

PREVALENCE AND RISK FACTORS OF SEXUALLY TRANSMITTED
AND BLOOD BORNE INFECTIONS
AMONG WINNIPEG STREET-INVOLVED YOUTH ENGAGED IN SURVIVAL SEX

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Abstract

Background: The purpose of this secondary data analysis was to determine the prevalence of sexually transmitted and blood-borne infections (STBBI) and to examine the role of survival sex in sexual risk among street-involved youth in Winnipeg, Manitoba.

Methods: Between 1999 and 2003, 743 Winnipeg street youth were interviewed in three separate cohorts as part of a national multi-centred study by the Public Health Agency of Canada.

Results: Among the 673 Winnipeg street youth who responded to questions relating to survival sex, 26.3% reported they had engaged in survival sex. Females and Aboriginal youth were at greatest risk for sex trade involvement. Youth engaged in survival sex were diagnosed with significantly higher rates of STBBI; experienced greater amounts of abuse; and were at greater risk for participating in high risk sexual behaviours compared to their non-sex trade counterparts.

Conclusion: Gender specific, culturally appropriate, and youth oriented prevention and intervention strategies are urgently required to reduce the prevalence of STBBI and survival sex among this at-risk population.

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Dedication

I would like to dedicate this thesis to the street youth of Winnipeg who volunteered to participate and share intimate details of their current and past personal lives during each phase of the primary research study. The information they have so generously provided will contribute to our understanding of their lives and experiences with the expectation that this knowledge will assist in development of health and social programs geared towards youth-at-risk.

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Introduction

Background of the Issue

Despite ongoing prevention and control efforts, the incidence of sexually transmitted and blood-borne infections (STBBI) has been steadily increasing locally, nationally, and globally since the late 1990s (Manitoba Health, 2004-2009; Public Health Agency of Canada (PHAC), 2008a; PHAC, 2008b; PHAC, 2006a; Manitoba Health, 2005; World Health Organization (WHO), 2005). They remain an immense public health concern. STBBI pose a significant threat to an individual and community's overall health as they may be asymptomatic initially but yet highly infectious, and those who do not seek treatment will continue to harbour and spread infection. Without treatment, serious long-term negative health consequences for the individual may result in infertility, dementia, and death (PHAC, 2006c). A heavy economic burden stems from the diagnosis, treatment, management, and productivity loss due to STBBI. Paid work, unpaid work, and volunteer work time is lost due to illness or disability as the individual becomes more compromised due to the negative health effects related to STBBI (WHO, 2005; Wong, Singh, Mann, Hansen, & McMahon, 2004; Patrick, 1997). It was estimated that in Canada the direct and indirect costs associated with chlamydia (Ct) and gonorrhoea (GC) in 1990 was \$123 million and \$75 million, respectively (Goeree & Gully, 1993, as cited in Wong et al., 2004). HIV lifetime care and treatment costs in 1998 were approximately \$160 000 per person; indirect costs associated with lost productivity and

premature death may be as high as \$600 000 per person (Spigelman Research Associates, 2003). Furthermore, healthcare costs in 2005 for Hepatitis C totaled approximately \$500 million annually and was expected to increase two-fold by 2010 (Dinner, Donaldson, Potts, Sirna, & Wong, 2005). The incidence of these infections continues to rise along with their related costs and expenditures.

While STBBI do not discriminate on the basis of a person's age, education, ethnicity, or socio-economic status, they do cluster within certain core populations and in Canada, it is youth who are at the centre of this unyielding epidemic (Manitoba Health, 2004-2009; PHAC, 2008a; Manitoba Health, 2005; Shields, Wong, Mann, Jolly, Haase, Mahaffey, Moses, Morin, Patrick, Predy, Rossi, & Sutherland, 2004; Elliot, Blanchard, Beaudoin, Green, Nowicki, Matusko, & Moses, 2002). National surveillance data indicates that adolescents are disproportionately affected by sexually transmitted infections (STI) with young adults between the ages of 15 and 24 years having the highest incidence of STI, most notably Ct and GC (PHAC, 2008a; PHAC, 2006a; PHAC, 2006b). Further data demonstrate that Manitoba reports one of the highest rates of both Ct and GC in Canada with a significant proportion concentrated among this youth population (Manitoba Health, 2004-2009; PHAC, 2008a; PHAC, 2008b; PHAC, 2006a; Manitoba Health, 2005). Even more disconcerting is that from 1985 to 2007, approximately 33% of Manitobans who tested positive for HIV (the most serious STBBI) were between the ages of 15 to 29 years (Manitoba Health, 2008). This makes intuitive sense since the ulcerative and inflammatory nature of STI is implicated in facilitating the sexual transmission and acquisition of HIV. This occurs through a variety of biological mechanisms (e.g., disruption of mucosal barriers, recruiting HIV susceptible cells to the

genital tract) and potentially contributes to the cases of HIV diagnosed in Manitoba (PHAC, 2006c; Jones & Barton, 2003; Fleming & Wasserheit, 1999). The number of reported cases of STBBI likely underestimates the true disease burden as many of these infections go undiagnosed and untreated (PHAC, 2006c; Wong et al., 2004). Although not all STBBI are captured in this surveillance system (individual cases of Human Papilloma Virus and Herpes Simplex Virus are not reported to public health authorities), these rates do provide a snapshot of adolescent sexual health in Canada and Manitoba.

Within the adolescent age group, there is a sub-population of street-involved youth who significantly contribute to the escalating incidence of STBBI among this cohort. Street-involved youth are more susceptible to sexually transmitted and blood-borne infections (STBBI) than the general adolescent population as their biologic, social-developmental, and behavioural factors combined with conditions derived from living on the street enhance their acquisition and transmission (PHAC, 2006b; Beaudoin, 2004; Elliot et al., 2002). A harmful repercussion of living on the streets, survival sex - the trading of sex or sexual acts in exchange for food, shelter, money, drugs, and material goods - is used as an economic survival strategy to meet subsistence needs for street youth (Greene, Ennett, & Ringwalt, 1999). Bartering sex in exchange for basic daily survival needs heightens the youth's vulnerability to sexual exploitation, violence, and infection.

Statement of Research Problem

The incidence of STI is highest among youth ages 15-24 (Manitoba Health, 2004-2009; PHAC, 2008a; PHAC, 2006a) with street-involved youth significantly contributing to the escalating incidence rate among the adolescent population. Between 1999 and

2003, 743 street-involved youth living in Winnipeg were interviewed in three separate cohorts as part of a national multi-centred study by the Public Health Agency of Canada (formerly known as Laboratory Centre for Disease Control). To date, only local data from phase II (1999) has been analyzed. The purpose of this study was to explore the relationship between childhood experiences of abuse (emotional, physical, and sexual), survival sex with its related STBBI risk behaviours, and the acquisition of STBBI among homeless youth engaged in survival sex for all three phases in which Winnipeg participated.

Relevance of Research Study

People under the age of 25 have the highest burden of most STI. Street-involved youth are at greater risk for acquiring STBBI than the general adolescent population due to their vulnerable position within mainstream society. Recognizing the multitude of adverse health outcomes arising from STBBI, epidemiological data helps aid in the understanding of the proximate behavioural determinants and underlying factors relating to sexual risk taking and survival sex among street-involved youth, which is a crucial first step in reducing these infections within this high risk group. Further surveillance and characterization of this growing population can help develop and deliver public health programs that promote healthy sexual behaviours specifically geared towards their unique needs. Prevention of these infections would have a broad impact on society by reducing the burden of disease, suffering, and associated economic costs to the health care system and related expenditures.

The review of literature related to survival sex among street youth in Canada, and particularly in Winnipeg, Manitoba is limited. The lack of such research impedes our

ability to identify relevant factors that are driving the spread of STBBI within this at risk adolescent population. Building on previous research regarding street-involved youth in the City of Winnipeg (Patton, Lemaire, & Friesen, 2008; Bodnarchuk, Patton, & Rieck, 2006; Beaudoin, 2004; Higgitt, Wingert, Ristock, Brown, Ballantyne, Caett, Coy, Quoquat, & Operation Go Home, 2003), this secondary data analysis explored the role of survival sex in STBBI risk among street-involved youth in Winnipeg. Youth who engaged in survival sex were compared to those who did not report such activity on a variety of socio-demographic variables and STBBI risk related behaviours.

Literature Review

Adolescents and STBBI Risk

There are a wide variety of determinants contributing to the high rates of STBBI seen among adolescents including biological, social-developmental, and behavioural factors (McKay, 2004). Females in early adolescence have a biological susceptibility to STI as the cellular and tissue structure within the adolescent cervical os supports the growth of Ct and GC. During pubertal development, cellular and tissue changes begin to occur within the cervical os due to estrogen exposure and it is these micro-level changes that increase a female's resistance to Ct and GC. These biological changes occur gradually and continue into adulthood, thus the risk of being infected with *Chlamydia trachomatis* and *Neisseria gonorrhoeae* within the adolescent cervical tissue remains high (Holmes & Stam, 1999, as cited in Wong et al., 2004; Berman & Hein, 1999, as cited in Cheng & Low, 2002). Little is known about the biological susceptibility of STBBI in males. Studies have shown that male circumcision has been associated with significantly reducing the risk of heterosexually acquired HIV-1 infection among men (Bailey, Moses, Parker, Agot, Maclean, Krieger, Williams, Campbell, & Ndinya-Achola, 2007; Gray, Kigozi, Serwadda, Makumbi, Watya, Nalugoda, Kiwanuka, Moulton, Chaudhary, Chen, Sewankambo, Wabwire-Mangen, Bacon, Williams, Opendi, Reynolds, Laeyendecker, Quinn, & Wawer, 2007; Wong et al., 2004; Bailey, Plummer, & Moses, 2001); however this is not an issue germane to adolescent males' risk.

Social-developmental factors also impact on an adolescent's sexual and reproductive health status. Education and socio-economic status are closely linked together and are two key social determinants contributing to the health of adolescents.

Education contributes to health by providing youth with knowledge and skills required for problem solving and it offers a sense of control over life situations. Education improves one's ability to access and understand information relating to health and thus the responsibilities and consequences of engaging in sexual activities. In general, health status improves as the level of education increases, and deteriorates in those with lower levels of education (PHAC, 2001). Associated with lower levels of education are circumstances of unemployment, underemployment, and unsafe work conditions which lead to lower socio-economic status that in turn, affects one's ability to determine living conditions such as safe housing and food security (PHAC, 2001). Simply based on their young age, youth will have less education, skills, and employment opportunities than their adult counterparts, and therefore are at a considerable disadvantage when independently attempting to meet their health and welfare needs.

During adolescence, youth seek to develop their own identity, opinions, and values independent from those of their parents or caregivers (Miller, 1989, as cited in Rolison & Scherman, 2002). For many teens this entails emotional turmoil, struggles with self-esteem, and engaging in risk-taking behaviour. Research findings suggest that heightened risk-taking during adolescence is influenced by peers, parenting, and brain development (Steinberg, 2007; Reyna & Farley, 2006) and Steinberg (2007) further purports that the ensuing behaviour is likely to be to some extent, inevitable. When adolescents take risks, the consequences of these actions can cause negative (sometimes life-changing) health outcomes: motor vehicle accidents can occur while driving at high speeds or intoxicated and can lead to death or disability, substance use (alcohol, cigarettes, and drugs) can lead to cancer and chronic health conditions, and risky sexual

behaviour can lead to unwanted pregnancies and STBBI (PHAC, 2007; Reyna & Farley, 2006; Williams & Davidson, 2004; Sveinson, Carmel, & Varnhagen, 1997).

Sexual and Reproductive Health Challenges among Street-Involved Youth

Sexual and reproductive health issues affect all Canadian youth, however, there is a sub-population of adolescents known as street-involved youth who are at a particularly high risk of acquiring STBBI when compared with the general adolescent population (Patton et al., 2008; Bodnarchuk et al., 2006; PHAC, 2006d; Anderson, 2004; Beaudoin, 2004; Shields et al., 2004; Higgitt et al., 2003; Elliot et al., 2002; Rew, Fouladi, & Yocky, 2002; Rew, 2001; Tyler, 2000; DeMatteo, Major, Block, Coates, Fearon, Goldberg, King, Millson, O'Shaunessy, & Read, 1999; Caputo, Weilere, & Anderson, 1997; Johnson, Aschkenasy, Herbers, & Gillenwater, 1996; Rotherman-Borus, Mahler, Koopman, & Langabeer, 1996). There is not one universally recognized definition of the term *street-involved youth*, however, it is generally used to describe adolescents and young adults who are between the ages of 12 and 24 years, who have left home either voluntarily or involuntarily, who are currently homeless, that is, live on the streets, in a shelter system, or are moving between temporary or marginal housing arrangements, and who are heavily engaged in street culture (Haldenby, Berman, & Forchuk, 2007; Kelly & Caputo, 2007; Hwang, 2001). For the purpose of this study the terms street-involved, homeless, and street youth are used interchangeably. Regardless of the term employed, homeless adolescents contend not only with the characteristics that place all youth at an increased risk for STBBI but their risk is further enhanced by unstable living circumstances, barriers to accessing traditional health care (e.g., health care provider intolerance, mental health disorders), and discrimination in comparison to housed youth (Patton et al., 2008;

PHAC, 2007; Haldenby et al., 2007; Bodnarchuk et al., 2006; PHAC, 2006b; Boivin, Roy, Haley, Galboud du Fort, 2005; Self & Peters, 2005; Beaudoin, 2004; Feldmann & Middleman, 2003; Higgitt et al., 2003; Elliot et al., 2002; Hwang, 2001; Tyler, 2000; Rotheram-Borus et al., 1996). The ill-effects of homelessness on their sexual and reproductive health is evidenced by data indicating the rates of Ct and GC among this disenfranchised population has been estimated to be greater than ten times the rate found among non-street-involved youth (PHAC, 2006d) and that findings from an American study estimated that compared to any other group of youth, street-youth were 6 to 12 times more likely to become infected with HIV (Rotherum-Borus, Song, Gwadz, Lee, Van Rossem, & Koopman, 2003).

Street Youth Population

Street youth are a heterogeneous group who come to the street from a variety of backgrounds with a wide range of experiences, needs, and personal qualities (Caputo et al., 1997). The exact number of Canadian street youth is unknown as it is difficult to measure the homelessness rate due to the transient, hidden, and often ill-defined nature of this population (Kelly & Caputo, 2007). Subsequently, national estimates vary widely from 50 000 (Ayerst, 1999) upwards to 150 000 (Radford, King, & Warren, 1989 as cited in Caputo et al., 1997). Based on a 2005 shelter survey conducted in Winnipeg, Manitoba, there were a total of 1915 homeless persons estimated to be staying in Winnipeg shelters with approximately 545 identified as youth, however, this figure likely underestimates the true number of homeless youth as the visible homeless (i.e., sheltered homeless) compose only 20% of the total population in the city (Proposed Fund

Allocation Committee, the Winnipeg Housing and Homelessness Initiative, and the Social Planning Council of Winnipeg, 2005).

A multitude of diverse and complex variables¹ are attributed to increasing the risk of youth becoming street-involved and homeless including: an emotionally, physically, or sexually abusive family situation; family violence and neglect; conflict over sexual orientation; low self-esteem; mental health disorders; involvement with delinquent peers; negative school experiences; failure of the social welfare or educational systems; and a desire for independence or freedom from parental rules (Buffardi, Thomas, Holmes, & Manhart, 2008; Patton et al., 2008; Haldenby et al., 2007; Tyler & Johnson, 2006; PHAC, 2006b; Rew, Whittaker, Taylor-Seehafer, & Smith, 2005; Anderson, 2004; Beaudoin, 2004; Gaetz, 2004; Whitbeck, Chen, Hoyt, Tyler, & Johnson, 2004; Higgitt et al., 2003; Cochran, Steward, Ginzler, & Cauce, 2002; Rew, 2001; Tyler, Hoyt, Whitback, & Cauce, 2001; Tyler, 2000; Caputo et al., 1997; Maticka-Tyndale, 1997; Rotherman-Borus et al., 1996). To some youth, the street is viewed as the safest place to live and represents the best alternative to an abusive and dysfunctional home environment; however, many find themselves alienated not only from their families but also from schools, health care services, and other support systems. With few ties to mainstream society, these youth tend to develop relationships and social networks with other street youth who provide emotional support while simultaneously entrenching them further into street culture and economy. Lacking the educational skills, work experience, and social supports necessary for traditional gainful employment, many homeless youth resort to illegal subsistence strategies such as drug trafficking, fraud, and theft in order to survive (Patton et al., 2008;

¹ Structural factors such social, political, legal, economic, and environmental practices and policies structure the context that give rise to street-youth in Canada and influence the transmission dynamics of STI (Buffardi et al., 2008; Marshall, 2008; Haldenby et al., 2007; Higgitt et al., 2003; Aral, 2002; Dematteo et al., 1999), however, these macro-level issues are beyond the scope of this paper.

Haldenby et al., 2007; Kelly & Caputo, 2007; PHAC, 2006b; Tyler & Johnson, 2006; Gaetz, 2004; Higgitt et al., 2003; Panter-Brick, 2002; Rew et al., 2002; Rew, 2001; Tyler, 2000; Caputo et al., 1997; Whitbeck, Hoyt, & Ackley, 1997; Rotheram-Borus et al., 1996).

