently on methadone maintenance therapy. There was no significant difference detected in the proportion who had needed help injecting or who binged on injection drugs.

**HIV and HCV prevalence by gender**

HIV and HCV were significantly more prevalent among females in the study (Table 4) with the exception of HCV among non-injectors which was occurred in similar proportions among both men (3.5%) and women (3.4%), p=1.000. HIV was 4.3% among males compared to 13.1% in among females, p<0.001 and HCV was 25.4% among males compared to 43.6% in all females, p<0.001. When the analysis was restricted to young people who reported injection drug use (IDU), HIV prevalence was 8.5% among males involved in IDU and 16.7% in females involved in IDU, p=0.037, while HCV was 50.4%
among males involved in IDU and 65.4% among females involved in IDU, \( p=0.010 \).

Among non-injectors, HIV prevalence was eight times higher among females (6.5%) compared to males (0.7%), \( p=0.014 \).

**Multivariable analysis**

Multivariable results are presented in Table 5. Using forward stepwise logistic regression, living in Vancouver vs Prince George, increased duration of injection drug use as a continuous variable in months, and having been sexually abused were independently associated with HIV infection. These variables were used to investigate the association of gender with HIV seropositivity. When the model was built in a stepwise fashion beginning with gender, being female was significantly associated with HIV seropositivity as seen in model 1. However, being female was not significantly associated with HIV in the final model (model 3) suggesting that the bivariate association of gender with HIV is confounded. The final model included location, duration of infection and history of sexual abuse as significant independent predictors of HIV infection. Inspection of the three models in Table 5 demonstrates that inclusion of location and duration of infection did not dramatically alter the odds ratio estimate for gender. However, when sexual abuse was added to the model, being female showed a reduced effect on HIV prevalence (model 3). Interactions terms were tested in the model, specifically for being female and having experienced sexual abuse, but no interactions were found.

**2.4 Discussion**

In this study we found that young Aboriginal women were three times more likely to be HIV positive as compared to men. When the analysis was restricted to young
people who had ever injected at baseline, women were still twice as likely to be HIV positive. In addition, two-thirds of young women who injected drugs were HCV positive at baseline, a 30% higher prevalence than among young men. This is despite the fact that women enrolled in the study were slightly younger at baseline. We find it alarming that, with the exception of crystal methamphetamine, young Aboriginal women were more likely to report more frequent drug use for nearly every drug use category examined in univariate analysis.

The failure of gender (female vs male) to appear in the final model might lead some to discount the importance of gender in this context. However, an uncritical use of gender in models may not highlight the significance of women’s vulnerability to HIV. The failure of gender to appear in model 3 simply suggests that its role in this instance is confounded by other factors. Our data suggest that the increased risk of HIV among women is mediated by their far greater risk of antecedent sexual abuse, which in turn leads to greater HIV risk behaviours. The modeling does not eliminate gender as an important consideration in understanding HIV risk; rather, it suggests the manner by which women acquire their greater vulnerability to the virus.

Sexual abuse in Aboriginal communities was reported to be rare prior to colonization as moral codes and mores prohibited its occurrence (Fournier & Crey, 1997; Hylton, 2002, p. 7). In the aftermath of European colonization Aboriginal cultural principles that fostered a sacredness of sexuality were dismantled, impacting preventative values and tradition (Chester, Robin, Koss, Lopez, & Goldman, 1994). Certainly, sexual abuse is one of the most disastrous corollaries of historical trauma among Aboriginal people; and for many, the “cultural buffers” (Walters & Simoni, 2002, p. 523) that
mediate vulnerability have eroded, increasing potential for negative health and social outcomes including HIV infection (Barlow, 2003). It is no coincidence that reports of sexual violence among Indigenous women in Canada, the US and Australia have reached epidemic proportions (Brownridge, 2003; Evans-Campbell, Lindhorst, Huang, & Walters, 2006; Raphael, Swan, & Martinek, 1998; Walters & Simoni, 2002). Aboriginal women in Canada have been both more likely than men to experience sexual abuse in their home communities as well as in the child welfare system (Fournier & Crey, 1997; Milloy, 1999). Much of the established research addressing the health care needs of survivors of sexual trauma have focused upon high rates of substance use and abuse, traumatic depression, post traumatic stress syndrome and injection and sexual risk exhibited later in life (Barker-Collo, 1999; Kue Young & Katz, 1998; Libby, Orton, Novins, Beals, & Manson, 2005; M. Miller, 1999; Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997; Wyatt, Myers, & Williams, 2002). These findings have clear implications for clinicians, outreach workers and the criminal justice system. Many Aboriginal AIDS service organizations recognize the importance of ‘culture as intervention’ and support intervention programming based upon histories of resilience and resistance (Duran & Walters, 2004; Majumdar, Chambers, & Roberts, 2004). However, the high levels of trauma reported by young women involved in this study, namely overdose, sexual abuse, and attempted suicide, are an indication that many communities are still grappling with the multigeneration effects of both the residential school and child welfare system. Some suggest that unless Aboriginal leadership in Canada make concerted efforts to break the silence and shame related to the legacy of abuse, the cycles of addiction and pain exhibited among young people, particularly girls,
will continue unabated (Ross, 2006). A significant increase in resources to provide intensive healing programs for victims, offenders and their families must be supported by leadership, chief and council, community based health representatives (CHRs), addiction specialists, crown attorneys and the RCMP (Aboriginal Peoples Collection, 1997; Fournier & Crey, 1997; Ross, 2006).

Young women in this study were almost four times more likely to report daily opiate use, and seven times more likely to report daily speedball use. Extant literature suggests that drug dependent women use opiates in order to mitigate the effects of physical and emotional pain associated with early abuse experiences and survival sex work (C. L. Miller et al., 2002). The HIV epidemic that has occurred in Vancouver among people who use injection drugs has been related to needle sharing which is exacerbated by frequent use of injection cocaine (Tyndall et al., 2003). However, it is important to note that there are HIV related vulnerabilities related to opiate addiction (Connors, 1994). The pain associated with withdrawal in addition to the trauma memories which emerge as the numbing effect of drug use subsides, make it difficult for drug dependent women to protect themselves against HIV (Connors, 1994). Additionally, women are more vulnerable within gendered power relationships when they are going through withdrawal as they are more likely to accept sex without a condom and inject second on the needle (Spittal et al., 2002). The gendered contexts of injecting relationships often include the injecting male controlling sexual relations, cash, drug acquisition, preparation and injection (Amaro, 1995).

It is disconcerting that despite the significant proportions of women who reported using opiates in the last six months, only a fraction of the women reported
currently accessing methadone maintenance therapy (MMT). MMT is the single most
important opiate addiction treatment that has been demonstrated to prevent HIV infection
among people who are retained in programs (Kerr, Marsh, Li, Montaner, & Wood, 2005).
Despite expansions in the availability of MMT in BC in 2000, physicians in public health
clinics in Vancouver have recently reported an inability to meet patient demand
(CCENDU, 2007). Increased efforts should be made to determine other barriers of MMT
access among Aboriginal women and to explore alternative therapies for opiate addiction
where MMT is not successful. Barriers for accessing methadone and other recovery
services for Aboriginal women have included fear by women that their children would be
apprehended if they seek treatment (Poole & Trainor, 2000), lending support for the idea
that gender specific treatment facilities need to accommodate mothers and their children
(Benoit, Carroll, & Chaudhry, 2003).

Although this analysis found that young Aboriginal women were at higher risk
compared to young men, important findings regarding men’s vulnerability must be noted.
Any discussion of Aboriginal men’s health has been deemed inadequate without attention
to the issue of incarceration (Krieg, 2006). Incarceration of Aboriginal men can inflict
economic, social and emotional deprivation on their children and families in cycles of
incarceration and re-incarceration (Ross, 2006). Approximately one-third of young men
in this study had been in jail, prison or detention centre overnight or longer in the past six
months, nearly double that of women in the study. Further, although the proportions are
high overall, a significantly higher proportion of men compared to women had been
detained by police in their lifetime (M:F = 89%:70%). High rates of incarceration among
Aboriginal men have been linked to intergenerational effects of residential schools
including widespread hopelessness and lack of opportunities, as well as hostility and violence within Aboriginal families and communities (Fournier & Crey, 1997; Milloy, 1999; Ross, 2006). In addition to difficulty in sustaining and finding work, exposure to incarceration itself has been suggested increase vulnerability among young people to further criminal involvement as well as further pain, anger, grief, and loss of contact with and isolation from children and families (Krieg, 2006). It is recommended that future research focus on incarceration itself as a traumatic exposure in both young Aboriginal men and women’s lives similar to other traumatic exposures in Aboriginal people’s lives (Drucker, 2004).

The HIV epidemic among Aboriginal people in Canada has been predominantly associated with injection drug use, however we found that among Cedar Project participants who had never injected drugs women had significantly higher HIV infection compared to men (M:F = 0.7%:6.5%). Although the HIV prevalence is comparatively lower than among participants who reported injection drug use, this finding suggests increased heterosexually acquired HIV among young Aboriginal women. We found significantly more young Aboriginal women in this study reported having regular partners of the opposite sex and over 80% reported unsafe sex with their regular partners. The association of regular partnership with low condom use has been found among both men and women in the general population (PHAC, 1999), and in a systemic review of condom use among Aboriginal people (Devries, Free, & Jategaonkar, 2007). However, it should not be assumed that young Aboriginal women in this study are negotiating condom use with their regular partners in consensual circumstances (G. E. Wyatt et al., 2002). Established literature indicates that the negotiating power of women
for condom use is often constrained by gendered power dynamics and numerous contextual factors such as the fear of anger, violence or abandonment from their male partners (Amaro, 1995). Violence in relationships greatly reduces women’s ability to make safe sex choices with their regular partners and compounds existing factors including antecedent sexual abuse, unstable housing and poverty (Vernon, 2001). Sexual health programming and HIV prevention initiatives often focus on consensual sexual circumstances, ignoring the effects of early sexual abuse and sexual violence in relationships on sexual decision-making (Amaro, 1995; Craib et al., 2003). For young women, any sexual health programming must take into account the context of decision making within women’s lives and set realistic goals.

Aboriginal AIDS service providers have suggested that drug dependence among young people is a means to cope with the effects of intergenerational and lifetime trauma (Canadian Aboriginal AIDS Network [CAAN], 1998). The polydrug use presented in this study can be seen as self-medication for painful traumatic life events, including as we have highlighted in this paper, sexual abuse. Working through the cultural shame associated with abuse, whether through Aboriginal approaches to addiction and sexual abuse healing or by other means need to be prioritized. These programs must help young clients learn about the historical experiences of Aboriginal people and that the abuses they experience are not their fault (DeBruyn, Chino, Serna, & Fullerton-Gleason, 2001). Healing should always remain in the control of survivors of sexual abuse, and further consultation with young people is necessary to determine the types of supports they prefer (McEvoy & Daniluk, 1995). Community-based Aboriginal approaches to healing have prioritized the following unique approaches. They address the underlying causes of
drug dependence as related to the historical experiences of Aboriginal people in Canada; they prioritize sustaining and maintaining connections among individuals, families and community members; they promote both traditional and contemporary activities, including contact with elders (Chansonneauve, 2007).

While ours is not a probability sample, the significantly higher percentage of females who had injected in their lifetime is a cause for concern (M:F = 47%:65%). To dispel the notion that the increased HIV-related vulnerabilities among women are related to an oversampling of women who ever injected, the analyses of drug use patterns, HIV and HCV prevalences, and the final model were restricted to both men and women who reported injecting drugs. However this does not preclude the likelihood that among this young urban population, injection drug use is higher among women, a difference supported by previous research among young Aboriginal people in Vancouver (C. L. Miller et al., 2006). Recently in response to the increased HIV/HCV prevalence in the north of BC, the Northern Aboriginal HIV/AIDS Task Force implemented a mobile needle exchange van (Northwest Tribal Treaty Nations, 2005). Further evaluation is necessary to ensure that women surviving on the streets in this northern community are accessing this critically important harm reduction initiative.