Survival Sex

A harmful repercussion of living on the streets is the trading of sex or sexual acts in exchange for subsistence needs including food, shelter, money, drugs, and material goods, also called survival sex. Survival sex is used as an economic survival strategy that exposes this group to multiple negative health outcomes including STBBI, sexual victimization, and violence (Tyler, 2007; Tyler & Johnson, 2006; Anderson, 2004; Tyler et al., 2001; Tyler, 2000; Greene et al., 1999). Youth homelessness is characterized by deprived economic circumstances, with few legitimate means of self-support. In such circumstances, some youth may ‘voluntarily’ engage in survival sex; often however, it results from coercive and exploitive relationships with their partners or peers (Buffardi et al., 2008; Tyler, 2007; Tyler & Johnson, 2006; Tyler et al., 2001; Noell, Rohde, Seeley, & Ochs, 2001). Prevalence rates of Canadian and American street youth engaged in survival sex have been estimated to range from ~5% to ~30% (PHAC, 2006d; Tyler, 2007; Tyler, Whitbeck, Chen, & Johnson, 2007; Halcon & Lifson, 2004; Shields et al., 2004; Greene et al., 1999; Whitbeck et al., 1997). For the city of Winnipeg, there is limited research specific to the prevalence (and correlates) of survival sex among homeless youth, therefore, rates of survival sex vary significantly (see Table 1): 0% among a small qualitative study sample of street youth (Higgitt et al., 2003); 21% among female and 5% among male street youth (Beaudoin, 2004); 19% and 5% respectively,

among female and male participants in the 2006 study by Bodnarchuk et al.; and 6.3% for female street youth and 10.8% among their male counterparts (Patton et al., 2008). The current study builds on the findings from these previous studies regarding Winnipeg street youth.

Table 1. Research studies for Winnipeg street youth and survival sex

Principle author	Year	Location	Sample size (N)	Age (years)	Prevalence of survival sex	
					Females (%)	Males (%)
Higgitt	2003	Winnipeg	12	15 to 27	0%	0%
Beaudoin	2004	Winnipeg	319	14 to 24	21%	5%
Bodnarchuk	2006	Winnipeg	142	14 to 25	19%	5%
Patton	2008	Winnipeg	151	14 to 25	6.3%	10.8%

Several studies have found that survival sex among homeless youth vary by age, ethnicity, gender, and sexual orientation (Patton et al., 2008; Tyler, 2007; Tyler et al., 2007; Bodnarchuk et al., 2006; PHAC, 2006d; Tyler & Johnson, 2006; Beaudoin, 2004; Halcon & Lifson, 2004; Whitbeck et al., 2004; Shields et al., 2004; Tyler et al., 2001; Greene et al., 1999). Other correlates positively associated with survival sex among this population include sexual coercion, deviant peer affiliations, and length of time living on the streets (Buffardi et al., 2008; Tyler, 2007; Tyler & Johnson, 2006; Tyler et al., 2001; Green et al., 1999).

Childhood Abuse as an Antecedent Risk Factor for Survival Sex

Childhood victimization characterized by abuse (emotional, physical, and sexual) and neglect has been identified as an antecedent factor contributing to homeless youth engaging in survival sex (Buffardi et al., 2008; Tyler, 2007; Tyler & Johnson, 2006; Whitbeck et al., 2004; Tyler et al., 2001; Greene et al., 1999; Whitbeck et al., 1997). Literature demonstrates that youth who experience extreme trauma from the abuse and exploitation by their family members or caretakers are more vulnerable to revictimization later in life (Tyler & Johnson, 2006; Whitbeck et al., 2004; Dong, Anda, Dube, Giles, & Felitti, 2003; Noell et al., 2001; Tyler et al., 2001; Greene et al., 1999; Whitbeck et al., 1997). Several studies have attempted to clarify the relationship between early childhood abuse and sexual victimization later in life and in this regard childhood abuse may lead to adverse changes in self concept, powerlessness, maladaptive attitudes towards sexual behaviour, and cognitive impairments (Arriola, Loudon, Doldren, & Fortenberry, 2007; Cinq-Mars, Wright, Cyr, & McDuff, 2003; Dong et al., 2003; Rew, Taylor- Seehafer, Thomas, & Yockey, 2001). Negative familial relations, when combined with the psychological and physical damage caused by homelessness and trading sex, may result in long term mental, physical, sexual, and reproductive health problems for these vulnerable youth (e.g., substance use, suicide, depressive illness, and STBBI). The endpoint of these combined health problems lead to increased morbidity and mortality among this population (Buffardi et al., 2008; Tyler et al., 2007; Tyler & Johnson, 2006, Hwang, 2001). Findings from the Winnipeg based study by Bodnarchuk et al. (2006), however, suggested that gender, alone, regardless of abuse history was related to

exploitation by the sex trade. These notable findings warranted further investigation on the association between abuse history, gender, and survival sex.

Conceptual Framework: Relationship between Survival Sex and STBBI

STBBI are primary sources of morbidity for homeless youth who receive goods in exchange for sex. These youth are approximately two to three times more likely to have been told they have an STI compared with youth who did not trade sex (Tyler et al., 2007; PHAC, 2006d). In the face of hunger and victimization, meeting their basic daily needs often surpasses efforts to reduce STBBI risk among this population and since most have few options available, they will continue to be at high risk for these infections (PHAC, 2006d; Tyler & Johnson, 2006; Elliot et al., 2002; Rew et al., 2002; Rew, 2001; Tyler, 2000; Caputo et al., 1997; Rotheram-Borus et al., 1996).

Behaviour plays an important role in the transmission and acquisition of STBBI. In STI epidemiology, the risk of sexually acquiring STBBI is dependent upon the exposure to a sexual partner infected with sexually transmitted pathogens with the factors contributing to their transmission varying widely. Three distinct components of transmission dynamics used in determining the reproductive rate of a sexually transmitted disease was promoted by Roy Anderson and Robert May in the late 1980's (Anderson & May, 1988; May & Anderson, 1987) and summarized by the equation formula $R_0 = \beta c D$ (see Figure 1). The transmission model states that R_0 is the reproductive rate of an infectious disease (i.e., the mean number of people newly infected by an individual carrying a particular STI), β is the transmission probability from an infected to an uninfected individual, c is the number of sexual contacts between infected and susceptible individuals, and D is the average duration of infectivity of an infected individual. If R_0 is less than one, the prevalence of infection declines over time, and if R_0 is greater than one, prevalence increases. Inherent to survival sex are behaviours that positively contribute to

the sexual transmission of STBBI within this marginalized group including: (β) inconsistent condom use; and (c) age at first intercourse, high number of lifetime sexual partners, sex with high-risk (e.g., sex trade worker, injection drug user) partners, and rate of sex partner exchange. Although (D) duration (e.g., health care seeking behaviours, compliance to treatment) is the third component in the R_0 formula, for the purpose of this paper only the high-risk proximate determinants associated with the probability of transmission (β) and sexual partnering (c) will be further examined as duration of STBBI was not addressed during the primary study. Substance (alcohol and illicit drug) use and its influence on STBBI acquisition and transmission will be explored later in this report.

Prevention research has focused on condom usage as a safer sexual behaviour that decreases the probability of transmission if exposure does occur (β), as unprotected sex with an infected partner is an important risk factor for acquiring STBBI (Garnet, White, & Ward, 2008; Aral, 2002). This risk is influenced not only by the behaviours and biological characteristics (e.g., circumcision, gender) of the individual but also by the probability that the partner is infected (which is determined by the partner's behaviours) and by the sexual pathogen as different STBBI have different degrees of infectivity and transmissibility (Centres for Diseases Control (CDC), 2009; Garnet et al., 2008; Bailey et al., 2007; Holmes & Stam, 1999, as cited in Wong et al., 2004; Aral 1999). CDC (2009) reports condoms offer different levels of protection for various sexual pathogens and that a greater level of protection is provided for chlamydia, gonorrhoea, and HIV (the discharge diseases) as compared to genital ulcer diseases (genital herpes, syphilis, and human papilloma virus). Male latex condoms when used consistently and correctly are highly effective in reducing the risk of sexual transmission of STBBI even when the duration of

infectivity (D) cannot be decreased due to barriers in receiving screening, diagnosis, and treatment or that adequate treatment for that STBBI does not exist (CDC, 2009; Patrick, 1997). As condoms are only one part of the equation, promoting condom usage must be part of a more comprehensive, multi-faceted, behavioural approach to reducing the incidence of STBBI (CDC, 2009; Maticka-Tyndale, 1997).

For populations at risk who may be less receptive to condom usage, some of the other salient prevention strategies focusing on sexual partnering (c) may be more tolerable or attainable. Encouraging decreasing risk of exposure through postponing sexual debut (Shields et al., 2004; Williams & Davidson, 2004), reducing the number of sexual lifetime partners (Garnet et al., 2008; Shelton, Halperin, Nantulya, Potts, Gayle, & Holmes, 2004), decreasing rate of partner exchange (Garnet et al., 2008; Aral, 2002), and limiting sexual encounters with high-risk (e.g., sex trade worker, injection drug user) partners (Aral, 1999; Laumann & Youm, 1999) will impact the basic reproductive rate (R_0) of STBBI.

Initiation of first sexual intercourse before the age of 16 years places a person at greater risk for STI, as they are sexually active for a longer period. Early age at sexual initiation is correlated with other risk-taking behaviours including participating in unsafe sex, reduced contraception and condom use, and increased exposure to multiple sex partners (Shields et al., 2004; Williams & Davidson, 2004; Tyler, 2000; Maticka-Tyndale, 1997). In postponing sexual debut to late adolescence, the immediate negative consequences are reduced and allows for the older adolescent to bring a more developed brain, as well as greater maturity when making decisions about their sexual and reproductive health and behaviours (Reyna & Farley, 2006).

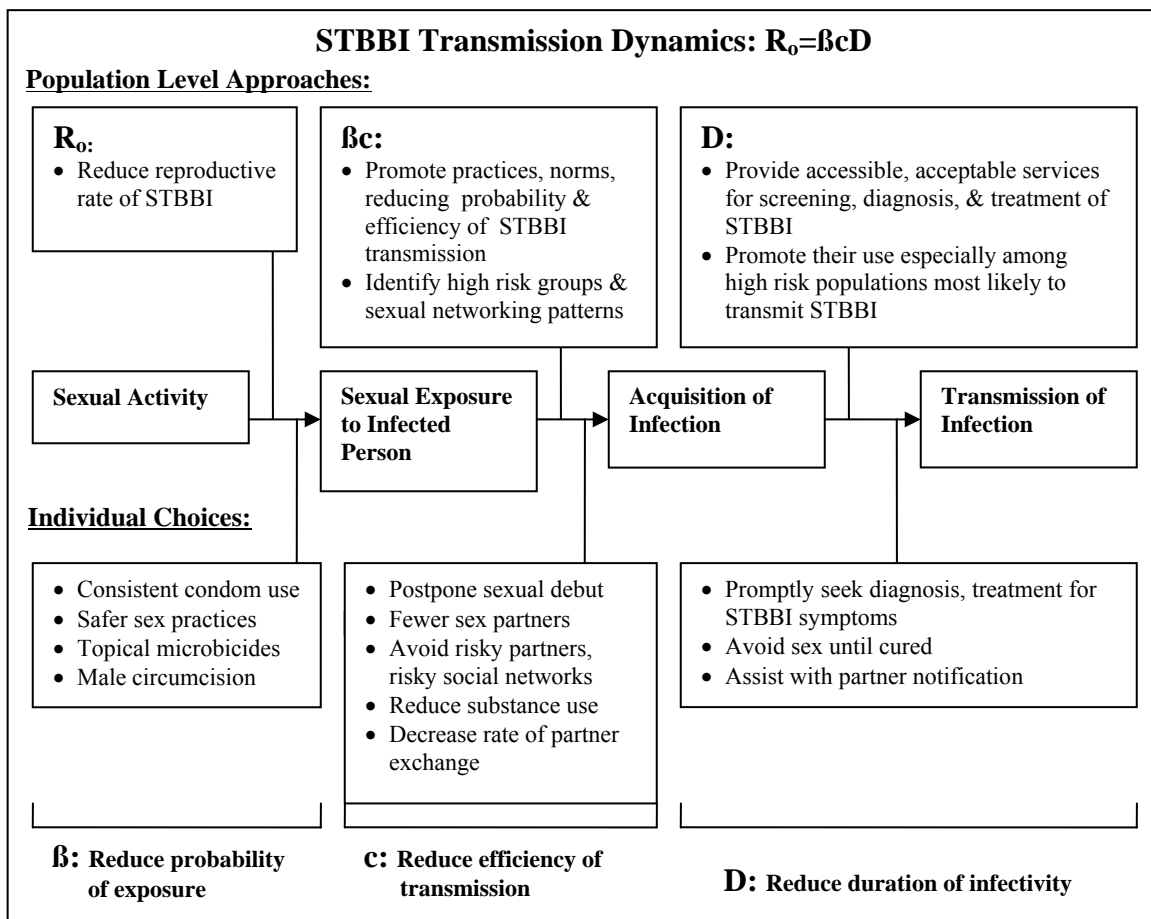
The number of sexual partners has consistently shown to affect the transmission of STBBI (Garnet et al., 2008; Shelton et al., 2004). Aral (1994) notes that the number of sexual partners serves as a direct measure of exposure as well as an indicator for other related risk taking behaviours and beliefs. Highly conducive to the transmission of STBBI are sexual networks that include those who exchange sex for drugs, money, or material goods; sex trade workers; and anonymous sex (Aral, Lipshutz, & Blanchard, 2007; Aral, 2002). Aral et al. (2007) assert that targeting multiple sexual partnerships, as a mechanism for reducing R_0 , requires the identification of these high-risk groups, their sexual networking patterns, and bridges between these groups and other lower risk groups. Aral (1999) indicates that another critical determinant of exposure to infection and risk determination is a sex partners' risk behaviours (e.g., sex trade worker, substance use, inconsistent condom use) as these factors increase the probability of infection among the partner.

STI by definition are transmitted via unprotected sex acts within sexual partnerships. Substance use (e.g., alcohol, illicit drugs) impacts the transmission dynamics of STBBI by altering the probability of infection during coital events. Alcohol or drug use reduces sexual inhibition, impairs judgment, and may cause an elevated desire to engage in high risk sexual activities (e.g., unprotected intercourse, multiple sex partners), thereby increasing the potential of infection (Marshall, 2008; Solorio, Rosenthal, Milburn, Weiss, Batterham, Gandara, & Rotheram-Borus, 2008; Tyler et al., 2007; Tyler, 2007; Bodnarchuk et al., 2006; Tyler & Johnson, 2006; PHAC, 2006d; Halcon & Lifson, 2004). For many street-involved youth, alcohol or drugs may serve as mechanism to cope with negative feelings that arise from their abusive childhoods or

from trading sex. Tyler & Johnson (2006) note a cyclical relationship between drug use and survival sex, as the need or addiction to substances may cause the adolescent to trade sex in order to acquire drugs, which possibly while under the influence makes trading sex 'easier'.

Research has demonstrated that many of the high-risk sexual behaviours associated with (b) and (c) may be interrelated (Aral, 2002). People who engage in these behaviours tend to use drugs and alcohol, those who initiate sex early likely have a greater number of lifetime sexual partners, and a history of abuse (emotional, physical, or sexual) has been linked with high-risk sexual behaviours and drug use. The prevalence of infection is greatly influenced by these behaviours and the interactions between them. Widespread reductions in risk (e.g., decreased frequency of unprotected sex acts or reduced numbers of sex partnerships) will greatly impact the basic reproductive rate (R_0) of STBBI.

Figure 1. STBBI transmission dynamics: Population and individual level approaches to STBBI prevention (Adapted from AIDSCAP/Family Health International, 1996).



Objectives of Research Study

The purpose of this study was to explore the role of survival sex in sexual risk among street-involved youth in Winnipeg, Manitoba through secondary analysis of the Enhanced STI Surveillance in Canadian Street Youth Study data (Phases II, III, and IV).

The specific objectives of the current study were:

1. To describe the socio-demographic characteristics (gender, age, education, ethnicity, main income source, reasons for leaving home, family social history and function, mental health status, and contact with social and/or justice services) of street youth engaged in survival sex in comparison to their non-sex trade involved counterparts.
2. To examine the prevalence of Ct, GC, Hepatitis B Virus (HBV_{core}), Hepatitis C Virus (HCV), HIV, and syphilis among Winnipeg street-involved youth engaged in survival sex compared to their non-sex trade involved counterparts.
3. To examine the role of abuse (emotional, physical, and sexual) and its potential association to engagement in survival sex.
4. To examine the prevalence of STBBI risk-related behaviours among street-youth engaged in survival sex compared to their non-sex trade involved counterparts.

Hypotheses of Study

To meet Objectives 2, 3, and 4 of this study, the following hypotheses were tested:

1. Winnipeg street-involved youth engaged in survival sex are more likely to be positive for STBBI than their study counterparts who are not engaged in survival sex.
2. Winnipeg street-involved youth engaged in survival sex are more likely to have been a victim of emotional, physical, or sexual abuse than street-involved youth who are not engaged in survival sex.
3. Winnipeg street-involved youth engaged in survival sex will demonstrate more STBBI related risk behaviours compared to their study counterparts who are not engaged in survival sex. These STBBI related risk behaviours are early onset of first sexual intercourse, inconsistent condom use, high number of lifetime and recent sexual partners, sex with high-risk partners (i.e., sex trade worker, non-injection and injection drug user, partner infected with STBBI, and intoxicated sexual partner), and substance (alcohol and illicit drug) use.

Methodology

Description of Phases II, III, and IV of Primary Study

Study design. In order to answer the objectives outlined in this proposal, this study reviewed and analyzed the data collected for the Winnipeg cohort from phases II, III, and IV of the national Enhanced Surveillance of STI in Canadian Street Youth study. In 1998, Public Health Agency of Canada (then called the Laboratory Centre for Disease Control) initiated a national, cross-sectional, multi-centred study to examine the prevalence of STBBI in Canadian street-involved youth. This study consisted of a series of five phases. Data collection for phase I (pilot phase) occurred in 1998; phase II in 1999; phase III in 2001; phase IV in 2002/2003; and phase V in 2005. Winnipeg participated in phases II, III, and IV.

Study setting. Phases II, III, and IV data collection for the province of Manitoba occurred in the urban city of Winnipeg. A minimum of three sentinel sites was required for this study. The sites within Winnipeg were representative of locations and services frequented by street-involved youth.

Subject eligibility and recruitment. Inclusion criteria for participants were as follows:

- 15 to 24 years of age AND
- able to understand spoken English or French AND
- able to understand and recognize the purpose of the study AND
- frequented an organization dedicated to street-involved people at time of recruitment

Or in the last 6 months

- used the services of one of the above agencies or
- had run away from home or other place of residence for 3 days or more or
- been thrown out of home for three days or more or
- been without a fixed address for three days or more

Population sampling. Recruitment of phases II, III, and IV study participants occurred in Winnipeg and was completed by a research nurse who had significant experience in working with street youth. Participants were recruited by the snowball sampling approach. This strategy uses advertising, word-of-mouth, and social networks to find subjects (Taylor-Powell, 1998). Advertising describing the objective of the study and how to contact the research nurse occurred in community centres where services for street youth were offered and where the target population congregated. Snowball sampling relies on referrals from study participants to inform others within their social network that a study is being conducted. This technique represented the most feasible method of gaining access to street youth who met the eligibility criteria of the study. In Winnipeg, data was collected for 299 participants in phase II, 224 participants in phase III, and 220 youth in phase IV.

Data collection. In each phase of data collection, sampling occurred over a nine month period to account for any seasonality effects in youth transience. Phase II data collection was conducted in 1999; phase III data collection occurred in 2001; and phase IV occurred over 2002 and 2003. Data collection consisted of the research nurse administering two quantitative questionnaires and the collection of biological samples, urine and blood, to those youth who consented to be part of the study. Biological

sampling occurred after the administration of the first questionnaire. An honorarium of ten dollars per interview was given to each study participant.

The first questionnaire consisted of a set of questions regarding socio-demographic characteristics including age, gender, income source, ethnicity, and level of education. Subsequent to this information, the questionnaire proceeded to gather data regarding issues of sexual and reproductive health, family and social support, abuse history, substance use, sexual history, and sexual risk behaviours.

Consent to participate was obtained verbally and documented by the research nurse separately for the interview and the collection of biological samples. Once the first interview was completed, a urine and blood specimen was taken from those youth who consented to provide. The specimens were sent to Cadham Provincial Laboratory for diagnostic testing for chlamydia (Ct), gonorrhea (GC), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Herpes Simplex Virus-1 (HSV-1), Herpes Simplex Virus- 2 (HSV-2), HIV, Human T-Lymphotropic Virus (HTLV), and syphilis. Youth were asked if their blood samples could be stored and tested for additional STBBI at a later date. It was explained to the youth that the results of current testing for STBBI would be communicated back to them; results from tests conducted at a later time among stored samples would not. For youth who requested further information on testing, the nurse provided names of community resources and testing facilities.

For phases II, III, and IV all testing was anonymous, that is, no identifying information on the participant was obtained. The participant was given a unique study identification code that enabled the nurse to link each subject to their test results.

Prevalence data for STBBI could be determined using the biological samples provided by participants.

Upon verbal consent, the second questionnaire was administered to all participants who returned to the interview site one week after the first interview to receive their test results. Participants were provided with a copy of their anonymous study code after the first interview to enable reporting of results. If the results were positive, the nurse was given the delegation of function to treat these individuals according to Manitoba Health STI protocol. The focus of this second questionnaire was to address issues surrounding partner notification. Participants received ten dollars for participation in this second questionnaire.

Ethics Approval

Ethics approval for data collection for phases II, III, and IV of The Enhanced STI Surveillance in Canadian Street Youth study was obtained from the Health Research Ethics Board (HREB), University of Manitoba, prior to the start of data collection for each phase of the primary study. Ethical approval to conduct the secondary analysis of phases II, III, and IV data as presented in this proposal was obtained from the HREB, University of Manitoba, on June 05, 2009 prior to commencement of analysis. The original HREB approval letter is located in Appendix B. The research supervisor (Dr. Beaudoin) previously obtained approval from the Communicable Disease Unit, Public Health Branch, Manitoba Health and Healthy Living regarding the use of these data for secondary data analysis.

Data Management and Analysis

Phases II, III, and IV data were entered and validated by the Public Health Agency of Canada in Ottawa. An electronic copy of these data is housed at Manitoba Health. Dr. Carole Beaudoin (faculty advisor), the principal investigator for Phases III and IV also retains an electronic copy of these data (from all three phases) under a separate research agreement with Manitoba Health. The copy provided to Dr. Beaudoin is securely stored at the National Microbiology Laboratory in the Canadian Science Centre for Human and Animal Health in Winnipeg, Manitoba. In order to meet the objectives of this study, all secondary data analysis was performed at the National Microbiology Laboratory using Statistical Analysis System (SAS) statistical software, Version 8.2 (SAS Institute, 2001).

Youth engaged in survival sex were compared to those who did not report such activity on a variety of socio-demographic variables and STBBI risk related behaviours. Group comparisons between youth engaged in survival sex and their non-survival sex counterparts were quantified using frequency distributions, relative risk statistic, Chi squared tests, and analysis of variance. All reported p-values are two tailed and considered statistically significant if $p \leq 0.05$. Most of the analyses were univariate; some multivariate analysis was also undertaken.

As noted previously in this paper, the findings from Bodnarchuk et al. (2006) suggested that gender, alone, regardless of abuse history was related to exploitation by the sex trade. In this study, multivariate analysis was undertaken for the variables pertaining to abuse (emotional, physical, and sexual) and gender as these risk factors were found to be significant at the univariate level for engagement in survival sex.

Logistic regression analysis was the most reasonable method to determine whether a significant relationship existed between survival sex (dependent variable) and either or all of the independent variables examined (emotional, physical, and sexual abuse; and gender); additionally, it also allowed any interactions between each abuse variable and gender to be analyzed and untangle the influence each independent variable alone had on survival sex (Selvin, 2001).

Results

The results contained in this secondary analysis refer to the Winnipeg data collected for phases II (1999), III (2001), and IV (2002/2003) from the Enhanced Surveillance of STI in Canadian Street Youth study conducted by the Public Health Agency of Canada.

Sample Size

A total of 743 Winnipeg street youth between the ages of 15 and 24 were recruited and interviewed over the three phases of the study, however, 70 youth had missing data related to survival sex and therefore were excluded from subsequent analysis. The remaining 673 youth who responded to questions relating to survival sex, also provided detailed information regarding their socio-demographic characteristics, family environments, reasons for leaving home, mental health status, substance use, abuse history, and high risk sexual behaviours. For those youth who consented, samples of their blood and urine were obtained to determine their STBBI status.

Each of the three phases were analyzed individually for the main demographic variables (see Appendix A). As these variables did not demonstrate trends between phases and as only a few differences in these variables were identified, the decision was made to combine all phases for the remaining analysis. The findings reported in this study refer to the combined results from all three phases unless otherwise indicated.

Socio-Demographic Characteristics of Winnipeg Street Youth Engaged in Survival Sex

Survival sex. The socio-demographic characteristics of the 673 Winnipeg street youth relevant to these analyses are highlighted in Table 2. All 673 youth reported that they had sexual activities (which included anything from sexual fondling, penetration

with penis or genital contact with a finger, the mouth, or an object) at some point in their lives which may or may not have been forced upon the participant. In each phase of the study, participants were considered to have engaged in survival sex if they answered yes to the question “Have you ever had sex and then received money, gifts, drugs or a place to sleep? This could include oral, anal or vaginal sex.” This item list was further elaborated on by the research nurse who additionally asked youth if they ever traded sex for: cigarettes/alcohol (included in the drug inventory), food, clothing, transportation, and other. A total of 177 (26.3%) youth reported they had engaged in survival sex, whereas, 496 (73.7%) reported no history or involvement in survival sex.

Gender. Of the total number of youth (N=673), significantly more males (54.7%) than females (45.3%) participated in the study² ($\chi^2_{(1, 672)}=5.90$, $p<.05$), however, a significantly greater number of females (40.0 %) reported involvement in survival sex (RR=2.68, $\chi^2_{(1, 672)}= 54.01$, $p<.0001$) compared to their male street youth counterparts (14.9%). For the 177 youth involved in survival sex, females accounted for 68.9% of this population.

Ethnicity. Slightly more than half (54.5%) of the 673 street youth identified themselves as Aboriginal (Cree, First Nations, First Nations Tribes, Indian, Inuit, and Métis) which was a significantly greater number ($\chi^2_{(1, 672)}= 5.53$, $p<.05$) than youth who identified themselves as non-Aboriginal (African, Caribbean, Caucasian, East Asian, Hispanic, Middle East, South East Asian, and other). Aboriginal street youth (32.7%) also reported more involvement in survival sex (RR=1.76, $\chi^2_{(1, 672)}= 17.04$, $p<.0001$) than non-Aboriginal street youth (18.6%). For youth engaged in survival sex (n=177) greater

² Only phase IV captured the transgender category, however, there were no youth who self identified as transgendered.

than two thirds (67.8%) self identified as Aboriginal as compared to 32.2% non-Aboriginal youth.

Further analysis demonstrated that female Aboriginal youth accounted for 50.3% (n=89) of all the youth engaged in survival sex and they were at higher risk (RR=2.59, $\chi^2_{(1, 366)}=33.29$, $p<.0001$) for engaging in survival sex than male Aboriginal youth (n=31). Non-Aboriginal female youth engaged in survival sex (n= 33) accounted for 18.6% of this population, and were also at a higher risk (RR=2.38, $\chi^2_{(1, 305)}=13.69$, $p<.0005$) for engaging in survival sex than male non-Aboriginal street youth (n=24).

Based on the preceding findings, being Aboriginal increased a street youth's risk for engaging in survival sex as did being female, however, further analysis demonstrated that being *both* Aboriginal and female placed this group at significantly higher risk (RR=1.57, $\chi^2_{(1, 304)}=8.19$, $p<.005$) for survival sex than non-Aboriginal female street youth.

Age. The overall mean age for the sample was 18.43 years. Youth (both male and female) engaged in survival sex, however, were significantly older ($F_{(1, 672)} = 24.57$, $p<.0001$; Mean_{(survival sex=177)}=19.20, Mean_{(non survival sex=496)}=18.15}) than youth who were not engaged in survival sex. In comparing the age and gender of youth engaged in survival sex, there was no significant difference in age between females and males engaged in survival sex ($F_{(1, 176)} = 3.22$, n.s.; Mean_{(females=122)}=18.97; Mean_{(males=55)}=19.73}). For street youth not engaged in survival sex, females were significantly younger than their male counterparts ($F_{(1, 495)} = 20.20$, $p<. 0001$; Mean_{(females=183)}=17.55; Mean_{(males=313)}=18.51}).}}}

Age first traded sex. In all three phases, youth engaged in survival sex were asked the age at which they first traded sex, however, four female youth and two male youth did not respond to this question. The mean age for both male and female youth combined was just over 15 years of age (Mean_(n=171)=15.12, CI₉₅=14.72, 15.52), although females reported a younger age of sex trade debut. The mean age at which female youth first traded sex was 14.72 (CI₉₅=14.24, 15.19; n=118), with a range from 9 to 23 years; the mean age at which male youth first traded sex was 16.02 (CI₉₅=15.34, 16.70; n=53) with a range from 9 to 22 years.

Education. Questions related to level of education were asked in phases II, III, and IV; wording changes between phases, however, may have resulted in a lack of comparability. Phases II and III asked “What level are you at?” and phase IV asked “What was the highest level of school you have completed?” A total of 429 youth responded to questions related to education level. For reasons not apparent (i.e., missing responses in each of the three phases with no apparent patterns) there were 244 youth (36.3%) responses missing from the data set. Due to the high numbers of missing responses this variable was not considered valid for analysis.

Main income source. Youth were asked to report their main source of income in the three months prior to the interview. There were 654 youth who were included in the analysis as 19 youth did not answer this question and therefore were excluded from the results. For youth engaged in survival sex (n=174), the majority (31.03 %) indicated that prostitution was their main source of income, followed by money received from social programs (25.3%). For the 480 street youth who were not engaged in survival sex, 18.54% indicated that money received from social programs was their main source of

income, followed by regular work (16.67%), and money from family (13.54%).

Table 2. Socio-demographic characteristics of Winnipeg street youth.

Sociodemographic Characteristics	Total	Survival Sex		No Survival Sex	
		n	%	n	%
<i>Phases (N=673)</i>					
Phase II	243	63	25.9	180	74.1
Phase III	218	65	29.8	153	70.2
Phase IV	212	49	23.1	163	76.9
Total	673	177	26.3	496	73.7
<i>Gender (N=673)</i>					
Male	368	55	14.9	313	85.1
Female	305	122	40.0	183	60.0
Total	673	177	26.3	496	73.7
<i>Ethnicity (N=673)</i>					
Aboriginal	367	120	32.7	247	67.3
Non-Aboriginal	306	57	18.6	249	81.4
Total	673	177	26.3	496	73.7
<i>Main income (N=654)</i>					
welfare programs	133	44	33.1	89	66.9
EI	2	0	0.0	2	100.0
occasional work	29	4	13.8	25	86.2
work (part/full time)	92	12	13.0	80	87.0
family	77	12	15.6	65	84.4
friends	22	7	31.8	15	68.2
prostitution	54	54	100.0	0	0.0
stealing/robbery/scams	30	5	16.7	25	83.3
selling drugs/drug runs	62	5	8.1	57	91.9
panhandling/sold belongings	44	9	20.5	35	79.5
money from youthcentre/SW	62	13	21.0	49	79.0
squeegee	30	5	16.7	25	83.3
other	17	4	23.5	13	76.5
Total	654	174	26.6	480	73.4

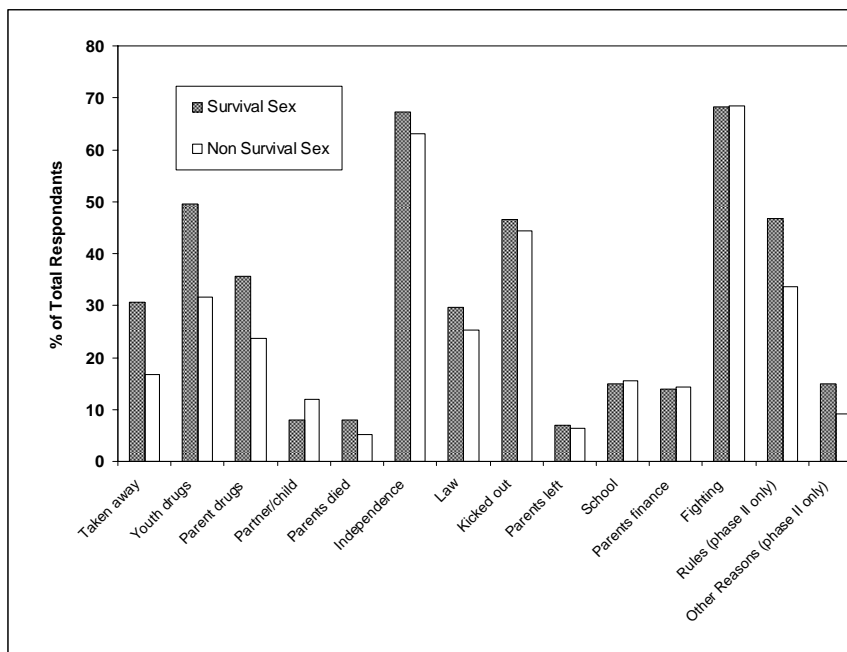
Reasons for leaving home. Participants were asked in all three phases if they were still living with their parents either part or all of the time. A total of 665 youth responded to this question with the majority (80.8%) indicating they were not living with their parents. For youth engaged in survival sex (n=172), 17.44% reported still living at home part or all the time compared to 19.88% of youth not engaged in survival sex (n=493); this difference was not significant ($\chi^2_{(1, 664)} = 0.49$, n.s.).

Youth not living with their parents were asked only in phases II and III to report their reasons for leaving home which are highlighted in Figure 2. There were 110 youth who were excluded from analysis either due to lack of response to the question (n=2) or as they were still living with their parents (n=108). Reasons for leaving home that increased the risk for engaging in survival sex included: the youth's involvement with drugs (RR= 1.69, $\chi^2_{(1, 350)} = 9.92$, $p < .005$); being taken away or placed in foster care by social services/children's aid (RR=1.69, $\chi^2_{(1, 350)} = 8.43$, $p < .005$); and parent's involvement with drugs (RR=1.49, $\chi^2_{(1, 350)} = 5.29$, $p < .05$). The remaining reasons for leaving home were not significantly different between these two groups. Regardless of engaging in survival sex, the most common reasons youth left home were due to: fighting/arguing with parents (68.3%), being kicked out (45.0%), and the youth's involvement with drugs (36.8%). Youth were also asked in phases II and III if they had left home due to independence, travel, or moving to a larger city; only 174 youth responded to this question with the remaining responses either missing or due to the youth living with a parent. The majority of these youth (64.4%) indicated that they had left home due to independence, however, there was no significant difference between youth engaged in survival sex and those who were not ($\chi^2_{(1, 173)} = 0.30$, n.s.).

In phase II (n=243) youth were asked whether they left home due to rules or other reasons. There were 178 youth who responded to these two questions and were no longer living with their parents. For youth who left home due to rules, there was no significant difference between youth engaged in survival sex and youth who were not ($\chi^2_{(1,177)} = 2.59$, n.s.). As well, for youth who left home due to other reasons, there was no significant difference between these two groups ($\chi^2_{(1,177)} = 1.19$, n.s.).

An additional reason why youth left home may have been due to their sexual orientation. This was only addressed in phase III (N=218) whereby participants were asked if conflict with their parents over the youth's sexual orientation was the reason they left. There were 173 youth who responded to this question and who were no longer living with their parents. A total of two youth responded positively to this question and both were engaged in survival sex.