Our study makes several important contributions to the field of community-based HIV and drug dependence research, gender studies, and Aboriginal health. Through inclusion of a large sample of Aboriginal young people who have used illicit substances recently (n=543) in two Canadian cities, this study demonstrates drastic disparities in HIV and HCV prevalence, harmful injection patterns, and sexual abuse histories between young Aboriginal men and women. As a probability sampling framework is not available
for the population under study, recruitment for the Cedar study was non-random. However this methodology has been recognized as one of the most viable ways to reach mobile participants who have no fixed address (Faugier & Sargeant, 1997). Our study was based on self-report, participants may under-report behaviours that are illegal or stigmatizing. On the other hand, self-reports of drug use have been found to be fairly reliable and valid when participants feel that confidentiality is assured and that they are not judged. As study participants were aware of the duty of the interviewer to report sexual abuse for those under the ages of 18, there may have been specific under-reporting of sexual abuse in the under 18 age group. However, no gender differences in sexual abuse prevalence were found between men and women under 18, therefore we do not believe this affects the direction of the associations. Finally, as this is an observational study, we are unable to determine the temporality of variables associated with HIV seropositivity, although it is most certain that sexual abuse preceded HIV infection as the median age of first abuse is six-years-old.

We recognize other limitations of the data. Due to the limited focus of the population under study (Aboriginal youth who use injection and non-injection drugs), generalizations cannot be made to the general population of Aboriginal young people who reside in urban settings. As no observations were made of non-participants, non-response bias is possible. In particular, snowball methodology (recruitment through word-of-mouth) has been found to bias towards individuals who have many interrelationships and miss individuals who are socially isolated (Faugier & Sargeant, 1997). One limitation of the methodology of this study is that the comparison group of men are an extremely vulnerable group themselves. Therefore differences that do not
obtain statistical significance should not be seen as lacking importance; rather showing that this population of young people is experiencing similar conditions.

In summary, this study highlights that among a cohort of young Aboriginal people who use injection and non-injection street drugs, women were significantly more likely to be HIV positive among both people who use injection drugs and those who do not. Among young people who injected, HCV was significantly more prevalent among women. The high rate of lifetime sexual abuse (70%) among young women in the Cedar Project is one of the most telling traumatic life experiences in this cohort, particularly in light of its association with HIV infection. As sexual abuse at a median age of 6 years old is more commonly experienced by young women, and is associated with HIV infection, gender specific trauma-driven harm reduction and treatment programs are urgently required. Further research and community consultation is necessary in order to determine how best Aboriginal women who are surviving sexual abuse can be afforded the opportunity to provide leadership in the development of programming for their healing.
Table 2.1: Comparisons of demographic characteristics and traumatic events between all female (n=260) and male (n=278) Cedar participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male n (%)</th>
<th>Female n (%)</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age at enrolment visit (Range)</td>
<td>23 (13-30)</td>
<td>23 (14-30)</td>
<td>--</td>
<td>0.017</td>
</tr>
<tr>
<td>Located in Prince George vs Vancouver</td>
<td>129 (46)</td>
<td>111 (43)</td>
<td>0.860 (0.61, 1.21)</td>
<td>0.387</td>
</tr>
<tr>
<td>Married/Common Law vs. Single</td>
<td>41 (15)</td>
<td>76 (29)</td>
<td>2.23 (1.47, 3.38)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bisexual or gay (two-spirited)</td>
<td>21 (8)</td>
<td>38 (15)</td>
<td>2.07 (1.18, 3.63)</td>
<td>0.010</td>
</tr>
<tr>
<td>Did not complete high school</td>
<td>183 (77)</td>
<td>173 (82)</td>
<td>1.41 (0.89, 2.41)</td>
<td>0.142</td>
</tr>
<tr>
<td>Unstable Housing (previous six months)</td>
<td>138 (52)</td>
<td>108 (44)</td>
<td>0.74 (0.52, 1.04)</td>
<td>0.085</td>
</tr>
<tr>
<td>Ever been on the street (&gt;3 nights)</td>
<td>197 (71)</td>
<td>166 (64)</td>
<td>0.72 (0.50, 1.03)</td>
<td>0.071</td>
</tr>
<tr>
<td>Employed in last 6 months</td>
<td>66 (24)</td>
<td>19 (7)</td>
<td>0.25 (0.14, 0.42)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>On welfare last 6 months</td>
<td>126 (45)</td>
<td>140 (54)</td>
<td>1.41 (1.0, 1.98)</td>
<td>0.048</td>
</tr>
<tr>
<td>Ever detained by police</td>
<td>248 (89)</td>
<td>181 (70)</td>
<td>0.28 (0.18, 0.44)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Been in jail, prison or detention centre overnight or longer (previous six months)</td>
<td>76 (27)</td>
<td>41 (16)</td>
<td>0.50 (0.33, 0.77)</td>
<td>0.001</td>
</tr>
<tr>
<td>Ever taken from biological parent</td>
<td>170 (61)</td>
<td>176 (68)</td>
<td>1.33 (0.93, 1.90)</td>
<td>0.114</td>
</tr>
<tr>
<td>Median age first taken from biological parents (range)</td>
<td>4 (1-16)</td>
<td>5 (1-17)</td>
<td>--</td>
<td>0.474</td>
</tr>
<tr>
<td>Either biological parent ever attended residential school</td>
<td>132 (48)</td>
<td>112 (43)</td>
<td>0.83 (0.59, 1.16)</td>
<td>0.288</td>
</tr>
<tr>
<td>Ever attempted suicide</td>
<td>85 (31)</td>
<td>109 (42)</td>
<td>1.63 (1.14, 2.33)</td>
<td>0.007</td>
</tr>
<tr>
<td>Ever seriously thought about taking own life</td>
<td>142 (51)</td>
<td>134 (52)</td>
<td>1.02 (0.73, 1.43)</td>
<td>0.915</td>
</tr>
<tr>
<td>Ever been forced to have sex against will</td>
<td>78 (29)</td>
<td>178 (70)</td>
<td>5.63 (3.87, 8.10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median age of first sexual abuse and range</td>
<td>6 (1 - 19)</td>
<td>6 (1 - 25)</td>
<td>--</td>
<td>0.445</td>
</tr>
<tr>
<td>Frequent crack use (last 6 months)</td>
<td>128 (46)</td>
<td>174 (67)</td>
<td>2.37 (1.67, 3.36)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Injection drug use (ever)</td>
<td>130 (47)</td>
<td>168 (65)</td>
<td>2.08 (1.47, 2.94)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

1 Analysis restricted to participants aged 19 or older, n=447.
2 Participants who answered unsure were grouped as "no" answers.
Table 2.2: Comparisons of sexual experiences between all female (n=260) and male (n=278) Cedar participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male n (%)</th>
<th>Female n (%)</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever been paid for sex</td>
<td>48 (17)</td>
<td>184 (71)</td>
<td>11.50 (7.63, 17.33)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Paid for sex (last 6 months)</td>
<td>20 (7)</td>
<td>152 (59)</td>
<td>18.18 (10.83, 30.52)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median age for first paid sex (Range)</td>
<td>17 (12-26)</td>
<td>16 (10-28)</td>
<td>--</td>
<td>0.020</td>
</tr>
<tr>
<td>Median number of clients in last 6 months (IQR)</td>
<td>15 (2-168)</td>
<td>98 (24-480)</td>
<td>--</td>
<td>0.014</td>
</tr>
<tr>
<td>Unsafe sex with client in past 6 months</td>
<td>2 (17)</td>
<td>17 (14)</td>
<td>0.82 (0.17, 4.06)</td>
<td>0.537 ²</td>
</tr>
<tr>
<td>Regular partner of opposite sex</td>
<td>100 (53)</td>
<td>159 (67)</td>
<td>1.77 (1.20, 2.62)</td>
<td>0.004</td>
</tr>
<tr>
<td>Unsafe sex with regular partners</td>
<td>79 (31)</td>
<td>132 (84)</td>
<td>1.23 (0.64, 2.37)</td>
<td>0.549</td>
</tr>
<tr>
<td>Regular partner you knew injected drugs (last 6 months)</td>
<td>27 (27)</td>
<td>40 (27)</td>
<td>0.98 (0.55, 1.73)</td>
<td>0.941</td>
</tr>
<tr>
<td>Regular partner you knew was HIV positive (last 6 months)</td>
<td>1 (1)</td>
<td>9 (7)</td>
<td>6.02 (0.75, 48.44)</td>
<td>0.051</td>
</tr>
<tr>
<td>Casual partner of opp sex</td>
<td>111 (58)</td>
<td>87 (37)</td>
<td>0.42 (0.28, 0.61)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Unsafe sex with casual partner</td>
<td>53 (50)</td>
<td>33 (38)</td>
<td>0.67 (0.38, 1.18)</td>
<td>0.126</td>
</tr>
</tbody>
</table>

¹ Proportions related to sex with either client, regular partners, or casual partners were restricted to participants who reported having each respective type of partner or clients in the last six months
² Fisher’s exact test used to calculate p-value
Table 2.3: Comparisons of substance use patterns between female (n=170) and male Cedar participants (n=131) restricted to participants who reported they “ever injected drugs”

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male n (%)</th>
<th>Female n (%)</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age</td>
<td>25 (15-30)</td>
<td>24 (14-30)</td>
<td>--</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median duration of injection in months (IQR)</td>
<td>30 (3-72)</td>
<td>36 (12-84)</td>
<td>1.00 (1.00, 1.01)</td>
<td>0.494</td>
</tr>
<tr>
<td>Median age of first injection (IQR)</td>
<td>18 (16-23)</td>
<td>17 (15-20)</td>
<td>--</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily IV cocaine use (previous six months)</td>
<td>29 (22)</td>
<td>49 (30)</td>
<td>1.47 (0.87, 2.50)</td>
<td>0.153</td>
</tr>
<tr>
<td>Daily IV speedball</td>
<td>3 (2)</td>
<td>25 (15)</td>
<td>7.40 (2.18, 25.10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily IV opiate use (morphine, heroine, methadone, Talwin and/or Dilaudid)</td>
<td>25 (19)</td>
<td>78 (46)</td>
<td>3.64 (2.14, 6.19)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily IV crystal use (previous six months)</td>
<td>14 (11)</td>
<td>6 (4)</td>
<td>0.31 (0.11, 0.82)</td>
<td>0.013</td>
</tr>
<tr>
<td>Daily use of any single injection drug category last six months</td>
<td>49 (38)</td>
<td>98 (58)</td>
<td>2.31 (1.45, 3.70)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Runs or binges with injection drugs in last 6 months</td>
<td>23 (18)</td>
<td>30 (18)</td>
<td>0.96 (0.52, 1.77)</td>
<td>0.971</td>
</tr>
<tr>
<td>Ever overdosed</td>
<td>44 (34)</td>
<td>70 (42)</td>
<td>1.40 (0.87, 2.25)</td>
<td>0.168</td>
</tr>
<tr>
<td>Overdosed past six months</td>
<td>5 (4)</td>
<td>21 (13)</td>
<td>3.55 (1.30, 9.69)</td>
<td>0.009</td>
</tr>
<tr>
<td>Ever needed help injecting</td>
<td>72 (71)</td>
<td>97 (69)</td>
<td>1.56 (0.91, 2.66)</td>
<td>0.738</td>
</tr>
<tr>
<td>Needed help injecting (last six months)</td>
<td>32 (32)</td>
<td>58 (43)</td>
<td>1.56 (0.91, 2.66)</td>
<td>0.078</td>
</tr>
<tr>
<td>Needle lending (last 6 months)</td>
<td>13 (13)</td>
<td>27 (19)</td>
<td>1.31 (0.42, 4.11)</td>
<td>0.644</td>
</tr>
<tr>
<td>Ever borrowed needle</td>
<td>48 (49)</td>
<td>55 (39)</td>
<td>0.67 (4.00, 1.14)</td>
<td>0.137</td>
</tr>
<tr>
<td>Needle borrowing (last 6 months)</td>
<td>21 (21)</td>
<td>30 (21)</td>
<td>1.00 (0.54, 1.88)</td>
<td>0.990</td>
</tr>
<tr>
<td>Difficulty accessing clean needles</td>
<td>25 (25)</td>
<td>44 (31)</td>
<td>1.38 (0.77, 2.45)</td>
<td>0.278</td>
</tr>
<tr>
<td>On average, use the same rig more than once</td>
<td>44 (44)</td>
<td>53 (38)</td>
<td>0.77 (0.46, 1.30)</td>
<td>0.317</td>
</tr>
<tr>
<td>Mobile needle exchange use (last 6 months)</td>
<td>29 (30)</td>
<td>68 (50)</td>
<td>2.31 (1.33, 4.01)</td>
<td>0.003</td>
</tr>
<tr>
<td>Fixed needle exchange use (last 6 months)</td>
<td>54 (57)</td>
<td>90 (65)</td>
<td>1.42 (0.83, 2.43)</td>
<td>0.196</td>
</tr>
<tr>
<td>Daily visit of any needle exchange</td>
<td>24 (24)</td>
<td>44 (32)</td>
<td>1.45 (0.81, 2.60)</td>
<td>0.212</td>
</tr>
<tr>
<td>Ever been on methadone maintenance treatment</td>
<td>16 (12)</td>
<td>64 (39)</td>
<td>4.42 (2.41, 8.13)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Currently in alcohol or drug treatment program</td>
<td>29 (22)</td>
<td>38 (23)</td>
<td>1.06 (0.61, 1.82)</td>
<td>0.927</td>
</tr>
<tr>
<td>Variable</td>
<td>Male</td>
<td>Female</td>
<td>Odds Ratio (95% CI)</td>
<td>p-value</td>
</tr>
<tr>
<td>----------------------------------------------------------------</td>
<td>-------</td>
<td>--------</td>
<td>---------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Tried but failed to access drug treatment (last 6 months)</td>
<td>19 (15)</td>
<td>29 (17)</td>
<td>1.25 (0.67, 2.32)</td>
<td>0.557</td>
</tr>
<tr>
<td>Currently in methadone treatment</td>
<td>7 (5)</td>
<td>23 (14)</td>
<td>2.77 (1.15, 6.68)</td>
<td>0.018</td>
</tr>
</tbody>
</table>
Table 2.4: Prevalence of HIV and HCV infection among female and male Cedar project participants stratified by injection drug use

### HIV Prevalence (n=538):

<table>
<thead>
<tr>
<th>Group</th>
<th>Male Prevalence (%) [95% CI] (#Infected/Total #)</th>
<th>Female Prevalence (%) [95% CI] (#Infected/Total #)</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All participants</td>
<td>4.3 [2.5, 7.4] 12/278</td>
<td>13.1 [9.5, 17.7] 34/260</td>
<td>3.34 (1.69, 6.59)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Injectors (ever)</td>
<td>8.5 [4.8, 14.5] 11/130</td>
<td>16.7 [11.8, 23.0] 28/168</td>
<td>2.16 (1.03, 4.5)</td>
<td>0.037</td>
</tr>
<tr>
<td>Non-injectors (ever)</td>
<td>0.7 [0, 3.7] 1/148</td>
<td>6.5 [2.4, 13.7] 6/92</td>
<td>10.26 (1.21, 86.62)</td>
<td>0.014²</td>
</tr>
</tbody>
</table>

### HCV Prevalence (n=518):

<table>
<thead>
<tr>
<th>Group</th>
<th>Male Prevalence (%) [95% CI] (#Infected/Total #)</th>
<th>Female Prevalence (%) [95% CI] (#Infected/Total #)</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All participants</td>
<td>25.4 [20.5, 30.9] 68/268</td>
<td>43.6 [37.6, 49.8] 109/250</td>
<td>2.27 (1.57, 3.30)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Injectors (ever)</td>
<td>50.4 [41.8, 59.0] 63/125</td>
<td>65.4 [57.8, 72.3] 106/162</td>
<td>1.86 (1.56, 3.00)</td>
<td>0.010</td>
</tr>
<tr>
<td>Non-injectors (ever)</td>
<td>3.5 [1.1, 7.8] 5/143</td>
<td>3.4 [0.7, 9.6] 3/88</td>
<td>0.974 (0.23, 4.18)</td>
<td>1.000²</td>
</tr>
</tbody>
</table>

¹ Exact Binomial Confidence Interval
² Based on Fisher's Exact Test
<table>
<thead>
<tr>
<th></th>
<th>HIV Positive N (%)</th>
<th>HIV Negative N (%)</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR Model 1</th>
<th>Adjusted OR Model 2</th>
<th>Adjusted OR Model 3 (n=293)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>28 (72)</td>
<td>140 (54)</td>
<td>2.16 (1.03, 4.53)</td>
<td>2.15 (1.02, 4.52)</td>
<td>2.06 (0.95, 4.46)</td>
<td>1.55 (0.69, 3.49)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince George</td>
<td>10 (26)</td>
<td>114 (44)</td>
<td>reference</td>
<td>reference</td>
<td>reference</td>
<td>reference</td>
</tr>
<tr>
<td>Vancouver</td>
<td>29 (74)</td>
<td>145 (56)</td>
<td>2.28 (1.07, 4.87)</td>
<td>2.26 (1.05, 4.86)</td>
<td>2.30 (1.04, 5.07)</td>
<td>2.68 (1.19, 6.05)</td>
</tr>
<tr>
<td><strong>Median Duration of injection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Months (IQR)</td>
<td>84 (48 - 120)</td>
<td>24 (4 - 72)</td>
<td>1.02 (1.01, 1.02)</td>
<td>-----</td>
<td>1.02 (1.01, 1.02)</td>
<td>1.02 (1.01, 1.03)</td>
</tr>
<tr>
<td><strong>Sexual abuse</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9 (23)</td>
<td>123 (48)</td>
<td>reference</td>
<td>-----</td>
<td>-----</td>
<td>reference</td>
</tr>
<tr>
<td>Yes</td>
<td>30 (77)</td>
<td>131 (52)</td>
<td>3.13 (1.43, 6.86)</td>
<td>-----</td>
<td>-----</td>
<td>3.24 (1.37, 7.66)</td>
</tr>
</tbody>
</table>
2.5 References


Ross, R. (2006). Traumatization in Remote First Nations: An Expression of Concern. from rupert.ross@jus.gov.on.ca


CHAPTER 3: SURVIVING SEX WORK: A COMPARISON OF HIV-RELATED VULNERABILITIES AMONG YOUNG ABORIGINAL WOMEN USING STREET DRUGS IN TWO CANADIAN CITIES

3.1 Introduction

In Prince George, Canada, the Ramsay case, involving a judge sentenced to seven years in prison for sexually assaulting four Aboriginal teenaged girls has garnered national media attention (Armstrong, 2004). More recently, there has been speculation that a serial killer may be involved in the disappearance of young Aboriginal women along Highway 16; a highway linking northern communities of British Columbia such as Burns Lake, Smithers and Prince George (Trick, 2006). Since Judge Ramsay’s sentencing there has been considerable outcry by Aboriginal and child rights advocates who have observed that the health and social crisis affecting young Aboriginal women is much larger than any single sexual assault or murder investigation (Amnesty International, 2004, pp. 23-24; MacDonald, 2005, pp. 11-13). The United Nations Committee on the Elimination of Discrimination against Women (CEDAW) has further expressed concern over the effects of provincial government cut backs and the closing of services, on the health and social well-being of marginalised women, including Aboriginal women (U.N. CEDAW, 2003, p. 6).

1 A version of this chapter has been accepted for publication. Mehrabadi, A.; Craib, K.J.P; Moniruzzaman, A.; Adam, W.; Patterson, K.; Ward-Burkitt, B; Schecter M.T.; Spittal P.M. (2007). International Journal of Drug Policy.
Recent studies conducted in British Columbia’s Lower Mainland have demonstrated that impoverished Aboriginal women in Vancouver involved in sex work and/or injection street drug use continue to be exposed to disproportionate levels of drug-related harm, HIV infection, and predation (Bowen et al., 2006; Craib et al., 2003; Farley, Lynne, & Cotton, 2005; Miller et al., 2006; Spittal et al., 2003). Unfortunately, these observations are consistent with many settings internationally where women exchanging sexual services for basic needs and to sustain drug dependence suffer from elevated rates of violence and health-related harms, including HIV infection (Church, Henderson, Barnard, & Hart, 2001; Potterat et al., 2004; Romero-Daza, Weeks, & Singer, 2003; Roxburgh, Degenhardt, & Copeland, 2006).

There is growing concern among Aboriginal communities and Aboriginal AIDS service providers that HIV will continue to overwhelm young Aboriginal women already facing multiple levels of discrimination (Red Road HIV/AIDS Network, 2006; Vernon, 2001). Despite evidence demonstrating that Aboriginal women around the world are overrepresented in visible, street based sex work (Farley et al., 2005; Harcourt, van Beek, Heslop, McMahon, & Donovan, 2001; Plumridge & Abel, 2001; Roxburgh et al., 2006), there is recognition that there are very few community-driven research efforts that address the vulnerabilities of young Aboriginal women involved in sex work (Assistant Deputy Ministers’ Committee, 2001). Further, the intersecting epidemics of poverty, HIV, and violence that threaten the lives of Aboriginal women involved in sex work remain poorly addressed (Craib et al., 2003; Spittal et al., 2003; Spittal et al., 2006).

Approximately 3,600 to 5,100 Aboriginal persons were living with HIV in Canada in 2005 (Public Health Agency of Canada, 2006). This represents around 7.5% of
all prevalent HIV infections, while Aboriginal persons comprise only 3.3% of the Canadian population. The same reporting further indicates that HIV is increasingly affecting Aboriginal women and youth. In Canadian provinces where ethnicity is reportable (excluding Ontario and Quebec), between 1998 and 2005, women represented 47.3% of new positive HIV test reports among Aboriginal people, as compared to 20.5% non-Aboriginals people. In addition, a third of new positive HIV tests reports among Aboriginal persons represented those under thirty, as compared to a quarter among non-Aboriginal persons. Approximately sixty percent of new infections among these young Aboriginal people were attributable to injection drug use, significantly higher than among non-Aboriginal young people.

In Canada, current knowledge addressing the HIV vulnerabilities of young Aboriginal people who use illegal drugs is mostly relevant to those residing in large city centres, such as the Downtown Eastside of Vancouver (Public Health Agency of Canada, 2006, pp. 52-57). There is an urgent need to address the potential for an epidemic of HIV infection in other more under-resourced areas of the province similar to the one reported in Vancouver' Downtown Eastside in the mid-nineties (Strathdee et al., 1997). Concerns over the paucity of available data prompted the initiation of a new two city cohort study to address the specific HIV related vulnerabilities of Aboriginal young people who use illegal drugs. The study, now called the Cedar Project, is the only cohort study of young Indigenous people involved in illegal drug use in North America.

The objectives of this current study were to compare socio-demographics, drug use patterns, injection practices, sexual experiences, and HIV and HCV prevalence among young Aboriginal women who used illegal drugs and were involved in recent sex
work (in the last six months), with those women who were not. All young people in the Cedar Project reported either smoking or injecting illegal drugs in the prior month. The study was based out of both downtown Prince George, a forestry and mining town in the northern interior of British Columbia, and in Vancouver’s Downtown Eastside. In this study Aboriginal ethnicity was based upon self-reported identification as a descendent of the First Peoples of Canada, and is inclusive of status and non-status First Nations, Métis and Inuit (for details on the definitions see RCAP, 1996, pp. 1-22, Vol.1).