Figure 2. Reasons for leaving home



Family function and conflict. Participants were asked a series of questions regarding their family social history and function. A total of twenty-four variables were used during the entire study to assess family function and conflict among street youth. These questions, however, changed between phases and therefore, the youths' responses could not be collapsed and analyzed together for all three phases. Subsequently, for this section each phase was analyzed individually in order to maintain consistency in data.

In phase II, 243 youth provided a response to each of the 16 variables used to assess family social history and function. A scale was created from these 16 family function variables which included: contact with parent/caregiver in the past three months (yes/no); contact with a father or male caregiver in the past three months (yes/no); contact with a mother or female caregiver in the past three months (yes/no); frequency of contact with father or male caregiver in the past three months; frequency of contact with mother or female caregiver in the past three months; quality of contact with father or male caregiver in the past three months; quality of contact with mother or female caregiver in the past three months; past or present drinking status of father or male caregiver; past or present drinking status of mother or female caregiver; past or present drug use status of mother or female caregiver; past or present drug use status of father or male caregiver; mother or female caregiver has ever injected drugs (yes/no); father or male caregiver has ever injected drugs (yes/no); youth living with a parent (yes/no); youth with no permanent home (duration); and if the youth had a permanent home (yes/no).

Responses to these 16 variables were given a value between 0 to 5 which allowed for a theoretical range from 0 to 47 for each participant with a higher score corresponding to a greater amount of family dysfunction. The actual range, however, was 4 to 35 based

on the youth responses with a mean= 14.67 for the whole sample. Shown in Table 3, there was no significant difference in family dysfunction score between youth engaged in survival sex and those who were not ($F_{(1, 242)}=2.57$, n.s.).

Table 3. Phase II - Family social history and function (16 variables)

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	63	15.67	6.33	14.07	17.26
No	180	14.31	5.54	13.50	15.13

In phase III, 218 youth provided a response to each of the 16 variables used to assess family social history and function. A scale was created from these 16 family function variables which included: the amount of time youth not living with parent; frequency of contact with father or male caregiver in the past three months; frequency of contact with mother or female caregiver in the past three months; father or male caregiver has ever injected drugs (yes/no); mother or female caregiver has ever injected drugs (yes/no); parents assaulted each other during youth's upbringing (yes/no); youth argued with parent (yes/no); parent arrested or placed in jail during youth's upbringing (yes/no); parents verbally abused each other during youth's upbringing (yes/no); parent damaged items in anger during youth's upbringing (yes/no); family ever homeless during youth's upbringing (yes/no); parents separated/divorced during youth's upbringing (yes/no); youth currently living with parent (yes/no); contact with parent/caregiver in the past three months (yes/no); contact with a father or male caregiver in the past three months (yes/no); and contact with a mother or female caregiver in the past three months (yes/no).

Responses to these 16 variables were given a value between 0 to 4 which allowed for a theoretical score ranging from 0 to 23 for each participant with a higher value

corresponding to youth reporting a greater amount of family dysfunction. The actual score for the whole sample was 2 to 19 based on the youth responses with a mean= 10.33 for this sample. Shown in Table 4, there was no significant difference in these family function variables between youth engaged in survival sex and those who were not ($F_{(1, 217)} = 2.09$, n.s.).

Table 4. Phase III- Family social history and function (16 variables)

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	65	10.81	3.21	10.02	11.61
No	153	10.12	3.23	9.61	10.64

In phase IV, 212 youth provided a response to each of the 12 variables used to assess family social history and function. A scale was created from these 12 family function variables which included: the amount of time youth not living with parent; father or male caregiver has ever injected drugs (yes/no); mother or female caregiver has ever injected drugs (yes/no); parents assaulted each other during youth's upbringing (yes/no); youth argued with parent (yes/no); parent arrested or placed in jail during youth's upbringing (yes/no); parents verbally abused each other during youth's upbringing (yes/no); parent damaged items in anger during youth's upbringing (yes/no); youth currently living with parent (yes/no); contact with parent/caregiver in the past three month (yes/no); parents separated/divorced during youth's upbringing (yes/no); and family ever homeless during youth's upbringing (yes/no).

Responses to these 12 variables were given a value between 0 to 5 which allowed for a theoretical range from 0 to 15 for each participant with a higher score corresponding to youth reporting a greater amount of family dysfunction. The actual range was 1 to 13

based on the youth responses with a mean= 8.08 for the whole sample. Shown in Table 5, youth engaged in survival sex reported significantly greater family dysfunction ($F_{(1, 211)} = 4.08, p < 0.05$) than youth who were not engaged in survival sex.

Table 5. Phase IV- Family social history and function (12 variables)

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	49	8.76	2.80	7.95	9.56
No	163	7.87	2.65	7.46	8.28

Each phase of the study analyzed family social history and function slightly differently based on the questions asked of the youth. In phase II, the questions focused on parental contact and parental substance use; phase III mainly addressed parental contact and parental conflict; while phase IV concentrated on parental conflict issues. Based on the preceding analyses where phase II and III findings resulted in no significant difference between youth engaged in survival sex and those who were not and in contrast to phase IV in which a significant difference was found between these two groups, each phase was reanalyzed with the parental contact variables omitted from analysis to determine if parental contact had diminished the effect of parental substance use and conflict as risk factors associated with survival sex. This new phase II scale now had eight variables focussing on parent's drinking, parent's drug use, and home stability. The new phase III scale also had eight variables focussing on amount of time not living with parent, parent's drug use, violence or considerable conflict in the home, and parent's arrested or placed in jail during youth's upbringing. Removing the parental contact items from phase IV resulted in a new eight-item scale assessing only parental substance use, parental conflict, and amount of time not living with parent(s).

Shown in Table 6, using these new scales, a history of family dysfunction remains significantly associated with engagement in sex trade work for phase IV, but also now for phase II. Phase III remains non-significant.

Table 6. Phases II, III, and IV- Revised family social history and function (8 variables)

Study Phase	Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL	Significance
Phase II	Yes	63	7.49	4.41	6.38	8.60	F _(1, 242) = 4.99, $p < .05$
	No	180	6.09	4.29	5.46	6.71	
Phase III	Yes	65	6.25	2.35	5.67	6.83	F _(1, 217) = 3.50, n.s.
	No	153	5.60	2.35	5.22	5.97	
Phase IV	Yes	49	6.80	2.25	6.15	7.44	F _(1, 211) = 5.61, $p < 0.05$
	No	163	5.93	2.23	5.59	6.28	

There were only four family function and conflict variables that were asked in all three phases. These variables included: father or male caregiver has ever injected drugs (yes/no); mother or female caregiver has ever injected drugs (yes/no); youth currently living with parent (yes/no); and contact with parent/caregiver in the past three months (yes/no). There were 560 youth who responded to these four questions with those youth who did not respond being excluded from analysis. Responses to these four variables were given a value between 0 (no family dysfunction) to 1 (family dysfunction) which allowed for a theoretical range from 0 to 4 for each participant with the higher the value corresponding to youth reporting a greater amount of family dysfunction. The actual range was 0 to 2 based on the youth responses with a mean = 0.87. Shown in Table 7, there was no significant difference in these four variables based on survival sex (F_(1, 559) = 0.31, n.s.).

Table 7. Phases II, III, and IV- Family social history and function (four variables)

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	137	0.85	0.50	0.76	0.93
No	423	0.88	0.52	0.83	0.92

Mental health status. During phases II and III, street youth were asked ten mental health related questions with a total of 461 youth who responded to these questions with no exclusions. A scale was created from these ten variables: little pleasure or interest in doing things, like myself, often wish to be someone else, confidence in self, happy person, feeling depressed, no one cares about me, sorry for things, indecision, and would change their look if possible.

Responses to these ten variables were given a value between 1 to 5 which allowed for a theoretical range from 10-50 for each participant with a higher value corresponding to a youth reporting a greater amount of mental health issues. The actual range was 10 to 48 for the entire sample with a mean= 25.02. Shown in Table 8, youth engaged in survival sex reported significantly more mental health problems ($F_{(1,460)} = 20.85$, $p < .0001$) than youth who were not engaged in survival sex.

Table 8. Mental health issues for phases II and III

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	128	27.31	7.29	26.04	28.59
No	333	24.14	6.45	23.44	24.83

Contact with social and/or justice services. Youth were questioned in phases II, III, and IV whether they have *ever* had contact with social and/or justice services prior to leaving home or at some point in their lives. A total of 673 youth responded to these

questions with no exclusions. A scale was created from five social and justice variables which asked if the youth had ever been in jail or detention facility, foster care, or a group home; and if they have ever had a probation officer or a social worker. Responses from each participant was given a value of 0 (no involvement) or 1 (involvement with a social/justice service variable). The theoretical and actual range was 0 to 5 based on the youths' responses with a higher value corresponding to involvement with a greater number of these services. The mean was 3.01 for the whole sample. Shown in Table 9, youth engaged in survival sex reported significantly more involvement with social and/or justice services ($F_{(1, 672)}=15.26, p<.0001$) than youth who were not engaged in survival sex.

Table 9. Social and/or justice services involvement

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	3.40	1.56	3.17	3.63
No	496	2.88	1.52	2.74	3.01

Prevalence of STBBI

Current STBBI. A total of 673 youth consented to blood and urine testing for STBBI with results shown in Figure 3. A scale was created from five STBBI variables that were tested in all three phases which included: Ct, GC, HBV_{core}, HCV, and HIV (note: syphilis was not included in this scale as it was only tested in phases III and IV, and results demonstrated either the youth were negative, no blood was collected, or there were missing test results). Responses from the participant for each of these five STBBI were given a value of 0 (negative STBBI result) or 1 (positive STBBI result). The theoretical range for this variable was 0 to 5 with a higher value indicating a greater

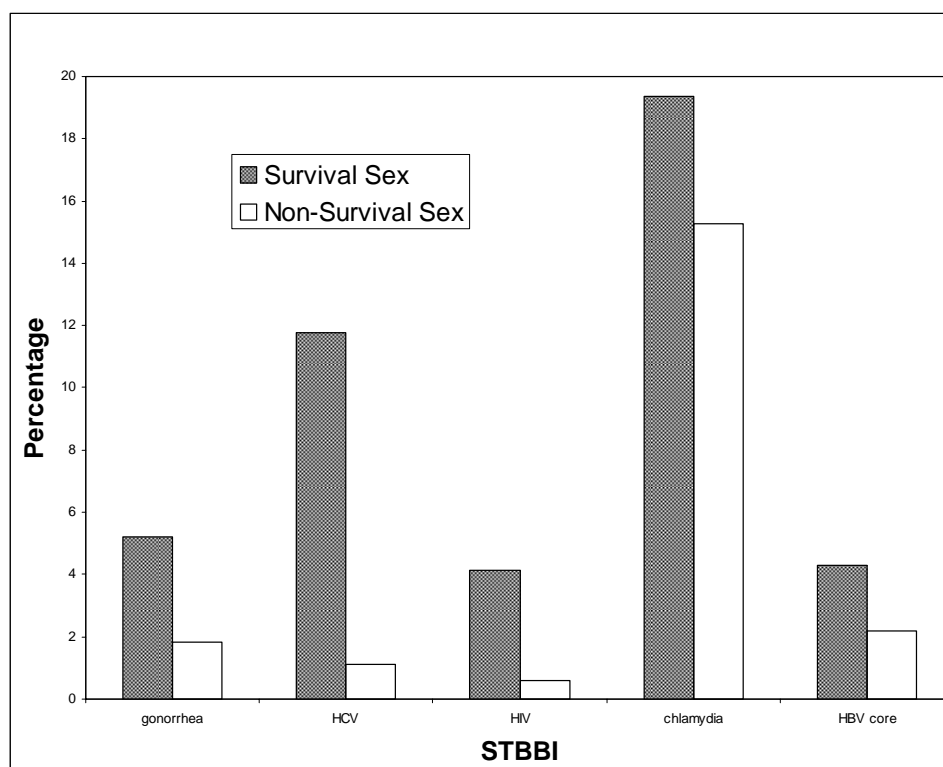
number of positive STBBI results. The actual range, however, for the whole sample was 0 to 3 with the mean= 0.22. Shown in Table 10, youth engaged in survival sex were diagnosed with a greater number of these STBBI ($F_{(1, 672)}=18.49, p<.0001$) than youth who were not engaged in survival sex.

Table 10. Prevalence of STBBI

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	0.36	0.62	0.27	0.45
No	496	0.18	0.42	0.14	0.21

Specifically, youth engaged in survival sex were at a significantly higher risk of being positive for hepatitis C ($RR=3.19, x^2_{(1, 498)}=29.24, p<.0001$); HIV ($RR=2.72, x^2_{(1, 447)}=7.12, p<.05$); and gonorrhea ($RR=1.97, x^2_{(1, 591)}=4.92, p<.05$). See Figure 3.

Figure 3. Engaged in survival sex vs. non-survival sex, STBBI positive results



History of STBBI. In phases II, III, and IV, youth were asked if they had *ever* tested positive for a series of STBBI including: Ct, genital warts, GC, HBV, HCV, herpes, HIV/AIDS, syphilis, and trichomonas. A total of 673 youth responded to this question with no exclusions. A scale was created from these nine STBBI variables and each participant was given a value of 0 (never tested positive to the STBBI) or 1 (tested positive to the STBBI). The theoretical range for this variable was 0 to 9, however, the actual score ranged from 0 to 5 for the whole sample with a mean= 0.50. The higher the value corresponded to a greater number of positive reports of STBBI. An overwhelming majority of youth (88.85%) indicated that they had either none of these STBBI (65.97%) or tested positive to one of these STBBI (22.88%). As shown in Table 11, youth engaged in survival sex reported having tested positive for a significantly greater number of these STBBI ($F_{(1, 672)} = 130.87, p < .0001$) than youth not engaged in survival sex.

Table 11. Ever tested positive to nine STBBI

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	1.06	1.10	0.90	1.23
No	496	0.30	0.60	0.25	0.35

Self perceived risk for STBBI. Self perceived risk for sexually transmitted infections was assessed in all three phases. In phase II (1999) the question only mentioned self perceived risk of sexually transmitted diseases, however, this question was revised in phases III and IV to include their self perceived risk of acquiring either STI, HIV, or hepatitis B. There were 30 youth who were excluded from analysis as they did not respond to this question. A scale was created from 0 (no self perceived risk for STBBI) to 3 (high self perceived risk for STBBI). The mean= 1.20 for the whole sample,

however, youth engaged in survival sex reported significantly higher self perceived risk of acquiring STBBI ($F_{(1, 642)}=17.09$, $p<.0001$) than youth who did not engage in survival sex (Table 12).

Table 12. Self perceived risk for STBBI

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	168	1.43	0.96	1.28	1.58
No	475	1.12	0.78	1.05	1.19

Abuse History

Street youth were questioned in all three phases whether they had experienced some form of emotional, physical, or sexual abuse prior to leaving home. For analysis, the two variables addressing sexual abuse were combined into one variable, these variables included: having experienced some form of sexual abuse prior to leaving home and having had sexual activities with someone in their family or in a position of authority. Although similar in context, these variables questioned youth about their experience with sexual abuse but were asked in slightly different ways. Combining these two sexual abuse variables into one larger category allowed for a more accurate account of sexual abuse history among Winnipeg street youth. The remaining two abuse variables analyzed were whether the youth experienced physical abuse and/or emotional abuse prior to leaving home. A scale was created from these three abuse variables which ranged from 0 (experienced no abuse) to 1 (experienced abuse). This allowed for a theoretical range from 0 to 3 for each participant; the higher the mean score corresponds to a greater amount of abuse experienced by the youth. In each abuse category, youth were excluded from analysis if data was missing. The actual range was 0 to 3 based on

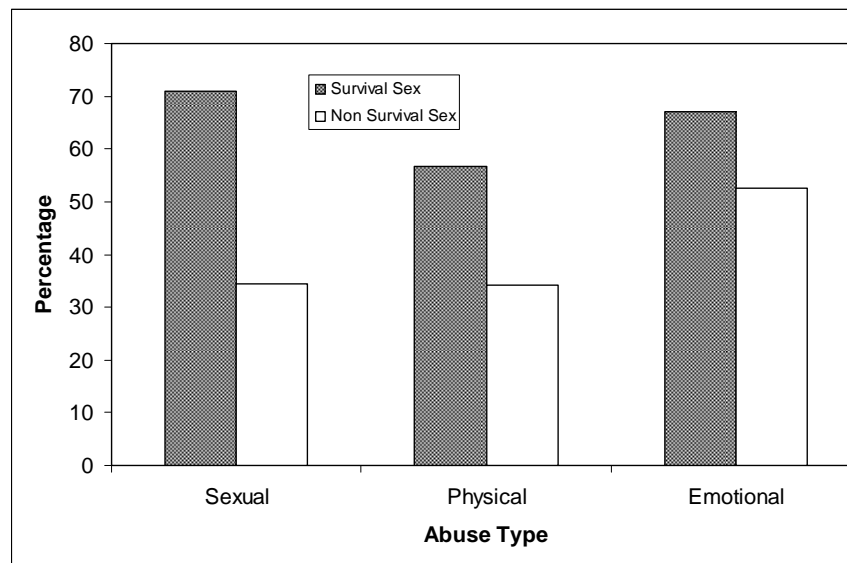
the youth's responses with a mean= 0.74. All 673 youth responded to these questions with nearly half the participants (47.85%) reporting they experienced some type of emotional, physical, and/or sexual abuse. Youth engaged in survival sex, however, reported experiencing significantly more abuse ($F_{(1, 672)}=39.28, p<.0001$) than youth who were not engaged in survival sex (Table 13).