3.2 Methods

Guidelines provided in the Tri-Council Policy Statement on Ethical Conduct for Research Involving Human Subjects were followed in the development and conduct of this study, with particular attention to section 6.0 pertaining to research involving Aboriginal subjects. Our Aboriginal collaborators, including Aboriginal AIDS Service Organizations, were involved in the conception, design and implementation of the Cedar Project. The Cedar Project Partnership reviewed the results of this analysis and approved this manuscript for publication. The study was further approved by the University of British Columbia/Providence Health Care Research Ethics Board.

The Cedar Project is an ongoing prospective cohort study involving Aboriginal young people who reside in Vancouver and Prince George and who reported recently either smoking or injecting illegal drugs. Eligibility criteria stipulate that participants are between 14 and 30 years of age, smoked illegal drugs in the last week or injected illegal drugs in the last month (including crystal methamphetamine, crack-cocaine, heroin or cocaine). Saliva screens (ORALscreen®, Avitar Onsite Diagnostics) were used to confirm drug use. Participants were eligible to participate if they had reported residing in
the Vancouver or Prince George regions respectively, and provided written informed consent. Participants in both cities were recruited through referral by health care providers, community outreach, and by word of mouth. The majority of youth who participate in the study were recruited by word of mouth (39%) and outreach staff (32%).

All participants met with one Aboriginal study coordinator who explained procedures, sought informed consent and confirmed study eligibility. In the consenting process, all participants were informed of the limitations of research confidentiality including communicable disease reporting, in cases of self-harm, and child welfare legislation regarding current sexual abuse. From the inception of the research process it was made clear by all involved that study participants must have the opportunity to be interviewed by an Aboriginal person. Since confidentiality issues are a concern, particularly in smaller communities, participants are always given a choice to be interviewed by someone from the research team they trust. Aboriginal study personnel were involved throughout the design and piloting of the research instrument, and helped to address sensitivities related to historical trauma. As examples, the question asking whether biological parents had attended residential schools and early childhood events such as the age first taken from biological parents (i.e. foster care) were included based upon the input of Aboriginal study personnel. Venous blood samples were drawn and tested for HIV and Hepatitis C antibodies and interviewers were blinded to the HIV and Hepatitis C status of the subjects. All eligible participants had private interviews including pre and post-test counseling with trained nurses; participants were requested to return for their HIV/HCV sero-status test result at which time referral for HIV/AIDS and hepatitis C care was provided.
We actively encouraged young people to return for their results, however receiving a result was not a requirement of participating in the study. If a young person indicated in the pre-test counseling process that they wanted their test result back, we let the nurse make an appointment around the approximate date when the results were in. Personnel also did extensive street-based outreach to let participants know when to return for their test results. Participants were given a twenty dollar stipend at each study visit as compensation for their time and to facilitate transportation. Study personnel worked actively with the young people involved in the study in securing the kinds of physical and emotional support they request. Requests for help include access to traditional healing support, addictions treatment and secure housing.

All females from the overall cohort who completed the baseline questionnaire from October 2003 to July 2005 were included in the analysis. Young women involved in recent sex trade work were defined as those young women who reported exchanging sex for money, food, alcohol and drugs in the past six months. Variables of interest include socio-demographic characteristics, sexual behavior variables, drug use variables, and service utilisation. We obtained information related to the legacy of abuse and intergenerational trauma (Fournier & Crey, 1997) such as the foster care system and having biological parents attend residential schools. In the late 1800’s the Canadian government legislated the removal of Aboriginal children from their homes and families and placed them in boarding schools, also called residential schools.

Young women who reported stable housing were defined as those who were living in their own house or apartment. Unstable housing was defined as living arrangements that included single room occupancy hotels (SROs), transitional living
arrangements (‘couch surfing’), and homelessness. Living on the street was defined as having lived on the streets for at least three nights. In addition, sexual abuse was defined as answering “yes” to the question: “Have you ever been forced to have sex against your will and/or been molested?”. Drug use patterns and high risk injection variables include borrowing syringes that had been used by someone else, and frequent injection and binge drug use. Bingeing was defined as periods where drugs were injected more frequently than usual. Opiate use was defined by the use of any of the following injection drugs: morphine, heroin, methadone, Talwin® (Pentazocine with Naloxone) and/or Dilaudid® (hydromorphone hydrochloride). Women who reported injecting once or more per day were defined as frequent users.

Sexual behavior variables include condom use with regular and casual partners, and condom use with clients. Regular partners were defined as those partners with whom the sexual relationship lasted for over three months. Casual partners were defined as those partners with whom sexual relationships lasted less than three months. Unsafe sex was defined as not always using a condom during anal or vaginal sex. Clients were defined as those partners with whom sex was traded for drugs, food, or money. Other variables included whether participants had ever been pregnant or had ever had a bad date. Bad dates were defined as physical assaults, sexual assaults, abandonment from cars and robberies committed on sex workers during sex work.

Initially a descriptive analysis was performed for the entire study population. Pearson’s chi-square and Fisher’s exact test (if one or more expected counts are less than five) were applied to compare categorical variables, while the Wilcoxon rank sum test was used to compare continuous variables. Univariate and multiple logistic regression
analysis were used to identify the correlates of recent sex work among women. Variables that were found to be significant in the univariate model \((p < 0.05)\) were considered for multiple logistic regression analysis. The odds ratios for continuous variables such as age and duration of injection represent the odds ratio associated with a one-unit increase in the variable of interest. Medians were reported for continuous variables as the majority of variables (e.g. age at first sexual abuse, duration of injection drug use, age first paid for sex, and number of clients) were not normally distributed.

The multiple logistic regression model included daily injection drug use variables (cocaine, speedball, and opiates), daily crack use, sexual abuse, binge drug use in the prior six months, ever having injected, identifying as bisexual or gay, and ever having lived on the streets over three nights, and the location of the interview. Stepwise (forward conditional) logistic regression was used to select final variables from the full multivariable model. Odds ratio with 95% confidence intervals were reported as a measure of association. Variables whose 95% confidence intervals did not include 1 were considered as significant correlates of sex work involvement. A sub-analysis followed to compare women who were involved in recent sex work in Vancouver with women who were involved in recent sex work in Prince George. All reported p-values were two-sided. SPSS (Windows 11.0 version) and S-plus (Windows 6.2 version) statistical software were used to run these analyses.

3.3 Results

A total of 262 females completed the baseline questionnaire between October 2003 and July 2005, and were therefore included in this analysis. Among them, 154 participants (59%) reported that in the past 6 months they were involved in sex work,
while 185 (71%) reported having been involved in sex work at some point in their lifetime. The median age at enrollment was 23 years-old. Out of all females in this study, 169 (65%) reported ever having injected drugs; out of 260 participants, 34 (13%) had HIV antibodies, while out of 250 participants 109 (42%) had HCV antibodies.

The results of univariate analysis of socio-demographic characteristics are shown in Table 1. Median age at enrollment was found to be 23 years-old for women involved in recent sex work and 22 years-old for those not involved, which was not significantly different. Women who were recently involved in sex work were significantly more likely to have ever been on the street longer than three nights (71% vs. 54%, p=0.004) and to be HCV positive (49% vs. 36%, p=0.031). Over two-thirds of the young women in the two groups reported having been taken away from their biological parents and over 40% reported knowing that their parents had attended residential school. The percentage reporting ever having attempted suicide was 42% for both women who were recently involved in sex work and for women who were not (p=0.986), while 85% of women involved in recent sex work and 84% of women not involved reported not having completed high school (p=0.351). Incarceration in the last six months was 15% and 17% for women involved in recent sex work and for those women who were not involved, respectively (p=0.721). Having been sexually abused was high for both women who were recently involved with sex work and those who were not at 76% and 61% respectively (p=0.009), although significantly higher for women recently involved in sex work. Remarkably, the median age for first sexual abuse was found to be 6 years old for women recently involved in sex work and women who were not.
When injection and non-injection drug use were considered, there were marked differences among women (Table 2). Women involved in recent sex work were more likely to report ever having injected drugs, recent (in the last six months) daily use of non-injection crack, injection cocaine use, injection opiate use, and injection speedball use (all p values <0.05). There was no significant difference in needle borrowing and sharing. However, women involved in sex work were more likely to report daily use of the needle exchange site in the past six months, and to report runs or binges with injection drugs in the past six months. Women involved in sex work showed no detectable difference in their likelihood to be enrolled in methadone maintenance treatment (MMT) (p=0.359).

In terms of condom use and sexual experiences, we found no evidence to suggest unsafe sex with casual or regular partners, or ever being pregnant was associated with recent sex work involvement (Table 3). However, the high level of pregnancy for both groups of women is noteworthy, as is the low level of condom use with casual and regular partners in both groups. It is also worth mentioning that a relatively high percentage of women involved in sex work (90%) reported always using condoms with clients in the last six months. However, in terms of violent experiences, 64% of women involved in sex work in the past six months reported having had a bad date in their lifetime while 25% reported at least one bad date in the prior six months.

The variables that were found to be associated with recent sex work in the stepwise logistic regression are listed in Table 4. The analysis revealed that women who were involved in sex work in the last six months were more likely to smoke crack daily in the prior six months (Adjusted OR=2.93; 95% CI: 1.64, 5.22) and inject cocaine daily in
the prior six months (Adjusted OR=4.40; 95% CI: 1.91, 10.14). Lifetime sexual abuse was further found to be independently associated with recent sex work involvement (Adjusted OR= 2.46; 95% CI: 1.36, 4.43)

When a comparison was made between young women involved in sex work in the prior six months who reside in Vancouver (n=84) versus Prince George (n=70) (data not shown), women in Prince George were slightly younger than those in Vancouver (median age 22 vs. 24 years, p=0.001), however the median age of first initiation into sex work was 16 years-old in both cities. There was no significant difference in the prevalence of HIV or Hepatitis C among those involved in sex work in the two cities, although prevalence was slightly higher in Vancouver. In Vancouver, 17% of the young women were HIV positive as compared to 12% in Prince George, p=0.358, while 51% of young women involved in sex work in Vancouver were HCV positive as compared to 47% in Prince George, p=0.611. Daily opiate use was significantly higher among women involved in sex work in Vancouver as compared to Prince George, (44% vs. 24%, p=0.010). Daily cocaine use was higher in Prince George as compared to Vancouver (34% vs. 18%), although this difference did not reach statistical significance (p=0.077). Daily crack use was higher in Vancouver as compared to Prince George (87% vs. 72%), although this difference did not reach statistical significance either (p=0.820). The levels of incarceration and living on the street were not significantly different in the two cities. Ever having been on the streets longer than three nights was 77% and 64% in Vancouver and Prince George respectively (p=0.064). There was no significant difference in the two cities in the proportion who had attempted suicide, who reported recent or lifetime bad
dates, or who had ever used injection drugs. However, unprotected sex with clients was significantly higher in Vancouver as opposed to Prince George (24% vs 2%, p<0.001).

3.4 Discussion

In this study, we found an independent association between recent sex work involvement and the lifetime experience of sexual abuse, recent daily injection cocaine use and recent daily non-injection crack use. The fact that sexual abuse was independently associated with sex work in univariable and multivariable analysis is remarkable. Particularly as sexual abuse among women in this study was reported to first occur during early childhood, at a median age of six-years old, suggesting that early childhood sexual abuse had an association with later sex work involvement. In order to highlight the fact that sexual abuse occurred earlier than first sex work involvement for the majority of women it should be noted that although the earliest reported involvement in sex work was 11-years-old, among young women who were involved in sex work and had been sexually abuse, 77% reported sexual abuse by age 10, while 89% reported sexual abuse by age 13. Previous research has identified the association of antecedent sexual abuse with both sex work and/or HIV transmission risk (Christopher T. Allers & Benjack, 1991; Cunningham, Stiffman, Dore, & Earls, 1994; Parillo, Freeman, Collier, & Young, 2001; Widom & Kuhns, 1996; Zierler et al., 1991). However this study accounted for a great deal of factors related to sex work, such as living on the streets and injection drug use. One drawback of this study is that it is difficult to estimate the extent of re-traumatization among women who had been sexually abused. As reported, 64% of women involved in sex work reported lifetime ‘bad date’-related trauma in the form of
rape, beatings or being robbed while 25% reported bad dates in six months prior to the baseline interview.