Table 13. Abuse history

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	1.12	1.03	0.96	1.26
No	496	0.62	0.85	0.54	0.69

Comparison of abuse history variables are highlighted in Figure 4. The majority of youth (56.4%) reported having suffered emotional abuse, followed by 46.3% who reported being sexually abused, and 40.2% who reported physical abuse. Street youth who reported a history of sexual abuse, however, were at the greatest risk for engaging in survival sex ($RR= 2.85, \chi^2_{(1, 377)}=43.53, p<.0001$), followed by those who experienced physical abuse ($RR= 1.96, \chi^2_{(1, 330)}=13.80, p<.0005$), and then those who reported emotional abuse ($RR= 1.57, \chi^2_{(1, 343)}=5.69, p<.05$).

Figure 4. History of abuse



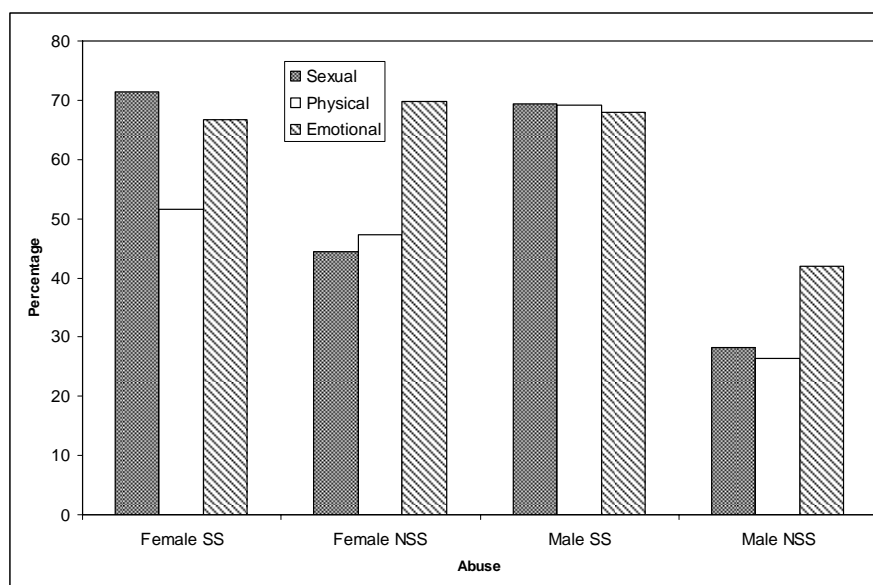
Abuse by gender. Each abuse category was further analyzed based on gender and is presented in Figure 5. A history of sexual abuse was reported by over half (56.83%) of female street youth (n=183), with females engaged in survival sex (n=84) more likely to report sexual abuse (71.43% reported abuse) compared to those not engaged in survival sex (n=99; 44.44% reported abuse) (RR= 1.90, $\chi^2_{(1, 182)}=13.49, p<.0005$). There were 195 male street youth who responded to questions related to sexual abuse with 35.90% reporting a positive history of sexual abuse. Similar to the females, males engaged in survival sex (n=36) were more likely to report sexual abuse (69.44% reported abuse) compared to males not engaged in survival sex (n=159; 28.30% reported abuse) (RR= 4.06, $\chi^2_{(1, 194)} = 21.59, p<.0001$).

There were 178 males that responded to the question related to physical abuse and nearly one-third (32.58%) reported they experienced physical abuse prior to leaving home. Males engaged in survival sex (n=26) experienced more physical abuse (69.44%)

than males who were not engaged in survival sex (n=152; 28.30% reported abuse) (RR= 4.66, $\chi^2_{(1, 177)}=18.61$, $p<.0001$). Nearly half (49.02%) of the 153 female street youth reported a history of physical abuse prior to leaving home, however, there was no significant difference ($\chi^2_{(1, 152)} = 0.28$, n.s.) in a history of physical abuse between females engaged in survival sex (n=62) and females who were not (n=91).

The majority (68.55%) of the female street youth (n=159) reported a positive history of emotional abuse prior to leaving home, however, there was no significant difference between females engaged in survival sex (n=63) and those who were not (n=96) ($\chi^2_{(1, 158)}=0.17$, n.s.). Overall, 45.95% of the male cohort (n=185) reported a history of emotional abuse prior to leaving home. Males engaged in survival sex (n=28) reported a greater amount of emotional abuse (67.86% reported abuse) than males who were not engaged in survival sex (n=157; 42.04% reported abuse) (RR= 2.48, $\chi^2_{(1, 184)} = 6.38$, $p<.05$).

Figure 5. History of abuse by gender



Multivariate logistic regression analysis: survival sex, gender, and abuse

Multivariate logistic regression analysis was undertaken to test for interactions between the abuse (i.e., emotional, physical, and sexual) and gender variables and their relationship to survival sex. These variables were chosen for logistic regression as they were statistically significant variables associated with survival sex based on univariate analysis. Each abuse variable and gender variable were analyzed for interaction with survival sex. The logistic regression results, shown in Table 14, demonstrated that sexual abuse, physical abuse, and gender (i.e., being female) are risk factors for engagement in survival sex after controlling for each other. There were no interactions between each of the abuse variables and gender.

Table 14. Logistic regression results for interaction variables associated with survival sex

Variable	DF	Type III SS	Mean Square	F Value	P value
<i>Sexual Abuse</i>	1	1.432	1.432	8.73	0.0034
<i>Physical Abuse</i>	1	0.981	0.981	5.98	0.0151
<i>Emotional Abuse</i>	1	0.076	0.076	0.46	0.4966
<i>Gender</i>	1	1.996	1.996	12.17	0.0006
<i>Interaction of Sexual, Physical, Emotional abuse, and Gender</i>	11	2.071	1.188	1.15	0.3238

High Risk Sexual Behaviours

The high risk sexual behaviours examined included: age of sexual debut, condom usage, sexual activities with high risk sex partners, number of lifetime partners, number of recent sexual partners in the last three months, substance use, and alcohol intake.

Age of sexual debut. In phases II and III, street youth were asked how old they were when they *willingly* first had sexual activities (vaginal, anal, or oral sex) with women or with men. In phase IV the question was rephrased and asked how old they were when they first participated in sexual activity. These two variables were combined for data analysis. A total of 665 youth were included in the analysis; eight youth were excluded due to missing responses. The age of sexual debut ranged from 5 to 22 years of age for the entire sample with a mean age= 13.75. Table 15 demonstrates that youth engaged in survival sex were significantly younger at sexual debut ($F_{(1, 664)}=14.68$, $p<.0001$) than youth who were not engaged in survival sex.

Table 15. Age of sexual debut

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	173	13.24	2.20	12.91	13.57
No	492	13.93	1.97	13.75	14.10

Condom usage. Condom usage was assessed in all phases of the study, however, the questions changed between phases and therefore condom usage was analyzed separately by phase. In phase II, youth were asked how often a barrier was used during sexual activity if they have ever had a regular and/or casual, female and/or male sexual partner. All 243 youth in phase II responded to these questions with no exclusions. A scale was created from these four condom usage variables ranging from 0 (barrier used every time) to 4 (barrier never used). Youth who reported ever only having one type of sexual partner (e.g., regular female) were given a score of 0 for each of the three remaining variables (e.g., casual female, regular male, casual male). The theoretical range for each participant was 0 to 16 with a higher score relating to less condom usage.

The actual range was 0 to 15 for the whole sample with a mean= 3.40. Shown in Table 16, there was a significant difference in condom usage ($F_{(1,242)} = 3.93, p < .05$) by survival sex: youth engaged in survival sex reported poorer condom usage (as evident by a higher score) than those not engaged in survival sex.

Table 16. Phase II- Condom usage

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	63	4.00	2.92	3.26	4.74
No	180	3.19	2.75	2.78	3.59

In phase III youth who have *ever* had a female and/or male sexual partner were asked if a barrier method was used the last time they had sexual activities with that partner. All youth in phase III (N=218) responded to these questions with no exclusions. A scale was created from these condom usage variables ranging from 0 (condoms used) to 1 (no condoms used) which allowed for a theoretical (and actual) score of 0 to 2; a higher mean score indicated less condom usage. Youth who reported ever only having one type of sexual partner (e.g., female partner) were given a score of 0 for the remaining variable (e.g., male partner). The mean for the sample was 0.76, with no significant difference ($F_{(1, 217)} = 0.86, n.s.$) in condom usage with their last partner between youth engaged in survival sex and those who were not (Table 17).

Table 17. Phase III- Condom usage

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	65	0.82	0.68	0.65	0.98
No	153	0.73	0.57	0.64	0.82

In phase IV youth who have *ever* had a female and/or male sexual partner were again asked if a barrier method was used the last time they had sexual activities with that partner. All youth in phase IV (N=212) responded to these questions with no exclusions. A scale was created from these condom usage variables ranging from 0 (condoms used) to 1 (no condoms used) which allowed for a theoretical (and actual) score of 0 to 2; a higher mean score indicated less condom usage. Youth who reported ever only having one type of sexual partner (e.g., female partner) were given a score of 0 for the remaining variable (e.g., male partner). The mean for the whole sample was 0.67. Shown in Table 18, there was a significant difference ($F_{(1, 211)} = 4.97, p < .05$.) in condom usage with their last partner by survival sex with youth engaged in survival sex reporting poorer condom usage (as evident by a higher score) than those not engaged in survival sex.

Table 18. Phase IV- Condom usage

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	49	0.84	0.72	0.63	1.04
No	163	0.61	0.58	0.52	0.70

Sex with high risk partners. In different phases of the study, youth were questioned regarding sex with high risk partners including partners infected with HIV, HBV, and HCV; and sex with a substance user, someone high on drugs (while having sex), someone who had an STI in the last three months, or a prostitute.

Infected partners. In phase II, youth were asked if in the last three months they had sexual activities with an infected partner (HBV, HCV, or HIV), someone who was infected with HBV, someone who was infected with HCV, or someone who was infected with HIV. All 243 youth in phase II responded to these four questions with no

exclusions. A scale was created from these four infected partner variables ranging from 0 (no recent infected sexual partner) to 1 (recent sexual activities with an infected partner). This allowed for a theoretical range from 0 to 4 for each participant with the actual score ranging from 0 to 3 based on the youth's responses; a higher score corresponded to a greater risk for sexual activity with an infected partner. The mean for the whole sample was 0.06 with the majority of youth (97.12%) indicating that they had not had sexual activities with an infected partner in the last three months. As shown in Table 19, youth engaged in survival sex reported a greater risk of sexual activity with an infected partner in the last three months ($F_{(1, 242)}=4.03, p<.05$) than youth who were not engaged in survival sex.

Table 19. Phase II- Sex with HBV, HCV, or HIV infected partners

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	63	0.14	0.56	0.001	0.29
No	180	0.03	0.28	-0.008	0.07

High risk sexual partners. During phases III and IV, youth were asked if in the last three months they had sexual activities with: a non-injection drug user, an injection drug user, someone high on drugs (while having sex), someone who had an STI in the last three months, or a prostitute (not necessarily hired by them). A total of 430 youth in phases III and IV responded to these questions with no exclusions. A scale was created from these five high risk partner variables ranging from 0 (no recent high risk sexual partner) to 1 (sexual activities with a high risk partner). This allowed for both a theoretical and actual range from 0 to 5 for each participant; a higher score corresponded to a greater number of high risk sexual partners. The mean for this sample was 1.55 with 23.72% of youth

reporting having had sex with a partner who was involved with at least one of these high risk behaviours. Shown in Table 20, youth engaged in survival sex reported having sex in the last three months with a significantly higher number of high risk sexual partners ($F_{(1,429)}=15.23, p<.0001$) than youth who were not engaged in survival sex.

Table 20. Phases III and IV- High risk sexual partners

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	114	1.90	1.14	1.69	2.12
No	316	1.42	1.12	1.30	1.55

Number of lifetime sexual partners. In all three phases, street youth were asked to quantify the total number of female and male sexual partners in their lifetime. Only youth that responded to having at least one sexual partner were included in the analysis. There were 662 youth who responded to this question and indicated they have had at least one lifetime sexual partner. The actual range of number of lifetime partners was 1 to 1000, however, the median number of partners was 41.5 and 90.37% of youth reported having had < 51 lifetime partners, therefore, so as not to skew the mean number of lifetime partners due to a few outliers ($n=63$), the highest number of partners was truncated at 51 for analysis. If these outliers were totally deleted from analysis, this action would likely remove the same people engaged in survival sex, therefore, simply by controlling (truncating) the number at 51, analysis did not lose any data related to survival sex and lifetime number of sexual partnerships. The mean for this sample was 15.92. Not surprisingly, as shown in Table 21, youth engaged in survival sex reported significantly higher numbers of lifetime sexual partners ($F_{(1, 661)}=50.59, p<.0001$) than youth who were not engaged in survival sex.

Table 21. Number of lifetime sexual partners

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	170	22.92	18.24	20.16	25.68
No	492	13.50	13.53	12.30	14.70

Youth were also analyzed separately based on gender to determine if differences existed in the number of lifetime sexual partnerships. The expected difference in the number of lifetime sexual partnerships for those engaged in survival sex was true for females (Mean_(survival sex) = 21.80, SD=18.00; Mean_(non-survival sex) = 10.23, SD= 10.03; $F_{(1, 298)} = 50.83$, $p < .0001$); and for males (Mean_(survival sex) = 25.38, SD=18.69; Mean_(non-survival sex) = 15.43, SD= 14.90; $F_{(1, 362)} = 18.65$, $p < .0001$).

Number of recent sexual partners. In all three phases, street youth were asked to quantify the total number of female and male sexual partnerships they had in the past three months. Only youth that responded to having at least one sexual partner in the past three months were included in the analysis. All 673 youth responded to this question and indicated having had at least one recent sexual partner. The actual range of the number of recent sexual partners was 1 to 501; the median number of recent partners was 12.5. Almost all youth (99.70%) reported having had < 51 recent partners, and therefore as described above for lifetime sexual partnerships, the maximum number of recent partners was truncated at 51. The mean number of recent sexual partners for the sample was 4.19. As shown in Table 22, youth engaged in survival sex reported significantly higher numbers of recent sexual partners ($F_{(1, 672)} = 22.45$, $p < .0001$) than youth who were not engaged in survival sex.

Table 22. Number of recent sexual partners in the past three months

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	4.84	6.58	3.87	5.82
No	496	3.05	3.15	2.77	3.33

Youth were also analyzed separately based on gender to determine if differences existed in the number of recent sexual partnerships. The expected difference in the number of recent sexual partnerships for those engaged in survival sex was true for females (Mean_(survival sex) = 4.66, SD=6.52; Mean_(non-survival sex) = 2.70, SD= 1.58; $F_{(1, 304)} = 15.14$, $p < .0001$); and for males (Mean_(survival sex) = 5.26, SD=6.75; Mean_(non-survival sex) = 3.25, SD= 3.77; $F_{(1, 367)} = 9.97$, $p < .005$).

Substance use. Youth were questioned in phases II, III, and IV regarding use of alcohol, injection drugs, and non-injection drugs.

Drug use. Youth were questioned regarding their use of non-injection and injection drugs in the past three months with fifteen drugs being asked consistently in all three phases. The nine non-injection drugs were: cocaine, marijuana, crack, crystal methamphetamine, ecstasy, speed, mushroom, hash, and LSD. The six injection drugs were: cocaine, heroin, speedball, PCP (phencyclidine), alcohol, and morphine. A scale was created from these fifteen drugs and responses from each participant were given a value of either 0 (have not used the drug in the past three months) or 1 (used the drug in the past three months). This allowed for a theoretical range from 0 to 15 for each participant with a higher value corresponding to a greater number of drugs used in the past three months. The actual range for the whole sample was 0 to 6 with a mean= 1.02. A total of 673 youth responded to these questions with no exclusions. Over three quarters of the youth

(76.67%) indicated that they had used at least one of these fifteen drugs in the past three months. Shown in Table 23, there was no significant difference in drug use in the past three months between youth engaged in survival sex and those who were not ($F_{(1,672)} = 3.40$, n.s.).

Table 23. Drug use (15 non-injection and injection drugs) in the past three months

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	1.10	0.94	0.96	1.24
No	496	0.99	0.56	0.94	1.04

Injection drug use. Youth were questioned in all three phases regarding their use of injection drugs and were asked if in the last three months they injected cocaine, heroin, morphine, alcohol, speedball, and/or PCP. A total of 673 youth responded to these questions with no exclusions. A scale was created from these six injection drugs. Responses from each participant were given a value of either 0 (have not injected the drug in the past three months) or 1 (injected the drug in the past three months). This allowed for a theoretical range from 0 to 6 for each participant; the higher the value corresponds to a greater number of injection drugs used in the past three months. The actual range was 0 to 5 for the entire sample with the mean = 0.14. The majority of youth (91.68%) reported that they had not injected any of these six drugs in the last three months. For the remaining 8.32%, youth engaged in survival sex reported injecting a greater number of these six drugs in the past three months ($F_{(1,672)} = 14.12$, $p < .0005$) than youth not engaged in survival sex, see Table 24.

Table 24. Injection drug use in the past three months

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	0.28	0.87	0.15	0.41
No	496	0.10	0.41	0.06	0.13

Non- injection drug use. In all three phases, participants were questioned regarding their use of non injection drugs in the past three months. These nine drugs included: cocaine, marijuana, crack, crystal methamphetamine, ecstasy, speed, mushroom, hash, and LSD. A total of 673 youth responded to these questions with no exclusions. A scale was created from these nine non-injection drugs and responses from each participant were given a value of either 0 (have not used the non-injection drug in the past three months) or 1 (used the non-injection drug in the past three months). This allowed for a theoretical range from 0 to 9 for each participant; the higher the value, the greater the number of non-injection drugs used in the past three months. The actual range was 0 to 2 with a mean= 0.88. The majority of the youth (81.72%) indicated they used at least one of these non-injection drugs in the past three months. As shown in Table 25, youth who were *not* engaged in survival sex reported using a greater number of these non-injection drugs in the past three months ($F_{(1, 672)}=4.75$, $p<.05$) than youth who were engaged in survival sex.