Young women involved in recent sex work in this study were more likely to report frequent drug use for nearly every drug use category we examined in univariate analysis. The fact that frequent cocaine injection was independently associated with recent sex work is particularly concerning as the intense injection patterns associated with cocaine use among sex workers has been shown to lead to increased risk for parenteral HIV transmission (Astemborski, Vlahov, Warren, Solomon, & Nelson, 1994; Paone, Cooper, Alperen, Shi, & Des Jarlais, 1999). Certain studies have further highlighted that the association of childhood sexual abuse with sex work involvement may be mediated by cocaine or other injection drug use (C. T. Allers, Benjack, White, & Rousey, 1993; Vaddiparti et al., 2006). In addition, cocaine use has been found to increase women’s’ vulnerability in survival sex work situations (Astemborski et al., 1994; Edlin et al., 1994). The HIV epidemic that has occurred in Vancouver among people who use injection drugs has been related to needle sharing associated with the frequent use of injection cocaine (Tyndall et al., 2001; Wood et al., 2007). Consequently, we recognize that the fact that girls and young women involved in sex work reported more frequent use of needle exchange programs (NEP) in both cities should not be taken to mean that service is adequate. Due to lack of resources, the hours of operation of the exchange program in Prince George remain limited. In both Vancouver and Prince George, NEP was introduced early, in 1988 and 1991 respectively and supported by the provincial government. However, in Vancouver NEP service access has increased with a greater number of sites opened to serve the region. In addition, based upon recommendations by
the British Columbia Centre for Disease Control to provide one syringe per injection, the restrictive point for point policies have been changed to support distribution focused models (B. C. Centre for Disease Control, 2004). Similar policy shifts, while simple, might help curb the tide of new infections in this Northern community. Of note, in 2004 a peer-based mobile service designed to address the specific needs of women involved in sex work was implemented in Vancouver’s Downtown Eastside. The van operates every night and provides respite, clean syringes, condoms and referrals to care. In particular, the van provides “bad date” sheets to attempt to warn women of dangerous clients. The piloted initiative has recently been evaluated and has demonstrated important successes in serving the needs of street entrenched women (Janssen, Spittal, Gibson, & Bowen, 2006). Similar peer involved models must be implemented in rural and remote areas of British Columbia on a nightly, continuous and sustainable basis.

We found no significant associations between sex work involvement and unsafe sexual practices in univariate analysis. While, these findings are consistent with literature that suggests parenteral risk is the overriding risk factor for women involved in sex work and injection drug use, the potential for the sexual transmission of HIV cannot be ignored. In this respect, we found an independent positive association between daily crack cocaine smoking and recent sex work involvement. The focus of the majority of studies which address the HIV risk associated with smoking crack cocaine has been the complex relationships between sexual risk and survival sex including sex in exchange for drugs, the prostitute-client relationship, sexually transmitted infections and lower levels of condom use (Booth, Watters, & Chitwood, 1993; Chiasson et al., 1991; Edlin et al., 1994; Elwood, Williams, Bell, & Richard, 1997; Hoffman, Klein, Eber, & Crosby, 2000;
Spittal et al., 2003; Tortu et al., 2000). The association between sexual transmission and crack use can further be explained by oral sex and the simultaneous presence of oral lesions and burns caused by crack pipes (Spittal et al., 2003). While the research on the association of sex work with crack cocaine smoking is extensive, few harm reduction initiatives have addressed the other health risks associated with crack use, including lung and throat damage, HCV transmission through sharing mouthpieces, and survival sex work (SCORE, 2007).

Our sub-analysis comparing young Aboriginal women involved in sex work in both cities highlights the particular needs of young women in Prince George, where there are very few services for street entrenched women. Similar proportions of girls in both cities reported already having exchanged sex for food, money, drugs, or a place to sleep. They also reported similar ages of first initiation into sex work. With a few exceptions, our sub-analysis failed to find significant differences in drug related vulnerabilities between cities. While a number of studies have demonstrated that women, whose social base are streets of large urban centers, are at enhanced risk for violence, communicable disease and death, it is important to note that young Aboriginal women who use drugs face few detectable differences in harms in a smaller Northern city.

A common explanation for the profound health disparities experienced by Indigenous people all over the world, including Australia and New Zealand, is the historical trauma associated with the process of colonization (Archibald, 2006; Horton, 2006). The colonial process and legislated oppression in Canada included the loss of traditional lands and territories, the multigenerational legacy of the forced removal of children from their families and the subsequent placement in the residential schools
system (Chansonneuve, 2005; Fournier & Crey, 1997). The goal of the residential school system was the forced Christianization and assimilation of Aboriginal children (Archibald, 2006). In British Columbia there were an estimated 35,000 survivors of the residential school system in 1997; the mean age of survivors was 49-years-old and ranged from 30 to 60 years (Pointe, March 30, 2000; Provincial Health Officer, 2002). While the residential school system was being dismantled, a drastic increase in the number of children removed from their families and placed in the care of the state occurred. In British Columbia, an estimated 5.2 percent of Aboriginal children are in care, compared with 0.7 per cent of non-Aboriginal children (Provincial Health Officer, 2002). Substance abuse is identified as one of the critical health issues faced by many Aboriginal families and communities (Adelson, 2005), and illustrates the effects of the intergenerational trauma and familial fragmentation experienced by former residential school students as they raise their own children and grandchildren (Wesley-Esquimaux & Smolewski, 2004). Indeed there is a growing body of literature in Canada that attributes negative health outcomes experienced by young Aboriginal people, including sexual abuse, poverty, traumatic injury, suicide and other mental and emotional health concerns, to the multigenerational impact of the residential school system (Adelson, 2005; Corrado & Cohen, 2003).

Recent ‘Indigenist’ scholarship emphasizes the importance of framing sexual trauma experienced by Indigenous people in the context of historical trauma and the importance of using culture ‘as intervention’ to interrupt the intergenerational cycles of abuse (Duran & Walters, 2004; Walters & Simoni, 2002; Walters, Simoni, & Evans-Campbell, 2002; Wesley-Esquimaux & Smolewski, 2004). The use of life sustaining
Aboriginal teachings, values, songs and dance have been identified as critically important to trauma recovery because they replace the psychologically destructive shame based beliefs that were imposed on children in residential schools (Chansonneuve, 2007). Examples of successful Aboriginal treatment programs exist (Chansonneuve, 2007; Health Canada, 1998), however, few of these programs address the specific needs of women who are surviving both sex work and early childhood sexual abuse. Through the acknowledgement of the impact of historical trauma and with significant increases in resources, Aboriginal leadership and communities may help prevent the further sexual abuse experienced by Aboriginal girls and women.

Several limitations of this study should be acknowledged. As a probability sampling framework is not available for the population under study, recruitment for the Cedar study was non-random. Snowballing methodology, while found to be useful for hard-to-reach populations, has been said to bias towards individuals who have many interrelationships and miss individuals who are socially isolated (Faugier & Sargeant, 1997). Our data is self-reported; therefore participants may under-report those behaviors that are illegal or stigmatizing. We have attempted to minimize this limitation through repeated assurances of confidentiality and through the establishment of rapport between participant and Aboriginal interviewer over time. In addition, the effect of memory on our estimates of risk for past traumatic events is difficult to assess. Another limitation of this study is that the comparison group of women is an extremely vulnerable sample themselves, one-third of whom were involved in sex work in their lifetime, although not in the past six months. While the exclusion of women involved in sex work in their lifetime from the comparison group did not affect the final model, lack of differences
between groups cannot be taken to mean a lack of vulnerability. Finally, we must consider the issue of temporality in the interpretation of multivariate analysis. It is noteworthy that in the analysis we have not examined causation. It is therefore not possible to determine whether the associated factors have a causative or predictive effect. However given that the large majority of women had experienced sexual abuse at an early age, it appears that early sexual trauma may be associated with current sex work involvement. We recognize another important limitation of the data. Due to the limited focus of the population under study (Aboriginal youth who use injection and non-injection illegal drugs), generalizations cannot be made to the general population of Aboriginal youth who reside in urban settings, or to the general population of sex workers. Additionally, Indigenous populations worldwide have varied experiences with drug use and live amidst different legal and social contexts related to both drug possession and sex work.

In summary, this study highlights that Aboriginal women who are involved in the sex work and illegal drug use across British Columbia face increased violence, frequent intravenous drug use, and current and childhood sexual trauma. When designing new programming, service providers must remain mindful of the interconnection between discrimination and patterns of violence against Aboriginal women, as well as histories of mistrust toward both provincial and federal authorities in Canada. Peer driven programming prioritizing physical and emotional safety are urgently required. Client driven, round the clock drop in centers may afford the opportunity for street involved women in the sex work to be safe, be warm, find food, and take a shower in non judgmental environments accepting of sexual diversity. Such places should also offer
women the opportunity to fix their drugs safely and access drug treatment. Any efforts to help alleviate the impact of sex and drug related harm in both rural and urban settings must be inclusive of the perspectives of the Aboriginal young women involved and afford them the opportunity to provide leadership in the decisions made about appropriate harm reduction and sexual health programming.
Table 3.1: Comparisons of socio-demographic characteristics between females who were involved in recent sex work (n=154) and those who were not (n=108)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sex work involved n (%)</th>
<th>Not work involved n (%)</th>
<th>Crude Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age at enrolment visit (Range)</td>
<td>23 yrs (15 to 30)</td>
<td>22 yrs (14 to 30)</td>
<td>1.00 (0.95, 1.07)</td>
<td>0.780</td>
</tr>
<tr>
<td>Located in Prince George vs Vancouver</td>
<td>70 (45)</td>
<td>42 (39)</td>
<td>1.31 (0.79, 2.16)</td>
<td>0.290</td>
</tr>
<tr>
<td>Lesbian/bisexual/two-spirited</td>
<td>29 (19)</td>
<td>10 (9)</td>
<td>2.25 (1.05, 4.84)</td>
<td>0.035</td>
</tr>
<tr>
<td>Did not complete high school¹</td>
<td>109 (85)</td>
<td>66 (80)</td>
<td>1.40 (0.69, 2.87)</td>
<td>0.351</td>
</tr>
<tr>
<td>Unstable Housing (last six months)</td>
<td>70 (48)</td>
<td>38 (38)</td>
<td>1.53 (0.91, 2.56)</td>
<td>0.108</td>
</tr>
<tr>
<td>Ever lived on the streets (&gt;3 nights)</td>
<td>109 (71)</td>
<td>58 (54)</td>
<td>2.14 (1.28, 3.58)</td>
<td>0.004</td>
</tr>
<tr>
<td>Positive HCV status</td>
<td>72 (49)</td>
<td>37 (36)</td>
<td>1.76 (1.05, 2.95)</td>
<td>0.031</td>
</tr>
<tr>
<td>Positive HIV status</td>
<td>22 (15)</td>
<td>12 (11)</td>
<td>1.35 (0.64, 2.87)</td>
<td>0.428</td>
</tr>
<tr>
<td>Ever taken from biological parent</td>
<td>105 (68)</td>
<td>72 (67)</td>
<td>1.07 (0.63, 1.81)</td>
<td>0.780</td>
</tr>
<tr>
<td>Median age first taken from biological parents (range)</td>
<td>5.0 (1 to 17)</td>
<td>4.5 (1 to 15)</td>
<td>0.81 (0.34, 1.94)</td>
<td>0.773</td>
</tr>
<tr>
<td>Either biological parent ever attended residential school²</td>
<td>68 (45)</td>
<td>44 (41)</td>
<td>1.18 (0.72, 1.94)</td>
<td>0.521</td>
</tr>
<tr>
<td>Ever sexually abused</td>
<td>116 (76)</td>
<td>63 (61)</td>
<td>2.04 (1.19, 3.50)</td>
<td>0.009</td>
</tr>
<tr>
<td>Median age for first sexual abuse (range)</td>
<td>6 yrs (1-21)</td>
<td>6 yrs (1-25)</td>
<td>0.99 (0.93, 1.06)</td>
<td>0.928</td>
</tr>
<tr>
<td>Ever attempted suicide</td>
<td>64 (42)</td>
<td>45 (42)</td>
<td>1.00 (0.60, 1.64)</td>
<td>0.986</td>
</tr>
<tr>
<td>Incarceration in last six months</td>
<td>23 (15)</td>
<td>18 (17)</td>
<td>0.86 (0.45, 1.73)</td>
<td>0.721</td>
</tr>
<tr>
<td>Ever incarcerated</td>
<td>63 (41)</td>
<td>53 (49)</td>
<td>0.72 (0.44, 1.18)</td>
<td>0.190</td>
</tr>
<tr>
<td>Median age first incarcerated (range)</td>
<td>16 (11 to 28)</td>
<td>15 (10 to 28)</td>
<td>1.04 (0.96, 1.14)</td>
<td>0.344</td>
</tr>
<tr>
<td>Ever denied shelter due to drug use</td>
<td>45 (30)</td>
<td>27 (25)</td>
<td>1.26 (0.72, 2.20)</td>
<td>0.413</td>
</tr>
</tbody>
</table>