Table 25. Non-injection drug use in the past three months

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	0.82	0.43	0.76	0.88
No	496	0.90	0.40	0.86	0.93

Alcohol use. Youth were questioned in all three phases regarding their use of alcohol. Youth were asked how often they drank and whether they binged on alcohol in the past three months. A total of 673 youth responded to these questions with no exclusions. A scale was created from these two variables. Youth who drank alcohol in the past three months were given a score of 0 (if they did not binge on alcohol) or 1 (if they binged on alcohol, that is, got drunk for one day or more). This value was combined with a score for frequency of drinking in the past three months that ranged from 0 (never drank in the past three months) to 4 (drank everyday). This allowed for a theoretical (and actual) score from 0 to 5. The mean for the sample was 2.11. Shown in Table 26, youth engaged in survival sex reported significantly more alcohol use and binge drinking in the past three months ($F_{(1, 672)}=4.20, p<.05$) than youth who were not engaged in survival sex.

Table 26. Alcohol use and binge drinking in the past three months

Survival Sex	Total Sample (N)	Mean	Standard deviation	Lower 95% CL	Upper 95% CL
Yes	177	2.29	1.47	2.08	2.51
No	496	2.04	1.36	1.92	2.16

Summary of Results

The results from this secondary analysis have provided relevant information regarding the prevalence and risk factors for STBBI among Winnipeg street youth engaged in survival sex. The following findings are of particular significance:

1. The prevalence of survival sex among Winnipeg street youth was 26.3%.

2. Females and Aboriginal youth were at greater risk for engaging in survival sex; with female Aboriginal youth being at the highest risk for engagement in survival sex.
3. Youth engaged in survival sex tended to be older than their non-survival sex counterparts.
4. The main income source for youth engaged in survival sex was prostitution, whereas, for the non-survival sex group it was money received from social programs.
5. Reasons for leaving home that significantly increased the risk for engaging in survival sex included: the youth's involvement with drugs; being taken away or placed in foster care; and the parent's involvement with drugs.
6. A negative family social history and function was associated with survival sex in phases II and IV.
7. Youth engaged in survival sex reported greater mental health issues and greater involvement with social and/or justice services than youth not involved in survival sex.
8. The prevalence of STBBI (Ct, GC, HBV_{core}, HCV, and HIV) was greater among youth engaged in survival sex; furthermore, these youth were at a significantly higher risk for HCV, HIV, and GC.
9. Youth engaged in survival sex reported having a greater history of being positive for a previous STBBI than the non-survival sex cohort.
10. Self perceived risk for STBBI was greater among youth engaged in survival sex.

11. A positive history of abuse (emotional, physical, and sexual) was significantly associated with survival sex; with youth who were sexually abused having the greatest risk for engaging in survival sex, followed by physical abuse, and emotional abuse.
12. Logistic regression analysis demonstrated that sexual abuse, physical abuse, and gender (i.e., being female) were risk factors for engagement in survival sex after controlling for each other. Additionally, there were no interactions between each of the abuse variables and gender. Once the abuse variables were controlled, gender became the most significant factor in youth engaging in survival sex followed by sexual abuse and physical abuse.
13. Risk factors for STBBI among youth engaged in survival sex included: younger age at sexual debut, high number of lifetime and recent sexual partners, high number of infected and high risk sexual partners, and greater substance (IDU and alcohol) use; however, condom usage varied by phase. In phases II and IV, youth engaged in survival sex had significantly less condom usage; however, in phase III there was no significant difference in condom usage by survival sex.

Discussion

The purpose of this secondary data analysis was to examine the role of survival sex in sexual risk among street-involved youth in Winnipeg, Manitoba. This study was undertaken to determine the prevalence of survival sex among this sample, to describe the socio-demographic characteristics between youth engaged in survival sex and those who were not, to examine the role of abuse (emotional, physical, and sexual) and its association with youth engaged in survival sex, and to determine the prevalence of STBBI and high risk sexual behaviours among youth engaged in survival sex and their non-sex trade involved counterparts. The results will be discussed in relation to the four objectives outlined in this study.

Objective 1

The first objective of this current study was to describe the socio-demographic characteristics of Winnipeg street youth engaged in survival sex in comparison to their non-survival sex counterparts. The rationale for objective number one was related to the fact that limited data is currently available concerning the socio-demographic characteristics of Winnipeg street youth. Local research is required to understand the characteristics and factors which place Winnipeg street youth at greater risk for becoming involved in survival sex in order for community health intervention to be relevant and successful in the prevention of survival sex, its associated high risk sexual behaviours, and STBBI.

The results from this secondary data analysis have shown that approximately one-quarter of Winnipeg street youth were engaged in survival sex in each of the three phases analyzed. This corresponds to the previous Winnipeg studies completed by Bodnarchuk

et al. (2006) and Beaudoin (2004). In comparison to the national data from the Enhanced Surveillance of Street Youth study (PHAC, 2006d) the prevalence of survival sex for all three phases was higher among Winnipeg street youth than nationally reported (see Table 27). In a more recent street youth study conducted in Vancouver, Canada (Chettiar, Shannon, Wood, Zhang, & Kerr, 2010) only 11.3% of the sample (N=560) reported actively engaging in survival sex work in the last six months. This variation in prevalence estimates between Chettiar et al.'s study and this current study may be related to the definitions chosen for sex trade which may or may not have included the same related items exchanged for sex as did this study; the differing age range of their sample (14 to 26 years); and their study sample only included street youth who were already involved with illicit drug use and would not have captured the street youth engaged in survival sex who did not use illicit drugs (aside from marijuana).

Table 27. Prevalence of survival sex - Winnipeg street youth compared to national street youth (PHAC, 2006d)

Study site	Winnipeg % survival sex	National % survival sex
Phase II	25.9%	20.2%
Phase III	29.8%	20.9%
Phase IV	23.1%	22.6%
% Average for three phases	26.3%	21.2%

Several socio-demographic characteristics were identified during analyses which were significantly associated with survival sex among Winnipeg street youth and included: being female, Aboriginal ethnicity, and being older. The current gender-related

results correspond to Beaudoin (2004) and Bodnarchuk et al.'s (2006) findings but differ from the study findings from Patton et al. (2008) which found more male Winnipeg street youth (10.8%) were engaged in survival sex than female youth (6.3%).³ Some studies (Chettiar et al., 2010; Tyler et al., 2007; PHAC, 2006d; Shields et al., 2004; Whitbeck et al., 2004; Tyler et al., 2001) also found that the prevalence of survival sex was greater among female street youth and support gender (i.e., being female) as a significant risk factor for engaging in survival sex, however, other studies either found no significant difference by gender (Shannon, Kerr, Marshall, Li, Zhang, Strathdee, Tyndall, Montaner, & Wood, 2010; Tyler, 2007; Halcon & Lifson, 2004) or that trading sex was higher among the male street youth population residing in shelters (Greene et al., 1999). The gender differences may relate to females being less able to defend themselves on the street and against coercive sexual partners and peers leading to their increased vulnerability to sexual exploitation (Tyler & Johnson, 2006); alternatively, male street youth may be more reluctant to report involvement in sex trade work due to its associated stigma and potential for violence.

According to Statistics Canada (2006), the total youth (ages 15 to 24 years) population in Winnipeg was 97 555 with Aboriginal youth (ages 15 to 24 years) accounting for 13% (12 600) of this total youth population. Findings from this study show that Aboriginal youth were overrepresented in both the street youth and sex trade populations. Over half of the street youth sampled were Aboriginal and Aboriginal street youth were twice as likely to be engaged in the sex trade compared to non-Aboriginal youth. Aboriginal youth were at a significantly greater risk for being street- involved and

³ Patton et al. (2008) attributed differences in their numbers as compared to Bodnarchuk's findings due to differences in survey methodologies, study time periods, and locations used for their study.

for engaging in survival sex compared to non-Aboriginal youth which corresponds to the more recent findings by Chettiar et al. (2010). Particularly disconcerting in this study were the findings that female Aboriginal street youth incurred the highest risk for engaging in survival sex. Kingsley & Mark (2000) report that Aboriginal females likely enter the sex trade due to a lack of alternative options for survival on the street. Many Aboriginal female youth may have grown up on reserves which may have different social welfare services and sub-standard education as compared to those of urban centres. Due to a lack of integral life skills and marketable work skills these females find it difficult to obtain traditional employment; consequently, affordable, safe housing and food security is beyond their reach leaving this group more vulnerable to coercion and exploitation. Exploited and abused Aboriginal females struggle for survival in the midst of being disconnected from family, culture, community, and social services. Kingsley and Mark (2000) contend that both current and historical factors (e.g., European colonialism, forced relocation, residential schools, cultural genocide) create and maintain barriers of social, economic, and political inequality that cause Aboriginal females to become disempowered and more vulnerable to exploitation. Lynne (1998) argued that the combination of patriarchy and capitalism rendered First Nations women as a sexual commodity:

“Historical patriarchal, capitalist relations subjugated First Nations women collectively. This collective sexual oppression, based on gender, created our inferiority as a class of people to both First Nations men and non-First Nations men. The sexual domination of First Nations women has remained unabated to present day due to patriarchy’s stronghold. Thus, it has had, and continues to

have, profound and prolonged injurious consequences in First Nations women's lives" (Lynne, 1998).

Once exploited in the sex trade, it is difficult for Aboriginal females to successfully exit this means of survival as they are often held there by their lack of economic alternatives, substance use, and diminishing self worth.

Older age was also significantly associated with survival sex which is consistent with previous research (Chettiar et al., 2010; Tyler, 2007; Whitbeck et al., 2004; Greene et al., 1999). Street youth lack both the social connectedness and economic means to secure legal, gainful employment without which basic daily needs can not be met. Many street youth do not continue with formal education after they leave home as they are forced to concentrate on their daily survival, and if they left home early they may not have the literacy or social skills to navigate the social support systems available further marginalizing them within society. Older street youth may be further embedded within street culture than their younger counterparts, making it more difficult to obtain formal education or the social supports needed to attain traditional work resulting in greater risk for survival sex.

In all survey years, youth who engaged in survival sex were asked how old they were when they first traded sex. The average age was 15.12 years, with females reporting their debut into survival sex at a younger age than males. The earliest reported age Winnipeg street youth (both male and female) first traded sex was 9 years old. This represents an early initiation into sexual exploitation and victimization which has continued into their adolescence and adulthood. These children and youth were too

young to willingly 'choose' and consent to enter into the sex trade and instead fell through the cracks of the social support systems set out to protect them.

The main income source reported by the majority of youth engaged in survival sex was prostitution (31.03%), followed by money received from social programs. Youth who were not engaged in survival sex reported money received from social programs was their main source of income (18.54%), followed by regular work, and money from family; none of these youth reported prostitution as a source of income. Findings from Bodnarchuk et al. (2006) reported that for their Winnipeg street youth study the main source of income for approximately 34% of males and females was also money received from social programs; they did not comment on prostitution as an income source reported by street youth. In this current study, the questionnaires did not explicitly define prostitution and subsequently, youth may have incorrectly responded yes or no to this question depending on their own definition of prostitution. Overall, prostitution accounted for 8.53% of total income reported by Winnipeg street youth in comparison to less than 5% for the national youth surveyed during the same time period (PHAC, 2006b). These youth do not readily choose to engage in sex trade work but with few realistic alternatives they sell themselves to achieve life's basic necessities.

One-quarter of the total Winnipeg youth sampled reported that their main source of income was from social welfare programs. As noted previously, street youth have few options to support themselves due to their young age, minimal education, and limited work skills (Patton et al., 2008; Haldenby et al., 2007; Kelly & Caputo, 2007; PHAC, 2006b; Tyler & Johnson, 2006; Higgitt et al., 2003). Social programs help financially support youth; however, financial assistance should only be part of a larger solution in

assisting these youth to become financially independent. The development of educational programming, employment training, and counselling should be geared to the unique needs of street youth to enable them to become self sufficient.

In all three phases, youth were asked whether they were still living with their parents either part or all of the time. The majority (80.8%) of respondents indicated they were not living with their parents, and this was similar regardless of engagement in survival sex. For youth who had engaged in survival sex and reported they were still living at home part or all of the time, these youth were not being sufficiently cared for or protected by their parents or caregivers as their basic needs were not being met.

Previous studies have acknowledged the multitude of reasons youth left home including: family violence, neglect, and abuse; conflict over sexual orientation; mental health disorders; failure of social welfare and educational systems; and a desire for independence (Buffardi et al., 2008; Patton et al., 2008; Haldenby et al., 2007; Tyler & Johnson, 2006; PHAC, 2006b; Anderson, 2004; Beaudoin, 2004; Gaetz, 2004; Higgitt et al., 2003; Rew, 2001; Tyler et al., 2001; Tyler, 2000; Caputo et al., 1997; Maticka-Tyndale, 1997; Rotherman-Borus et al., 1996). In phases II and III, youth not living with their parents were asked to report their reasons for leaving home. The most common reasons Winnipeg youth left home were due to: fighting/arguing with parents, being kicked out, and the youth's involvement with drugs. The general reasons youth left home (as noted above) differed for those engaged in survival sex, which included: the youth's involvement with drugs; being taken away or placed in foster care by social services/children's aid; and parent's involvement with drugs. Acknowledging the differences in reasons youth left home between youth engaged in survival sex and those

who are not opens the door for health and social service providers to intervene early in preventing youth-at-risk from becoming involved in the sex trade.

Homelessness and becoming street-involved is not an easy choice to be made by anyone. Rebellion and developing their own identity is a normal cognitive-developmental process occurring during adolescence, however, this can lead to conflict with parents over rules which in turn may cause the youth to leave home on their own initiative (Steinberg, 2007; Reyna & Farley, 2006; Miller, 1989, as cited in Rolison & Scherman, 2002). Youth would prefer living in a caring and nurturing home environment but as seen from the data presented in this study, this is often not the case. Instead these youth are often confronted with an abusive or violent home life, leaving them no alternative other than to leave home on their own or being forced out by their parents or caregivers. Family conflict was one main reason Winnipeg street youth reported leaving home and consequently this variable required further analysis as to its significance for engagement in survival sex. For this secondary data analysis a total of 24 sub-variables of family conflict were assessed. Each phase was analyzed separately as the family social history and function questions had changed between phases and therefore the phases could not be analyzed together. In each phase a scale was created from these family social history and function variables as many of the variables were interrelated. A scale provided a better appreciation of the extent of family dysfunction among street youth rather than analyzing each variable individually.

During the primary study the phase II questions focused on parental contact and parental substance use; phase III mainly addressed parental contact and parental conflict; and phase IV concentrated on parental conflict issues. Upon initial analysis of each

phase, only phase IV results demonstrated that youth engaged in survival sex reported a significantly greater history of family conflict than their non-survival sex counterparts. These preliminary findings were in contrast to previous literature (Whitbeck et al., 2004; Tyler, 2000) which suggested that family conflict was significantly associated with youth engaging in survival sex. Since the original family dysfunction scale in the other two phases had a parental contact component, it was hypothesised that perhaps these questions watered down the relationship with parental conflict. Subsequently, each phase was reanalyzed omitting the parental contact variables from analysis to determine if parental contact reduced the effect of parental substance use and conflict as risk factors associated with survival sex.

In the phase II reanalysis, once the parental contact variables were removed which then left mostly parental substance (alcohol, drug, and IDU) use variables for analysis, the results demonstrated that youth engaged in survival sex reported a significantly greater history of family dysfunction than youth who were not engaged in survival sex. This preceding finding corresponds to the result already demonstrated in this study that youth who left home due to parental drug use were at a significantly greater risk for engaging in survival sex.

Removing the parental contact variables for the phase III reanalysis, however, did not alter the final results as these two groups still did not experience significantly different amounts of family dysfunction (i.e., parental substance use, parental conflict, and amount of time not living with parents). Although the variability between the means of these two groups was not significantly different, it is worthy to note that these youth as

a whole still experienced high levels of parental conflict and family dysfunction in their lives that contributed to their leaving home and becoming street-involved.

Phase IV was reanalyzed removing the parental contact and separation/divorce variables. The eight variables remaining were identical to the ones used during the phase III reanalysis and included: parental substance use, parental conflict, and amount of time not living with parents' categories. Once parental contact and separation/divorce variables were removed youth engaged in survival sex in phase IV continued to report greater family dysfunction than youth who were not engaged in survival sex. The significance in this difference became greater once the parental contact and separation/divorce variables were removed.

There were only four family function and conflict variables (father/male caregiver and/or mother/female caregiver has ever injected drugs; youth currently living with parent; and contact with parent/caregiver in the past three months) which were asked in all three phases with no significant difference found based on survival sex. A potential reason for this lack of difference may once again be related to the parental contact and the living with parent variables diminishing the overall effect of parental injection drug use as a risk factor for engaging in survival sex.

The mental health status of the respondents was assessed in phases II and III of the primary study. For the purpose of this secondary analysis, a scale was created using ten mental health variables to determine if significant differences in mental health status existed between youth engaged in survival sex and those who did not. The questionnaires did not specifically ask youth if they experienced mental health issues prior to engaging in the sex trade; the questions referred mainly to the youth's current state of mental health

and therefore, the youth's mental health state prior to their first initiation into the sex trade work could not be assessed. The findings from this study demonstrated that street youth overall reported high levels of mental health dysfunction, however, youth engaged in sex trade work did report significantly greater mental health problems than youth who were not involved in the sex trade.

Earlier studies have also demonstrated that street youth have shown high rates of mental health problems and consequently, they are at greater risk for being exploited or pressured into trading sex. Depression, post-traumatic stress disorder, anxiety, low self esteem, negative self-image, suicidal ideation, and suicide attempts are prevalent among street youth (Tyler, 2007; Bodnarchuk et al., 2006; Tyler & Johnson, 2006; Whitbeck et al., 2004; Rew, Taylor-Seehahfar, & Fitzgerald, 2001; Ayerst, 1999) likely stemming from their abusive, exploitive, and dysfunctional childhood. While living on the street these health problems are exacerbated by the youth's separation from positive social supports, lack of appropriate mental health treatment, and the related harsh realities they must face daily on the street. These youth will tend to self medicate to try to escape from their depression and pain causing further mental, emotional, and physical health problems keeping them locked into the street life (Tyler & Johnson, 2006; Higgitt et al., 2003). There is a clear need to provide greater mental health services to these youth which are both easily accessible and individualized in order to help them achieve mental stability in their lives.

Youth were questioned in all three phases regarding their involvement with social and/or justice services; youth engaged in survival sex reporting significantly greater involvement with these services than their non-sex trade involved peers. Every contact

at-risk youth have with a social or justice service is an opportunity to identify, intervene, and prevent these youth from engaging in the sex trade or becoming further entrenched into street culture and economy. These systems were developed to protect vulnerable youth, however, the data from this study revealed that these systems were unable to prevent these street youth from engaging in survival sex. Many street youth become weary and distrustful of social and/or justice services and the professionals working in those organizations due to their past experiences of exploitation and victimization at the hands of adults (Higgitt et al., 2003). Many youth instead run toward the street and once alienated from positive social support networks will face an increasingly hostile, exploitive, and violent environment. Social and justice services need to meet the street youth head on and in their own environment if effective transitioning off the street is to occur. More appropriate would be the development of upstream programs which are cognizant of the challenges faced by at-risk youth and that address the precipitating factors that lead to youth becoming street-involved.

Objective 2

The second objective was to compare the prevalence of Ct, GC, HBV_{core}, HCV, HIV, and syphilis among Winnipeg street-involved youth engaged in survival sex to their non-sex trade involved counterparts. Limited data is available regarding the prevalence of STBBI specifically among Winnipeg street youth and its relationship to survival sex as a risk factor. Research on prevalence is needed to understand the extent of the issue and patterns contributing behaviours for appropriate interventions to be developed and implemented.

The first hypothesis suggested that the prevalence of STBBI is higher among street youth engaged in survival sex than those who were not. To test this hypothesis a relative risk estimate was generated and results from this secondary analysis support this hypothesis. The prevalence of STBBI, specifically HCV, HIV, and GC, was significantly greater among Winnipeg street youth engaged in survival sex than youth who were not. In the study conducted by DeMatteo et al. (1999) they reported 2.2% of participants in their Toronto based street youth study (N=695) were positive for HIV (all were male) and associated higher rates of HIV infection among males who reported ever engaging in survival sex. Similarly, the recent Vancouver study (Shannon et al., 2010) which reported on data derived from two prospective cohort studies (the Vancouver Injection Drug Use Study and the Scientific Evaluation of Supervised Injecting Study) of injecting drug users aged 14 to 24 years from 1996 to 2007 (N=364), also found that the baseline prevalence and cumulative incidence (36 months post baseline testing) of HCV was significantly higher among youth engaged in survival sex work compared to those youth who did not report survival sex work. Shannon et al. (2010) relate this elevated HCV incidence to differing social networks and risky injection environments rather than to the moderately ineffective mode of sexual HCV transmission.

The higher prevalence in STBBI among youth engaged in survival sex corresponds to the greater STBBI risk factors inherent to sex trade work. These factors have also been identified in other research literature (Garnet et al., 2008; Marshall, 2008; Solorio et al., 2008; Aral et al., 2007; Tyler et al., 2007; Tyler, 2007; Bodnarchuk et al., 2006; Tyler & Johnson, 2006; PHAC, 2006d; Halcon & Lifson, 2004; Shelton et al., 2004; Shields et al., 2004; Williams & Davidson, 2004; Aral, 2002; Tyler, 2000; Aral,

1999; DeMatteo et al., 1999; Laumann & Youm, 1999; Maticka-Tyndale, 1997; Aral, 1994) and include: an earlier age of sexual debut, higher number of sexual partners and/or high risk sexual partners, inconsistent condom usage, and greater substance use.

Among the Winnipeg street youth study participants (N=673) the overall prevalence rate for each of the STBBI examined for this study (Ct, GC, HBV_{core}, HCV, HIV, and syphilis) was determined to be greater in each category than the estimated prevalence findings from the PHAC national street youth studies (PHAC, 2006d) with HCV and syphilis being the exceptions (see Table 28). Differences in STBBI prevalence could be associated with the greater prevalence of survival sex work occurring among Winnipeg street youth in comparison to the lower prevalence of survival sex reported nationally. This is an important finding as the diversity in STBBI prevalence rates provincially and nationally highlights the need for public health interventions and prevention efforts to be adapted to the needs of the local context, circumstances, and cultures of street-involved youth.

Table 28. Prevalence of STBBI – Winnipeg street youth compared to national street youth (PHAC, 2006d)

STBBI	Winnipeg Street Youth STBBI %	PHAC National Street youth STBBI %
Chlamydia	16.3%	10.37%
Gonorrhea	2.7%	1.97%
HBV _{core}	2.7%	2.3%
HCV	4.0%	4.03%
HIV	1.6%	< 1.0%
Syphilis	0%	0%- 0. 7% (10 cases)

In each STBBI category, the prevalence among Winnipeg street youth was also determined to be greater than the prevalence found among the general Canadian youth (15 to 24 year old) population (see Table 29) for the same years surveyed. Preoccupation with meeting basic daily needs (e.g., food, money, drugs) within the context of an unstable living situation increases the risk of STBBI among this marginalized population.

Table 29. STBBI prevalence – Winnipeg street youth compared to national youth

STBBI	Winnipeg street youth population STBBI %	National youth population STBBI % (PHAC, 2006d)
Chlamydia	16.3%	< 1%
Gonorrhea	2.7%	0.06%-0.09%
HBV _{core}	2.7%	unavailable
HCV	4.0%	0.084% - 0.32%*
HIV	1.6%	unavailable

*Remis, 2009

In addition to the actual biological sampling for STBBI, youth were also asked to self report their STBBI (Ct, genital warts, GC, HBV, HCV, herpes, HIV/AIDS, syphilis, and trichomonas) history. The majority of youth (88.85%) reported either having had none (65.97%) or only one (22.88%) of these infections; youth engaged in survival sex reported a three-fold greater history of STBBI compared to non-sex trade involved street youth. A previous study by Halcon & Lifson (2004) also reported that street youth who received goods for sex were more likely to have a history of STI. The knowledge that Winnipeg street youth engaged in survival sex had a more extensive history of STBBI combined with the findings that they also reported a significantly greater self perceived risk for contracting STBBI (compared to youth not engaged in survival sex) is associated with the high risk sexual behaviours inherent to sex trade work.

Objective 3

This study's third objective was to examine the prevalence of self-reported abuse (emotional, physical, and sexual) between youth engaged in survival sex and those who were not. The rationale for this objective was again related to the gap in locally relevant literature specifically regarding the relationship between Winnipeg street youth, abuse, and survival sex. It is important that public health and community service providers are aware and informed of the prevalence of this health issue among this underserved population as it has implications for the development of gender and culturally appropriate interventions and programming.

Hypothesis 2 suggested that the prevalence of abuse would be higher among street youth engaged in survival sex than those who were not. To test this hypothesis a relative risk estimate was generated to assess if those youth who reported abuse were more likely to be engaged in survival sex. Previous research in other parts of Canada and the United States has demonstrated a positive relationship between abuse and engagement in the sex trade among street-involved youth (Buffardi et al., 2008; Tyler, 2007; PHAC, 2006d; Tyler & Johnson, 2006; Chen, Tyler, Whitbeck & Hoyt, 2004; Whitbeck et al., 2004; Tyler et al., 2001; Tyler, 2000; Greene et al., 1999; Whitbeck et al., 1997). The study findings gleaned from this secondary analysis echo these national and international results (and support hypothesis two) as Winnipeg street youth who were victims of abuse were determined to be at a significantly higher risk for engaging in survival sex in comparison to their non-sex trade counterparts. The effects of experiencing emotional, physical, and sexual abuse have negative consequences beyond those of experiencing either type of abuse individually. For this study, however, each abuse variable was also

analyzed independently and youth who had been sexually abused were found to be at greatest risk for engaging in survival sex, followed by those who were physically abused, and then by youth who were emotionally abused. Abuse has also been cited as a precursor to mental health problems and substance use (Tyler & Johnson, 2007; Chen et al., 2004; Rew, Taylor- Seehafer, & Fitzgerald, 2001; Tyler, 2000) and this relationship is made evident by the findings from this study which demonstrated that youth engaged in survival sex not only reported a greater history of abuse but also a greater amount of mental health illness and greater alcohol and injection drug use.

Results from this study have shown that nearly half (47.85%) of all Winnipeg street youth experienced some form of abuse. Each abuse category was further analyzed based on gender, and results demonstrated that females reported a greater history of abuse in each abuse category than their male counterparts. Sexual abuse was reported among 46.3% of the total Winnipeg sample in this study compared to approximately one quarter of Winnipeg street youth in the study conducted by Bodnarchuk et al. (2006), however, it is unknown how Bodnarchuk's study defined sexual abuse. For the present study, 70.8% of youth engaged in survival sex had experienced sexual abuse compared to 34.5% of youth not involved in the sex trade. Findings from this current study also revealed that only sexual abuse was a risk factor for survival sex among *both* sexes. A history of sexual abuse was reported by over half of female street youth and over one third of male street youth. Both females and males engaged in survival sex experienced significantly more sexual abuse than their counterparts not engaged in the sex trade. It may seem counter-intuitive that youth who experienced sexual abuse would engage in survival sex; and instead would want to avoid sex due to their past history of abuse. Sexually abused

youth, however, may cope differently than non-abused youth. Tyler & Johnson, (2006) note that coping mechanisms may include alcohol and drug use, which in turn, may lead to trading sex for drugs or money and greater involvement with high risk sexual behaviours.

Physical abuse and emotional abuse were experienced by the majority of study youth. An unexpected finding was that only for the male sample were these two abuse variables determined to be significant risk factors for engaging in survival sex. Among the male street youth population nearly one-third (32.58%) reported they experienced physical abuse prior to leaving home. Males engaged in survival sex reported having experienced significantly more physical abuse prior to leaving home than males who were not involved in the sex trade. In contrast, nearly half of the female street youth reported a history of physical abuse prior to leaving home, however, there was no significant difference in a history of physical abuse between females engaged in survival sex and females who were not. Bodnarchuk et al. (2006) also examined physical abuse among their Winnipeg street youth sample and reported that 47% of males and 59% of females reported being physically abused while growing up.

Emotional abuse prior to leaving home was reported by two-thirds of the female street youth with no significant difference between females engaged in survival sex and those who were not. Overall, almost half of the male sample reported a history of emotional abuse prior to leaving home, with males engaged in survival sex reporting a greater amount of emotional abuse than males who were not engaged in the sex trade.

The lack of a significant difference in physical and emotional abuse between female street youth engaged in survival sex and those who were not is an important

finding. Although no significant difference was found due to the lack of variability between the means of these groups, females still reported experiencing greater rates of emotional, physical, and sexual abuse than their male counterparts. This knowledge is vital in order for gender specific health interventions to be developed by community health care providers.

The previous Winnipeg based study completed by Bodnarchuk et al. (2006) indicated that gender alone, regardless of sexual abuse history, was the only demographic characteristic related to exploitation by the sex trade. A Montreal study (Weber, Boivin, Blais, Haley, & Roy, 2004) also did not show sexual abuse as an independent predictor of initiation into the sex trade among their small female street youth cohort who were engaged in survival sex (n=33). Weber et al. (2004) note that this finding may have resulted from decreased power to detect statistically significant associations within their small sample size. In this secondary data analysis, gender and abuse were both associated with survival sex at the univariate level. The logistic regression analysis results demonstrated that sexual abuse, physical abuse, and gender (i.e., being female) were significant risk factors for engagement in survival sex after controlling for each other; emotional abuse was not significantly associated with survival sex. Additionally, there were no interactions between each of the abuse variables and gender. Once the abuse variables were controlled, gender showed the strongest association with survival sex followed by sexual abuse and physical abuse. This finding is somewhat unique, as most studies that have investigated survival sex among street youth (Buffardi et al., 2008; Tyler, 2007; PHAC, 2006d; Tyler & Johnson, 2006; Beaudoin, 2004; Tyler et al., 2001; Greene et al., 1999; Whitbeck et al., 1997) did not examine the interaction between

survival sex, gender, and the three types of abuse. Gender is an important factor when analyzing sexual health behaviours as Connell (1987) suggested in her Theory of Gender and Power. Connell postulated that due to a power imbalance between men and women, women often have less control over sexual encounters in heterosexual relationships compared to men. The most recent Manitoba HIV statistics from 2009 indicated that there were 108 newly diagnosed cases of HIV in the province with females comprising 46.7% of these cases (Manitoba Health, 2004-2009); this statistic represents the highest percentage of annual female HIV cases in the province since HIV statistics were first reported in 1985 (Manitoba Health, 2008a). These statistics provide additional credibility to Connell's theory which further lends itself to the development of specific HIV prevention interventions targeting females (e.g., safer sex negotiation skills, female controlled barrier methods) in order to reduce the impact of HIV in our community.

These compelling results provide locally relevant and evidence based research findings which are essential components to facilitate regional and provincial stakeholders in their decision-making, resource allocation, and program development geared towards the specific needs of these youth. Based on these findings, youth who report a positive history of abuse should receive risk counselling to reduce sexual risk behaviours, and to promote and restore sexual health. Healthcare providers and related legal and social services, should identify and intervene early with abused children, tailor resources, and develop gender specific programming to help prevent abused children from becoming street-involved and from engaging in survival sex and its related harms.

Objective 4

The fourth objective was to examine the prevalence of STBBI related risk behaviours between youth engaged in survival sex and those who are not. Youth were asked if they had engaged in a series of behaviours that may put them at risk for STBBI. Hypothesis 3 suggested that the prevalence of high-risk sexual behaviours would be higher among street youth engaged in survival sex than those who were not. To test this hypothesis a relative risk estimate was generated to assess if those who reported engagement in survival sex were more likely to engage in these risky behaviours. The rationale for objective 4 is that for positive prevention to occur, evidenced based research data is required to demonstrate the prevalence and extent of these high risk sexual behaviours among the street youth population in order to better target intervention strategies. Currently, there is minimal local literature pertaining to this issue.

The research findings in this study demonstrated that Winnipeg street youth engaged in survival sex had a significantly greater prevalence of involvement in high risk sexual behaviours compared to their non-sex trade counterparts. This was true for the following high risk sexual behaviours: earlier age of onset of first sexual intercourse, less condom usage (phases II and IV), higher numbers of lifetime and recent sexual partners, sex with higher numbers of high risk partners, and greater alcohol and injection drug use. The analysis also revealed some unexpected findings regarding condom usage (phase III) and non-injection drug use.

Age of sexual debut is a predictor for STBBI with the earlier the age of onset of sexual intercourse being associated with a greater risk for STBBI (Shields et al., 2004; Williams & Davidson, 2004; Tyler, 2000; Maticka-Tyndale, 1997). The age of sexual

debut for the sample ranged from 5 to 22 years of age with a mean of 13.75 years which is substantially younger than the 16 to 17 years of age reported by general Canadian youth population ages 15 to 24 years (Hanson, Mann, McMahon, & Wong, 2004). Youth engaged in survival sex reported being significantly younger at sexual debut than youth who were not involved in the sex trade. This finding corresponds to the previous results in this study indicating that youth involved in the sex trade were diagnosed with a greater number of STBBI, reported a greater history of past STBBI, and perceived themselves to be at greater risk for STBBI than their non-survival sex counterparts.

Consistent and correct condom use is an important factor to help to reduce the sexual transmission of STBBI and is part of the first component in transmission dynamics used in determining the reproductive rate of STBBI (CDC, 2009; Garnet et al., 2008; Aral, 2002; Patrick, 1997; Anderson & May, 1988; May & Anderson, 1987). Condom usage was assessed in all phases but was questioned differently between phases. In phase II, youth were asked how often a barrier was used during sexual activity if they have ever had a regular and/or casual, female and/or male sexual partner with youth engaged in the sex trade reporting significantly less condom usage than youth who were not involved in survival sex. The condom related questions in phases III and IV were identical and included: youth who have *ever* had a female and/or male sexual partner were asked if a barrier method was used the last time they had sexual activities with that partner. Differences in these results were noted by phase whereas in phase III there was no significant difference in condom usage with their last partner based on survival sex; and phase IV results demonstrating that youth engaged in survival sex reported significantly less condom usage than non-sex trade involved youth. The phase III results were an

unexpected finding as this phase had the highest percentage of youth involved in sex trade work compared to the other phases. There is more than one possible explanation for the discrepancy in findings. Phase IV youth may have been street-involved for longer periods of time and subsequently have fewer resources available to access condoms, therefore, reducing the probability of condom usage during sexual intercourse.

Alternatively, these youth may have had their last sexual encounter with a regular partner with whom they felt condoms were not required. Ongoing harm reduction approaches including the promotion of condom usage among all street youth is a vital component to an effective STBBI prevention strategy.

STI epidemiology suggests that the second component of transmission dynamics which lead to the greater reproductive rate of STBBI is the efficiency of transmission which includes: early sexual debut (discussed in a previous section), high rate of partner exchange, sex with high risk partners, and high numbers of sexual partners (Garnet et al., 2008; Aral et al., 2007; Shelton et al., 2004; Aral, 2002; Aral, 1999; Laumann & Youm, 1999; Anderson & May, 1988; May & Anderson, 1987). Results from this study revealed that youth engaged in survival sex reported having sexual activities in the last three months with significantly greater numbers of high risk sexual partners (i.e., partners infected with HBV, HCV, and HIV; and high risk partners including sex with a substance user; someone high on drugs (while having sex); someone who had an STI in the last three months; or a prostitute) than youth not engaged in the sex trade. These findings reflect the significantly higher STBBI diagnoses among youth engaged in survival sex noted previously in this study.