¹ Restricted to 212 participants 19 years of age or older
² Participants who answered unsure were grouped as “no” answers.
Table 3.2: Comparisons of substance use behaviours between females who were involved in recent sex work (n=154) and those who were not (n=108)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sex work involved</th>
<th>Not sex work involved</th>
<th>Crude Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever used injection drugs</td>
<td>108 (70)</td>
<td>61 (57)</td>
<td>1.74 (1.04, 2.91)</td>
<td>0.033</td>
</tr>
<tr>
<td>Duration of injection (years) Median (Range)</td>
<td>3.0 (0.08-13.0)</td>
<td>3.0 (0.08-14)</td>
<td>1.01 (0.93, 1.10)</td>
<td>0.160</td>
</tr>
<tr>
<td>Daily crack use (last six months)</td>
<td>113 (73)</td>
<td>57 (53)</td>
<td>2.88 (1.69, 4.99)</td>
<td>0.001</td>
</tr>
<tr>
<td>Daily IV cocaine use (last six months)</td>
<td>41 (27)</td>
<td>8 (8)</td>
<td>4.53 (2.03, 10.13)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily IV speedball</td>
<td>22 (14)</td>
<td>3 (3)</td>
<td>5.78 (1.68, 19.83)</td>
<td>0.002</td>
</tr>
<tr>
<td>Daily IV opiate use (morphine, hydromorphone hydrochloride, methadone, heroin excluding speedball) in last six months</td>
<td>54 (35)</td>
<td>22 (20)</td>
<td>2.03 (1.15, 3.57)</td>
<td>0.010</td>
</tr>
<tr>
<td>Runs or binges with injection drugs in last six months</td>
<td>26 (17)</td>
<td>4 (4)</td>
<td>5.28 (1.79, 5.61)</td>
<td>0.001</td>
</tr>
<tr>
<td>Overdosed in last six months</td>
<td>23 (15)</td>
<td>8 (7)</td>
<td>2.20 (0.94, 5.11)</td>
<td>0.063</td>
</tr>
<tr>
<td>Ever needed help injecting</td>
<td>66 (43)</td>
<td>31 (29)</td>
<td>1.86 (1.10, 3.15)</td>
<td>0.020</td>
</tr>
<tr>
<td>Needed help injecting in last six months</td>
<td>39 (25)</td>
<td>19 (18)</td>
<td>1.57 (0.85, 2.90)</td>
<td>0.148</td>
</tr>
<tr>
<td>Ever lent a rig/needle</td>
<td>33 (21)</td>
<td>10 (9)</td>
<td>3.02 (1.33, 6.89)</td>
<td>0.010</td>
</tr>
<tr>
<td>Needle lending in last six months</td>
<td>19 (12)</td>
<td>8 (7)</td>
<td>1.76 (0.74, 4.18)</td>
<td>0.196</td>
</tr>
<tr>
<td>Ever borrowed needles/rigs</td>
<td>39 (25)</td>
<td>15 (14)</td>
<td>2.06 (1.07, 3.94)</td>
<td>0.029</td>
</tr>
<tr>
<td>Needle borrowing in last six months</td>
<td>21 (14)</td>
<td>9 (8)</td>
<td>1.74 (0.76, 3.96)</td>
<td>0.185</td>
</tr>
<tr>
<td>Difficulty in accessing clean needles</td>
<td>29 (19)</td>
<td>15 (14)</td>
<td>1.44 (0.73, 2.84)</td>
<td>0.292</td>
</tr>
<tr>
<td>Daily use of needle exchange site</td>
<td>36 (23)</td>
<td>8 (7)</td>
<td>3.81 (1.70, 8.58)</td>
<td>0.001</td>
</tr>
<tr>
<td>Visit of fixed needle exchange site in past month</td>
<td>68 (44)</td>
<td>22 (20)</td>
<td>3.09 (1.76, 5.44)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Visit of mobile needle exchange in past month</td>
<td>44 (29)</td>
<td>24 (22)</td>
<td>1.40 (0.79, 2.48)</td>
<td>0.249</td>
</tr>
<tr>
<td>Current drug/alcohol treatment</td>
<td>31 (20)</td>
<td>24 (22)</td>
<td>0.87 (0.48, 1.59)</td>
<td>0.654</td>
</tr>
<tr>
<td>Current methadone maintenance treatment</td>
<td>12 (8)</td>
<td>12 (11)</td>
<td>0.68 (0.29, 1.57)</td>
<td>0.359</td>
</tr>
</tbody>
</table>
## Table 3.3: Comparisons of sexual experiences between females who were involved in recent sex work (n=154) and those who were not (n=108)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sex work involved n (%)</th>
<th>Not sex work involved n (%)</th>
<th>Crude Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever been pregnant</td>
<td>118 (79)</td>
<td>81 (75)</td>
<td>1.23 (0.69, 2.21)</td>
<td>0.489</td>
</tr>
<tr>
<td>Regular sex partners in last six months</td>
<td>90 (60)</td>
<td>70 (78)</td>
<td>0.43 (0.24, 0.78)</td>
<td>0.005</td>
</tr>
<tr>
<td>Median number of regular partners&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1.0 (1.0, 5.0)</td>
<td>1.0 (1.0, 4.0)</td>
<td>--</td>
<td>0.377</td>
</tr>
<tr>
<td>Unsafe sex with regular partner&lt;sup&gt;1&lt;/sup&gt;</td>
<td>74 (83)</td>
<td>59 (84)</td>
<td>0.92 (0.39, 2.15)</td>
<td>0.847</td>
</tr>
<tr>
<td>Casual sex partner in last six months</td>
<td>57 (38)</td>
<td>31 (34)</td>
<td>1.18 (0.68, 2.04)</td>
<td>0.554</td>
</tr>
<tr>
<td>Median number of casual partners&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.0 (1.0, 60.0)</td>
<td>2.0 (1.0, 15.0)</td>
<td>--</td>
<td>0.309</td>
</tr>
<tr>
<td>Unsafe sex with casual partner&lt;sup&gt;2&lt;/sup&gt;</td>
<td>20 (36)</td>
<td>13 (42)</td>
<td>0.77 (0.31, 1.89)</td>
<td>0.567</td>
</tr>
<tr>
<td>Median age for first paid sex (Range)</td>
<td>16 (10-28)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Median number of clients in last six months (range)</td>
<td>104 (1 – 750)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Unsafe sex with client in last six months</td>
<td>12 (10)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Ever had a bad date</td>
<td>98 (64)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Bad date in last six months</td>
<td>38 (25)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<sup>1</sup> Restricted to 160 participants who reported regular sex partner(s) in last six months

<sup>2</sup> Restricted to 88 participants who reported having casual sex partner(s) in last six months
Table 3.4: Logistic regression model showing independent risk variables associated with recent sex work involvement among young Aboriginal women who use illegal drugs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted Odds Ratio (95% CI)</th>
<th>Adjusted Odds Ratio (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily IV Cocaine Use (last six months)</td>
<td>4.53 (2.03, 10.13)</td>
<td>4.40 (1.91, 10.14)</td>
<td>0.001</td>
</tr>
<tr>
<td>Daily non-injection Crack Use (last six months)</td>
<td>2.88 (1.69, 4.99)</td>
<td>2.93 (1.64, 5.22)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Lifetime sexual abuse</td>
<td>2.04 (1.19, 3.50)</td>
<td>2.46 (1.36, 4.43)</td>
<td>0.003</td>
</tr>
</tbody>
</table>
3.5 References


CHAPTER 4: GENERAL DISCUSSION AND CONCLUSIONS

4.1 Summary of key findings

This study has set out to determine gender differences in recent drug use patterns and sexual experiences, and of current HIV and HCV prevalence among young Aboriginal people who have recently used injection and non-injection illegal drugs. The study has further attempted to determine differences in recent drug use patterns, sexual experiences, and current HIV and HCV prevalence between Aboriginal women involved in sex work compared to women who were not. The findings in this study indicate that for a similar age group and similar durations of time injecting, HIV and HCV infection were more prevalent among young Aboriginal women involved in drug use as compared to young Aboriginal men. The analyses further demonstrates significantly higher HIV and HCV prevalence among Aboriginal women when the sample was stratified by injection drug use (n=298). Among young Aboriginal people who inject illegal drugs, women were twice as likely to be HIV positive (16.7% vs 8.5%), while among young Aboriginal people who do not inject illegal drugs, women were eight times more likely to be HIV positive (6.5% vs 0.7%). With regards to HCV infection, among young people who inject illegal drugs, 65% of young Aboriginal women vs. 50% of young Aboriginal men were HCV positive. HCV prevalence was similar among Aboriginal women (3.5%) and men (3.4%) who did not report injection drug use. In modelling the association of being female with HIV infection, it appears that being female is associated with HIV infection when controlling for age, injection drug use status (yes or no), and duration of
injection. When sexual abuse is included in the model, being female loses its effects on HIV seropositivity. Sexual abuse has a common independent association with HIV infection for Aboriginal young people; however young women are experiencing sexual abuse to a greater extent, therefore it is preferable to model HIV seropositivity and being female without including lifetime sexual abuse in order to account for the increased burden of both sexual abuse and HIV infection experienced by women.

A high proportion of Aboriginal women had been involved in sex work in the prior six months (59%). In univariate analysis, HCV seropositivity was significantly higher among Aboriginal women involved in sex work (49%) as compared to Aboriginal women who were not involved in sex work (36%). No significant difference in HIV prevalence was found among women who had recently exchanged sex (15%) as compared to women who had not (11%). In modeling the association of sex work in the prior six months with traumatic life events and other HIV-related risk, recent sex work has been found to be independently associated with daily cocaine and daily crack use in the previous six months, and lifetime sexual abuse.

4.2 Conclusions

The hypothesis of this thesis was that HIV seropositivity, lack of condom use, and syringe sharing would be higher among women as compared to men, and among women involved in sex work as compared to women who were not. Clearly, young women in this study were more likely to have had acquired HIV and HCV compared to men of a similar age group and similar durations of injection drug use. HIV infection was not found to be significantly higher among young women recently involved in sex work as compared to young women who were not, however increased HCV infection may be a predictor of
HIV risk related to injection drug use among women involved in sex work. Recent harmful drug use patterns and lifetime sexual abuse were found to be independently associated with sex work. Although previous research has found associations between sexual abuse and HIV risk, the finding that sexual abuse remained associated with HIV prevalence despite adjustment for injection drug use, highlights the striking effects of sexual abuse on HIV risk. While previous research has suggested higher levels of needing help injecting or borrowing needles among young women as compared to young men (P. M. Spittal et al., 2002; Wood et al., 2003), this difference was not apparent in this study. Several factors may be responsible for this finding. Among young people who use injection drugs, some research has reported that both young men and women often report injecting with their peers as opposed to older people, thereby reducing the differences among young men and women due to power differentials in injection drug use patterns (Breen, Roxburgh, & Degenhardt, 2005; Bryant & Treloar, 2007). Further, the use of the comparison group itself is problematic as Aboriginal men in this study are an extremely vulnerable group, and 71% of whom have ever needed help injecting, as compared to 69% of women. Further research among young Aboriginal people is necessary to determine the unique gender differences among younger people involved in street drug use.

4.3 Relevance of findings

4.3.1 Sexual abuse: Context and consequences

Unfortunately sexual abuse has been commonly reported among populations where significant colonization and social disruption has occurred (Ramsay, 1999). The most common reason for high occurrences of sexual assault among certain populations is
that cultural norms which usually protect against abuses and promote positive interaction are severely disrupted during colonization and conflict (Posel, 2005). In times of war and social and economic turmoil, when institutions and government are not protecting the vulnerable, rape has been widespread in various countries across a wide range of races and ethnicities (Ramsay, 1999). More troubling, in Canada, institutions and governments have been responsible for the social disruption among Aboriginal people, including what has been termed "institutional sexual abuse" (Hall, 2002) suffered by Aboriginal children under government sanctioned residential school care. Importantly, scholars who have evaluated so-called rape-free societies in comparison to so called rape-prone ones, have noted that what essentially distinguished the two was the equitable status of women in rape-free societies (Hylton, 2002). The increased vulnerabilities related to sexual abuse found among young women in this study have implications for the overall health and well-being of Aboriginal communities.

Aboriginal women have described sexual abuse as "the single most impacting thing" of all childhood abuses, which left "the victim with a sense of inadequacy and selflessness" (McEvoy & Daniluk, 1995). Among women who have survived sexual abuse, Aboriginal women have been found to have experienced higher levels of somatic disorders, sleeping problems, and sexual dissatisfaction than non-Aboriginal women (Barker-Collo, 1999). The proportion of sexual abuse among women in the Cedar Project (71%) can be compared to proportions of sexual abuse among urban American Indian women in New York (39%) (Simoni, Sehgal, & Walters, 2004), among two tribes of women living on reservation (7-8%) and among women in a southwestern American Indian tribe (49%) (Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997).
Unfortunately differences in definitions make direct comparisons difficult. In this study the definition of “Sexual abuse” was defined for participants as any sexual activity that participants were forced or coerced into (including childhood sexual abuse, molestation, rape and sexual assault). Interviewers gave this definition to participants prior to asking the question: “Have you ever been forced to have sex against your will and/or been molested” (yes vs. no, unsure/can’t remember classified as missing). Where similar definitions have been used among young people, such as in the VIDUS cohort which compared Aboriginal and non-Aboriginal young people (ages 13-24) who used injection drugs, significantly more Aboriginal participants reported sexual abuse (50%), compared to non-Aboriginal participants (36%) (C. L. Miller et al., 2006). However, similar proportions of sexual abuse were found among older people who used injection drugs (ages 14-58) in the VIDUS cohort. For instance, similar proportions of sexual abuse were found among Aboriginal men (22%) compared to non-Aboriginal men (17%) and among Aboriginal women (68%) compared to non-Aboriginal women (71%) (Craib et al., 2003). In the older VIDUS cohort, similar proportions of sexual abuse were reported among Aboriginal women in the Cedar cohort as compared to women in the VIDUS cohort. This is despite the fact that VIDUS participants were on average 9 or 12 years older for women and men respectively and all used injection drugs as compared to 47% of women and 65% of men in the Cedar cohort. Reported sexual abuse among Aboriginal men in the Cedar cohort was in fact higher than in VIDUS.

The fact that Aboriginal men and women may in fact be experiencing different pathways to HIV infection has been suggested in previous research, although the findings are mixed and the association has not been directly investigated. A review of the
literature on the effects of sexual abuse with PTSD among men and women has presented many studies suggesting that female gender is independently associated with PTSD among sexual abuse victims, while a meta-analysis found no differences in gender on the effect of childhood sexual abuse on either PTSD, suicide, or depression (Walker, Carey, Mohr, Stein, & Seedat, 2004). A study on the psychological effects of child abuse among American Indian people from two American Indian reservations found that women were more likely to report early childhood sexual abuse, while experiences of physical abuse were more commonly reported among men (Libby, Orton, Novins, Beals, & Manson, 2005). In that study, the effects of sexual abuse on psychological disorders including depression and PTSD were found to be similar for men and women, and no significant interaction between gender and sexual abuse on psychological disorders were detected. Given the comparable findings of our study on the effects of sexual abuse on HIV infection, the possible use of drugs to alleviate psychological distress must be further investigated. In particular there are few studies which have assessed the prevalence of PTSD among young Aboriginal people and its association with drug use (Wesley-Esquimaux & Smolewski, 2004).

4.3.2 HIV infection and historical trauma

Although the studies in this thesis have not found an association of HIV infection with either residential school attendance or foster case, this should not mean that these factors have not affected HIV risk. The proportion of Aboriginal young people who had been taken away from their biological parents was high among both males and females. Conservative estimates of having either biological parent attend residential school showed similar proportions for both men and women (M:F = 48%;43%). Although
considering the proportion of young people taken away from their parents, it is clear that many young people may not know. In the papers in this thesis, the only factors independently associated with HIV infection or sex work were sexual abuse rather than the other traumatic life events, such as having had parents attend residential school or having been taken away from biological parents through the foster care system. Measuring any health impact without a clear exposure is a difficult task, let alone an exposure such as residential school and foster care attendance that cannot be separated from one individual to the next through effects passed between family, extended family and community (Barton, Thommasen, Tallio, Zhang, & Michalos, 2005; Fournier & Crey, 1997). Although researchers have attempted, and will likely continue to attempt to gauge the impact of historical trauma on health status (Barton et al., 2005; Pointe, March 30, 2000), including HIV risk, there is still no clear methodology for estimating the effects of historical trauma, for instance having parents attend residential school, on HIV infection (Barlow, 2003; Barton et al., 2005).

In 2003, Barlow published a literature review on the effects of the residential school system on HIV risk behaviour. His conclusions were that although it was hard to state whether or not surviving the residential school system was directly associated with HIV infection, a strong argument could be made in terms of the “multi-generational effects” of the residential system on increasing HIV infection. The “multi-generational effect” in this sense referred to physical and sexual abuse and psychological trauma passed on to future generations. The effect on HIV infection appear to be mitigated through the use of alcohol and injection drugs in order to suppress the pain associated with generational experiences of abuse (Barlow, 2003). Indeed, the links of traumatic
childhood events, such as childhood sexual abuse, with increasing HIV risk had been documented (Cunningham, Stiffman, Dore, & Earls, 1994; M. Miller, 1999; Zierler et al., 1991). Walters and Simoni have highlighted the connection between alcohol and drug use related to HIV risk behaviours and physical and sexual abuse experienced disproportionately by Aboriginal communities (2002). For these reasons, the papers in this thesis have attempted to contextualize the experiences of Aboriginal young people within the framework of historical trauma beyond that which can be addressed within the methodologies of the studies. Future research on Aboriginal health should continue to improve methodologies for measuring the impacts of historical trauma on HIV risk.

4.3.3 Healing from Sexual abuse

The experiences of family fragmentation and the ongoing trauma suffered by Aboriginal communities as a result of colonization is described as a “soul wound” which threatens a reenactment of abuse in communities where the pain and grief is most pronounced (Duran, Duran, Brave Heart, & Yellow Horse-Davis, 1998). Some of the experiences of Aboriginal women who survived sexual abuse have included a sense of shame and guilt, of invalidation and cultural shame, and the need to make sense of the abuse (McEvoy & Daniluk, 1995). Understanding the depth of intergenerational trauma and hardship among Aboriginal Canadians and developing more positive community identities to overcome experiences of cultural shame has been key to the recovery of many (Chansonneauve, 2007), although it must be emphasized that there is no wrong or right way to heal from abuse and each person must choose their own path to recovery (McEvoy & Daniluk, 1995).
Currently many drug treatment programs do not adequately address the need for sexual abuse counseling as an integral part of programming (Chansonneuve, 2007), although some treatment facilities include this treatment as part of their mandate (Callaghan, Cull, Vettese, & Taylor, 2006). The Aboriginal Healing Foundation has provided several comprehensive reports on Aboriginal approaches to addiction and healing, many of which have been cited in these manuscripts (Archibald, 2006; Barlow, 2003; Chansonneuve, 2005; Corrado & Cohen, 2003; Hylton, 2002; Mussell, 2005; Wesley-Esquimaux & Smolewski, 2004). Some of the unique characteristics of the Aboriginal approaches are that they: address the underlying causes of addiction behaviour related to the history of Aboriginal people in Canada, they incorporate traditional culture into the healing process, and they emphasize fostering the interconnectedness among family members and communities (Chansonneuve, 2007, p. 60).

One of the fundamental lessons learnt from experiences of sexual abuse survivors has been that initiatives for healing must be driven by the communities affected rather than by outside forces in order to ensure sustainable and comprehensive services, and to prevent further victimization by survivors once they disclose the abuse (Fournier & Crey, 1997; Ross, 2006). Some advocates have suggested that programs must also focus on the rehabilitation of sex offenders in a manner that fosters community cohesiveness rather than merely laying charges and sending offenders to prison; this is said to be particularly important, as when offenders come back to communities without rehabilitation but with added anger, isolation, and hurt, future victimization is likely (Ross, 2006). Particularly difficult for some communities is breaking the silence of sexual abuse within their
communities where there is fear and shame in bringing the problem to light (Fournier & Crey, 1997, p. 149). Despite the difficulties involved in these strategies, there are a number of communities in Canada which have had success addressing sexual abuse in a community-driven and sustainable manner (Aboriginal Peoples Collection, 1997; Chansonneuve, 2007).

4.3.4 Relevance to other Indigenous peoples

Despite many differences, the commonalities among Indigenous populations around the world may mean that other Indigenous communities may benefit from the findings, methodology, and community partnership of this study. Although different historical experiences are apparent among Indigenous people around the world, sufficient similarities have been noted to allow research findings from one community to be of potential relevance to others. In particular, similarities in health disparities have been reported among Indigenous peoples from Canada, the United States, New Zealand and Australia (Archibald, 2006; Horton, 2006). Social or economic disparities have included lower income levels, unemployment, and unstable housing, while health disparities include disproportionate experiences of violence, infectious disease (Tuberculosis, HIV), and chronic disease (diabetes) (Reading, 2002). Particularly striking is the common over-representation of Indigenous persons in prisons around the world, and the disproportionate experiences of injury (Krieg, 2006; Latimer & Foss, 2004; Walters, Simoni, & Harris, 2000).

There have been several differences in the HIV/AIDS reports of Aboriginal people around the world. While in Canada and the United States HIV prevalence has risen drastically in Aboriginal communities (Centre for Disease Control and Prevention,
2007; Public Health Agency of Canada, 2006), in comparison, HIV incidence has been comparatively lower in the circumpolar north and in New Zealand (Guthrie, Dore, McDonald, & Kaldor, 2000; National Centre in HIV Epidemiology and Clinical Research, 2006). Several theories regarding these differences have been proposed. In the circumpolar north it has been noted that HIV prevalence is largely attributed to heterosexual sex among the Indigenous population, and an effective response of condom distribution in combination with an overall low prevalence of HIV infection has protected this population from HIV (UNAIDS, 2006). New Zealand has been credited with launching a widespread and successful public health response to HIV which actively involved drug-using populations as well as the support of the New Zealand Prostitutes Collective (UNAIDS, 2006). As an emerging global movement of Indigenous people begins to build strength and capacity in the common struggles of Indigenous people globally (Reading, 2002), further research may afford the opportunity of learning about best practices in research and programming in different contexts and settings.