An interesting finding is that among the whole sample, youth reported the mean number of *infected* sexual partners in the last three months was 0.06 in comparison to the mean number of *high risk* sexual partners which was 25 times greater at 1.55. Each study phase attempted to discover the risk of transmission based on type of sexual partnerships, specifically whether participants were having sex with infected (phase II) or high risk (phases III and IV) partners. In phase II, 2.88% of youth had sex at least once with a partner known by them to be infected with HBV, HCV, or HIV; in phase III and IV combined, 23.72% of youth had sex at least once with a high-risk partner. This finding suggests that youth engaged in survival sex may not be able to turn away potential sexual partners regardless of heightened risk to themselves due to their marginalized status and their inability to meet their daily survival needs.

Street youth also quantified their total number of female and male sexual partners in their lifetime and in the last three months. Over 90% of youth reported having had less than 51 lifetime partners with the average being almost 16 lifetime partners (average of 13 sexual partners if sex trade workers are excluded). Not surprisingly, youth engaged in survival sex as a group reported significantly higher numbers of lifetime sexual partners than youth not involved in the sex trade, and this was true for both females and males. Males engaged in survival sex reported having the highest mean number of lifetime partners at 25.38 which was an unexpected finding considering more females were engaged in sex trade work compared to males. Other literature has explored the relationship between male street youth and high numbers of sexual partnerships and relates this finding to MSM⁴ and survival sex related activities (Marshall, Shannon, Kerr, Zhang, & Wood, 2010; PHAC, 2006d; Haley, Roy, Leclerc, Boudreau, & Boivin, 2004),

⁴ MSM: Men who have sex with men.

however, survival sex work among Winnipeg's sexual minority street youth was beyond the scope of this study.

The total number of female and male sexual partnerships street youth had in the last three months was also analyzed. Almost all youth (99.70%) reported having had less than 51 recent partners, and therefore the maximum number of recent partners was truncated at 51. The mean number of recent sexual partners for the sample was 4.19. Similar to the finding for lifetime sexual partners, youth engaged in survival sex reported significantly higher numbers of recent sexual partners than youth who were not engaged in sex trade work. The expected difference in the number of recent sexual partnerships for those engaged in survival sex was true for females and for males. Also similar to lifetime sexual partners, males involved in sex trade work had the highest number of recent sexual partnerships in comparison to the other three groups.

Substance use was examined in this study as it can lead to an increased sexual risk of STBBI transmission by impairing judgement and lowering sexual inhibitions (Marshall, 2008; Solorio et al., 2008; Tyler et al., 2007; Tyler, 2007; Bodnarchuk et al., 2006; Tyler & Johnson, 2006; PHAC, 2006d; Halcon & Lifson, 2004). Youth were questioned in all three phases regarding use of alcohol, injection drugs, and non-injection drugs in the past three months. Analysis initially combined non-injection drug use and injection drug use into one larger "drug use" category with no statistical difference found based on sex trade work. Non-injection drug use, especially the use of marijuana which is frequently used by Winnipeg street youth (Patton et al., 2008; Bodnarchuk et al., 2006; Beaudoin, 2004; Higgitt et al., 2003), may have reduced the overall effect of substance use as a risk factor for survival sex. Non-injection and injection drug use were therefore

analyzed separately and by doing so a significant difference was found based on survival sex.

Based on previous research (Chettiar et al., 2010; Kerr, Marshall, Miller, Shannon, Zhang, Montaner, & Wood, 2010; Halcon & Lifson, 2004; Weber et al., 2004; Greene et al., 1999) it was expected that there would be a significant association among Winnipeg street youth between injection drug use and survival sex. Results demonstrated that youth engaged in survival sex reported injecting a significantly greater number of drugs in the past three months compared to non-sex trade involved youth. The majority of street youth (91.68%), however, reported they had not injected any of the six drugs used in the analysis during the last three months.

Unexpectedly, youth *not* engaged in survival sex reported significantly greater use of non-injection drugs in the past three months compared to those engaged in survival sex. Results also revealed that the majority of youth (81.72%) reported they used at least one of these non-injection drugs in the past three months. In general, street youth reported greater use of non-injection drugs than injection drugs. Youth engaged in survival sex also reported significantly greater alcohol use than non-sex trade youth. These notable findings perhaps suggest that youth engaged in sex trade work are more apt to use harder drugs (i.e., injection drugs) and alcohol over the use of non-injection drugs. The greater use of harder drugs and alcohol may be used as coping mechanism to help these youth contend with the negative aspects of sex trade work, mental health issues, dysfunctional families, and abuse histories; or the drug use could have preceded engaging in sex trade work in order to finance their drug dependence. Using substances may provide a temporary escape from street life but it will continue to be a contributing factor

to their ongoing struggles unless these youth get the help they need to break free from this devastating cycle. Co-occurrence of substance use and sex trade work elevates the risk of STBBI and this relationship is made evident by the significantly higher STBBI rates seen among the sex trade cohort in this study. Harm reduction, addiction services, and counselling must be specifically developed and offered to these sexually exploited youth for their underlying issues of addiction to be addressed.

Strengths and Limitations of the Study

Limitations of this secondary analysis were related to the potential biases encountered in the primary study which may have caused data to be skewed. Each type of bias, however, was minimized by measures built into the primary study which were designed to counter the negative effects of bias.

Study Type

The primary study was cross-sectional in design. Cross-sectional studies collect data on individual characteristics, behaviours, and risk factors together with information regarding outcome variables over a short duration of time. The major drawback with cross-sectional studies is that cause and effect are measured simultaneously and thus non-differentiated. This type of study, however, was the most appropriate for determining prevalence of survival sex, STBBI, and high risk sexual behaviours and to formulate various hypotheses regarding important risk factors among Winnipeg street youth.

Power of Study

The sample size (N) for each phase of the primary study was defined by PHAC for the Winnipeg site; there was no evidence of the power formula used. For this study, the appropriateness of the number of Winnipeg street youth chosen for the study was evaluated. The adequacy of the sample size was calculated using the following formula (The John Hopkins and the International Federation of Red Cross and Red Crescent Societies, 2007):

$$n = (z^2 pq/d^2)$$

where n = sample size

z = normal standard deviation set at 1.96 (95% confidence interval)

p = the proportion in the target population (Winnipeg street youth population / total Winnipeg youth population)

$q = 1 - p$

d = degree of accuracy desired (p value), set at 0.05

Difficulties in determining the size of the Winnipeg street youth population were encountered due to their transient and hidden status within the larger urban population. A 2005 Winnipeg based shelter survey reported 545 youth used this city's shelters, however, this figure does not account for the many invisible homeless youth who do not seek the services of shelters. This same report suggested that the shelter-using homeless population may only account for 20% of homeless people. This suggests then that the population of homeless youth in Winnipeg may be estimated at roughly 2725 youth. Based on an average Manitoba birth cohort of 15 000, the study should have sampled 227 youth in each phase; the study in fact averaged 247 youth per phase. It seems reasonable then that the study sample was sufficient for the purpose of describing the social and sexual realities of street youth in Winnipeg.

Sampling bias. Participants were recruited by the snowball sampling approach. This non-probability sampling method relies on referrals from study participants to inform others within their social network that a study is being conducted in order to generate additional subjects. This technique represented the most feasible method of sampling this high-risk and hidden sub-population, however, it also has its disadvantages. The challenge with this method is that it reduces the likelihood the sample will be representative of the entire Winnipeg street youth population, and therefore, may produce biased estimates of trends relating to the prevalence and risk factors associated with

survival sex and STBBI within this target population. The initial youth participants heavily influenced who was chosen to participate in the study, and therefore, this research sample may only represent a small subgroup of street youth within Winnipeg who access youth oriented services and who are not generalizable to the larger population of street youth.

To ensure the sample was representative of the Winnipeg street youth population, PHAC utilized methods to minimize sampling bias. Three sentinel sites were required for the primary study. These sites depicted locations and services patronized by street youth and allowed youth from different parts of the city to have access to the study nurse and the research study. The research nurse also was available at different times of the day (from morning to early evening) allowing for the enrolment of a wider variety of participants. Winnipeg street youth are a transient group, and therefore, the primary study occurred over a nine month period to account for seasonal variations within this population. The study nurse also played a vital role in reducing sampling bias; she had significant experience working with street youth and was able to identify youth who were representative of the street youth population.

Self selection bias. Self selection bias occurs when the individuals who volunteer to be enrolled in a study differ in behaviour or characteristics from non-volunteers. This may result in study participants not being representative of the whole target population. In the primary study, youth participants were offered an honorarium of ten dollars for completion of each questionnaire; this may have increased the likelihood of participation across a wide variety of street youth. Self-selection bias was further reduced with adherence to the subject eligibility criteria which indicated that participants must be

between 15-24 years old and “homeless”. However, the research nurse relied on the participants’ themselves to determine if they met the age and homeless requirement. Although the nurse was experienced in working with street youth, some participants may have falsely indicated that they met these criteria in order to participate in the study. This study also occurred over three different years and as the youth were anonymous during each phase of the study it is theoretically possible that some youth may have self-enrolled in all three phases of the study.

The sample population also was limited to those who spoke only English or French (Canada’s two official languages). These criteria may be more exclusive than inclusive. Many immigrant street youth who, although street-involved, may have been unable to communicate in either official language would thus have been excluded from data collection leading to potential gaps in epidemiological and behavioural risk data.

Memory and response bias. Potential biases in self reported behaviour (not the actual rate of STBBI as these were confirmed by biological specimen testing in a laboratory) or inaccuracies in recalling past events (exposure) may have occurred due to memory recall and/or response bias. The subjects may have under/over reported abuse histories, substance use, past history of STBBI, and/or sexual behaviours due to either difficulty in accurately recalling past events (memory bias) or due to the desire to respond favourably or in a socially acceptable manner (response bias). Strategies to reduce these biases included: short time periods (i.e., last three months) in framing the questions in order for youth to better recall behaviours and events, maintaining anonymity of participants, ensuring confidentiality of responses and STBBI results, and building a trusting relationship with the research nurse.

Implications for Community Health Policy, Practice, and Future Research

Homelessness causes a daily struggle for street youth to meet their basic survival needs. The survival strategies utilized by homeless youth can produce multiple adverse effects in their physical and mental health. An economic strategy often employed by street youth to meet subsistence needs is survival sex. This research study, therefore, examined the role of survival sex in sexual risk and its impact on STBBI transmission dynamics among a group of street-involved youth in Winnipeg, Manitoba. These findings provide a major contribution to the current epidemiological data pertaining to the prevalence rates of survival sex, sexual risk behaviour, and STBBI among this local population. Socio-demographic characteristics and underlying factors that place youth at risk for survival sex were also explored in this secondary analysis.

Multiple risk factors for survival sex and STBBI transmission were addressed in this secondary analysis with youth engaged in survival sex reporting an overall greater risk for these factors compared to their non-sex trade counterparts. These results have implications for policy, practice, and research. With these findings, local health and social services practitioners are better equipped to develop appropriate policy and practices to help reduce the burden of survival sex and STBBI among this marginalized population.

Sexual exploitation among street youth can cause life long damage to their physical, mental, cognitive, and sexual development. A high-risk youth's initial contact with a social or health service provider can be the stepping stone in the prevention of survival sex. The foundation of prevention is based on service providers performing a thorough health assessment of at-risk youth including their family, social, sexual, and

abuse histories as the negative impact caused by any one of these underlying factors can lead to involvement in the sex trade. The opportunity for positive prevention exists with any additional contact with these services.

Prevention comes in many forms but must be based on the youth's needs and willingness to receive treatment. Harm reduction, addictions services, and abuse counselling play a positive role in mitigating risks associated with street culture and economy. Alongside these strategies must be the immediate provision of their basic daily needs which can initiate the establishment of trust and communication between service provider and youth. Affordable housing, food, and safety are priorities without which these youth will continue to be prey to sexual exploitation and victimization. For street youth to gain independence from sex trade work and street life they must also be given opportunities for educational upgrading, life skills, and job training programs which would allow them to find and secure traditional, gainful forms of employment and maintain better control over their lives. These interventions must be gender, culture, and sexual orientation specific; youth-oriented; and could be peer-led for better acceptance and utilization by street youth.

These services must also be offered to street youth already involved in the sex trade to prevent their further entrenchment into the street economy. Outreach services must continue to seek out this hard-to-reach population as many of these Winnipeg youth have lost their social connectedness to mainstream society and related health services. Outreach can offer the aforementioned services along with basic health care including STBBI testing, diagnosis, and treatment. For these youth, improved access to transitional housing, counselling, and crisis services are required if their involvement in sex trade

work is to cease. Programs for these youth must address the underlying reasons that initially led to their sexual exploitation keeping in mind the strengths and resources that they themselves bring to effect positive changes within their own lives.

A community is judged by how it protects its most vulnerable persons. The knowledge acquired during this study reveals that there is much more that Winnipeg can do to reduce inequities seen among street youth, particularly those involved in sex trade work. Prevention efforts must be broadened to facilitate the transition of these youth back into mainstream society. Once this transition has been made, proactive health and social services must continue to ensure their success is maintained in the long term.

Findings from this study may raise additional questions pertaining to the circumstances in which Winnipeg street youth engage in survival sex; their perceptions on homelessness and sex trade work; sexual minority street youth; and the resiliency of street youth. Future STI epidemiological research in Winnipeg may also wish to undertake a longitudinal study exploring street youth to provide a more in-depth analysis in relation to survival sex including youth initiation into sex trade work, length of time involved with sex trade work, and events leading to transition back into mainstream society.

Conclusion

This report presented results of a secondary data analysis pertaining to Winnipeg street youth and was designed to examine the prevalence and risk factors of STBBI and survival sex among these disenfranchised youth. These study findings expand and strengthen the current body of literature relating to Winnipeg street youth.

This study revealed a high prevalence of survival sex among Winnipeg street youth. It is this group who is particularly vulnerable to myriad health problems and in general they reported greater rates of family conflict, mental health issues, STBBI, abuse, high risk sexual behaviours, and alcohol and illicit drug use when compared to their non-sex trade involved peers in Winnipeg. Each of these factors individually can impact on a person's ability and capacity to maintain physical and mental health, family life, education, and employment; however, when combined they can be absolutely devastating for that individual.

It is important for epidemiological studies to elucidate the underlying reasons local youth engage in survival sex and its associated high risk behaviours to allow for appropriate prevention and intervention strategies to be developed. It is the clustering and interrelatedness of high risk sexual behaviours among Winnipeg street youth engaged in sex trade work that is multiplying their vulnerability to STBBI. Structural factors also determine the context in which sexual risk behaviour occurs and although this study did not specifically examine these factors, they were indirectly assessed through exploring youth income sources, employment history, homelessness, and contact with social services. These macro-level factors play a role in driving risk behaviours that increase

the likelihood of STBBI transmission in this marginalized population and could be addressed in future research among Winnipeg street-involved youth.

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Appendix A: Socio-demographic characteristics of Winnipeg street youth by study phase

Variable		Phase II		Phase III		Phase IV		Total
		Number	%	Number	%	Number	%	
Survival Sex	Yes	63	25.9	65	29.8	49	23.1	177
	No	180	74.1	153	70.2	163	76.9	496
	Total	243		218		212		673
Gender	Male	136	56.0	106	48.6	126	59.4	368
	Female	107	44.0	112	51.4	86	40.6	305
	Total	243		218		212		673
Ethnicity	Aboriginal	117	48.1	127	58.3	123	58.0	367
	Non-Aboriginal	126	51.9	91	41.7	89	42.0	306
	Total	243		218		212		673

Appendix B: Health Research Ethics Board- Letter of approval for secondary data Analysis



BANNATYNE CAMPUS Research Ethics Boards

P126-770 Bannatyne Avenue
Winnipeg, Manitoba
Canada R3E 0W3
Tel: (204) 789-3255
Fax: (204) 789-3414

APPROVAL FORM

Principal Investigator: Ms. D. Schuster/
Supervisor: Dr. C. Beaudoin

Ethics Reference Number: H2009:173
Date of Approval: June 5, 2009
Date of Expiry: June 5, 2010

Protocol Title: Prevalence and Risk Factors of Sexually Transmitted and Blood Borne Infections Among Winnipeg Street Youth Engaged in Survival Sex

The following is/are approved for use:

- Research Proposal submitted May 26, 2009

The above underwent expedited review and was **approved as submitted** on June 5, 2009 by Dr. John Arnett, Ph.D., C. Psych., Health Research Ethics Board, Bannatyne Campus, University of Manitoba on behalf of the committee per your letter dated May 29, 2009. The Research Ethics Board is organized and operates according to Health Canada/ICH Good Clinical Practices, Tri-Council Policy Statement, and the applicable laws and regulations of Manitoba. The membership of this Research Ethics Board complies with the membership requirements for Research Ethics Boards defined in Division 5 of the *Food and Drug Regulations of Canada*.

This approval is valid for one year only. A study status report must be submitted annually and must accompany your request for re-approval. Any significant changes of the protocol and informed consent form should be reported to the Chair for consideration in advance of implementation of such changes. The REB must be notified regarding discontinuation or study closure.

This approval is for the ethics of human use only. For the logistics of performing the study, approval must be sought from the relevant institution, if required.

Sincerely yours,

John Arnett, Ph.D., C. Psych.
Chair, Health Research Ethics Board
Bannatyne Campus

Please quote the above Ethics Reference Number on all correspondence.

Inquiries should be directed to REB Secretary
Telephone: (204) 789-3255 / **Fax:** (204) 789-3414