4.3.5 The need for an expansion of harm reduction services

Currently, there have been challenges associated with introducing harm reduction services to Aboriginal communities as a result of “community size and limited infrastructure, lack of financial resources and cultural differences” (Wardman, Clement, & Quantz, 2005). In addition, harm reduction in Canada has been a controversial public health approach, and similar to many communities, has been historically lacking in Aboriginal communities where abstinence based programming has predominated (Dell & Lyons, 2007). However, as emphasized in their review, Dell & Lyons (2007) note that harm reduction services are beginning to be incorporated in many rural Aboriginal
communities, where the harm reduction approach is seen to be akin to the Aboriginal approach of treating the whole person. However, even in Vancouver where a safe injection site and numerous syringe exchange programs are operating, young women in survival sex work, more than half of whom are Aboriginal, have limited access to clean syringes (Shannon et al., 2007). As the studies in this thesis have found sex work among young Aboriginal women to be independently associated with injecting cocaine daily, an immediate intervention requires urgently providing safer injecting equipment to young women. Cocaine dependence requires injections approximately twenty times a day, as opposed to around four times for heroin, and the HIV epidemic in Vancouver in the nineties has in several studies been attributed to the use of injection cocaine (Tyndall et al., 2003; E. Wood et al., 2007).

Additionally, given the high prevalence of violence and sexual abuse experienced by women involved in sex work in this study, it is becoming increasingly clear that withdrawal symptoms should be recognized as a chronic pain condition or "survival treatment" within drug treatment (Connors, 1994). The need to provide "survival treatment" cannot be underemphasized in light of the continued brutal treatment of women in the province where this study takes place. January 2007 marked the first day of the murder trial of a Canadian pig farmer accused of murdering at least 26 women in Vancouver, a trial described as the largest serial murder case in Canadian history (Ferreras, 2007; Gunn, 2007). Impoverished Aboriginal women were over-represented among the murder victims. In addition to these cases in the Downtown Eastside of Vancouver, community members in Northern BC are continuing to grieve the nine or more young women missing or murdered since 2002 while hitchhiking on a northern BC
highway, named the "Highway of Tears". With the exception of one woman, all young
women recently profiled in a report by community groups were Aboriginal women
(Lheidli T'ehheh First Nation, Carrier Sekani Family Services, Carrier Sekani Tribal
Council, P.G. Native Friendship Centre, & Prince George Nechako Aboriginal
Employment Training Association, 2006). The ruthless murders and lack of timely
police response have incited intense public attention; however the underlying social
conditions that put the murdered women at higher risk of victimization remain
inadequately addressed.

The use of methadone maintenance treatment (MMT) by women has been found to
be a harm reduction strategy in reducing instances of "dope-sickness" (heroin and other
opiate withdrawal), which can place women in situations where they are likely to have to
become more involved in sex work and experience higher levels of physical harm (P.M.
Spittal et al., 2001). Given the low use of MMT in these studies, MMT in BC requires
low threshold services for poly-substance users, who may not quit other drugs altogether,
but who may in fact reduce their use of opiates as a result of treatment. Methadone must
therefore be considered a "survival treatment" for street entrenched women rather than an
absolute substitute for drug use (P.M. Spittal et al., 2001).

It should be noted that while studies have shown that sex work is associated with
HIV infection among women involved in IDU, this relationship does not exist after
adjustment for injection drug use variables (Kuyper et al., 2005; Evan Wood et al., 2007).
Condom use has similarly been found to be high with clients, although given the high
prevalence of date rape, the use of condoms should not be considered a matter of control
for women. An association between sex work and HIV has not been detected in this
A comprehensive review by Vanwesenbeeck (2001) has largely disproved any association with sex work and HIV transmission in the developed world. The lack of significant difference in HIV prevalence and condom use between women involved in recent sex work as compared to women not involved supports the assertion by Vanwesenbeeck that "At the end of the 1980s, it had become clear that, for the Western world, any notion that prostitutes would play a decisive role in the spread of the disease could not be substantiated" (Vanwesenbeeck, 2001, p. 245). As a result, it is becoming increasingly apparent that the priority in research on harm reduction for women involved in sex work should be assessing and maintaining the safety of women and drug treatment strategies, rather than HIV transmission alone. As mentioned, although this study is focused on HIV, it initially stemmed from a concern by community members of the physical safety of young women. Based on the findings in these studies, these safety issues continue to affect women.

The legal context of sex work is a controversial topic; however it is one that needs to be openly discussed and questioned. Farley et al's (2005) study of sex workers in the street-based sex work in the Downtown Eastside of Vancouver concluded that sex work was "intrinsically traumatizing". However one quarter of Aboriginal women in their study were reported to have named "legalized prostitution" in response to the researchers' open-ended question of "what do you need". Given the ongoing violence faced by women involved in street based sex work, local advocates and sex worker groups have urged for radical policy changes from decriminalization to legalization. Pivot legal society has outlined the need to provide sex workers the security of work in any other profession, although specific to the context of sex workers, including providing
environments free of sexual harassment by employees or pimps, pension plans, and protection by the Worker’s Compensation Board (Pivot Legal Society, 2006). Further, as a result of the apparent successes in New Zealand, where legalization of prostitution began in 2003, this has been proposed as a way to regulate the exclusion of minors from sex work.

As this study includes girls and women involved in survival sex work, a caveat is needed regarding services for women involved in sex work. As sex work for young people may be a means of survival, programming may need to accommodate the shifting identities of young people involved in sex work, as many do not view themselves within a profession (Vanwesenbeeck, 2001). Services for very young people in particular may need to include more inclusive terms for young people who do not identify as sex workers but may trade sex in some circumstances. This is also important for women who are involved in sex work to meet their basic needs where there is often less identification with a profession.

4.4 Strengths and Limitations

This study is the only cohort study composed entirely of young Aboriginal people in North America. The study has the advantages of reducing previous confounding by ethnicity while providing a large sample of Aboriginal young people. This research further supports previous studies which have found higher HIV prevalence among young women as compared to men (Doherty, Garfein, Monterroso, Latkin, & Vlahov, 2000; C. L. Miller et al., 2002), with a unique application to Aboriginal young people. This study is among the few studies assessing gender differences in HCV and HCV prevalence between young Aboriginal men and women.
Several limitations of this study should be mentioned. The task of determining the effects of sexual abuse on HIV risk is complex and may not have been adequately addressed in this research. One of the difficulties in interpreting the association of sexual abuse with HIV is distinguishing the many inter-related factors associated with sexual abuse. These factors include an association of sexual abuse with physical and emotional abuse, with community or family socio-economic deprivation, with family alcoholism and drug dependence, with re-victimization, with homelessness; and with racial/ethnic shame (McEvoy & Daniluk, 1995). Other factors related to abuse, such as the duration and frequency of the abuse, and the closeness of the relationship of the survivor also vary (Walker et al., 2004). In addition, each of these factors effect individuals differently depending on when they occurred during the course of an individual’s life (from childhood to the present) (Zierler et al., 1991). The present study does not seek to clarify the complex relationship between childhood sexual abuse and associated child neglect, or physical and emotional abuse. Clearly, sexual abuse in this study is a marker for a complex array of vulnerabilities. Future research should attempt to better differentiate the many factors associated with sexual abuse among men and women.

Several other limitations not previously mentioned must be noted beginning with the fact that the focus of these studies on individual behaviours and circumstances may give readers the false impression that individual action and choice determined HIV prevalence rather than structural and historical factors (Farmer, Connors, & Simmons, 1996). We have attempted to dispel this notion by adequately contextualizing individual behaviours within historical and structural factors which converge to place Aboriginal people at increased risk for HIV infection. However, one of the limitations of this study is
that an analysis of larger socioeconomic issues such as differences between groups by
neighbourhood, income, and political context was not possible because of similarities
between groups. A limitation for both studies are the similar harmful life circumstances
faced by each comparison group (males and women who had not been involved in sex
work in the previous six months) who were extremely vulnerable themselves in terms of
unstable housing, lifetime incarceration, and high unemployment.

Although this analysis found that young Aboriginal women were at higher risk
compared to young men, important findings regarding men’s vulnerability must be
highlighted. For example, a greater number of women reported sexual abuse; however
the fact that 30% of men in the study reported sexual abuse is important. The particular
vulnerabilities of young Aboriginal men is an important area of research which has
emerged in this data but has not been adequately addressed within these studies. As this
research determined that 17% of young men had been paid for sex in their lifetime, future
research on sex work among men is necessary. The higher proportion of men incarcerated
and higher crystal methamphetamine use points to two issues that should be further
prioritized in research on drug treatment and young Aboriginal men’s health.

Another issue is the possible misclassification due to the definition of sex work.
Previous research has emphasized that sex work is not a homogenous category, and
definitions vary from study to study. Each definition has particular draw-backs (Kuyper
et al., 2005). The fact that one-third of women who had not recently been involved in sex
work reported being involved at some point in their lifetime would also have served to
reduce the effects of the associations with sex work involvement. As an emerging area of
research focuses on comparisons between street-based versus indoor sex work venues, in
addition to different levels of income in each location, recording these intricacies would be of benefit to future research.

4.5 Further research

There are currently no studies focusing on PTSD or traumatic stress interventions for young people who are drug dependent. Given the possible mediating effects of antecedent sexual abuse and HIV infection, these studies are urgently required. In addition, this thesis has demonstrated the increased prevalence of HIV and HCV among young Aboriginal women as compared to men, however more research is needed to determine whether young women are able to access HIV and HCV treatment (Kerr, Marsh, Li, Montaner, & Wood, 2005; Lima et al., 2006), and the barriers which exist in this regard, particularly for young women. Given the disproportionately high number of young Aboriginal people who have been removed from the families at a young age and who have been incarcerated in this study and in other research (BC health officer, p37), future research should continue to explore the association of experiences of incarceration and removal from parents with current HIV and HCV-related risk.

As with other minority groups, research on the experiences of Aboriginal people and racial/ethnic discrimination is also limited (Krieger, 1999). Experiences of racial/ethnic discrimination includes outright experiences of racial slurs and harassment at school or at work, or more insidious forms of discrimination such as police targeting and paternalism on the part of health professionals (Pivot Legal Society, 2004a, 2004b). Researchers in the field of social epidemiology and health have called for the development of a scale of racial/ethnic discrimination at both the individual and population level (Krieger, 1999). Given the findings of this study, further research can
incorporate the discrimination experienced by Aboriginal people as a predictor of illegal drug use and HIV-related risk.

Additionally, there are many measures of resiliency which should be explored in further research. These must be explored in light of the many factors, including cultural buffers, that have been suggested to protect Indigenous people against HIV risk (Walters & Simoni, 2002), including traditional and non-traditional mechanism of protection present in communities. Similarly, resiliency among young Aboriginal people may be determined by young people’s involvement in lobbying/social advocacy work, workplace organizing activism, social networks, neighbourhood/community work, awareness of personal rights, awareness of ancestry and family origin/roots, cultural/ethnic social resources, participation in civil rights movements (past or current racial justice work), and active involvement in the women’s movement (Zierler & Krieger, 1997). This thesis has highlighted troubling findings regarding HIV infection among Aboriginal young people. Further research is necessary to determine how resiliency factors can mitigate the harmful effects of historical and current trauma and discrimination on HIV risk.

In conclusion, this study of gender differences in HIV-related risk has reported that being an Aboriginal women is associated with increased HIV and HCV prevalence among young Aboriginal people involved in drug use. Women involved in sex work experience increase HCV prevalence which may therefore be at increased risk for HIV infection. Further qualitative research is necessary to help identify why young Aboriginal women are experiencing increased HIV-related risk as compared to young men in order to help build gender appropriate services.
4.6 References


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