

Running Head: ILLICIT DRUG USE IN PREGNANCY

Demographic and Psychosocial Correlates of Illicit Drug Use in Pregnancy:

A Mixed Methods Study

By

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ABSTRACT

The purpose of this mixed methods study was to identify demographic and psychosocial correlates of illicit drug use among pregnant women and to explore the life experiences and circumstances that contribute to women's use of illicit drugs during pregnancy. A sequential explanatory mixed-methods design consisting of quantitative and qualitative components was used. The results of the quantitative component found that women who are depressed, of First Nations ethnicity, drink alcohol during pregnancy, smoke during pregnancy, and have low self-esteem are more likely to use illicit drugs during pregnancy. The qualitative component of the study identified four themes that impacted women's use of illicit drugs during pregnancy. These included: (1) living a chaotic life as a child, (2) complicated life circumstances, (3) social support system, and (4) the road to recovery. The information gathered during this study will inform practice and policy and may guide future research in this area.

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DEDICATION

The decision to enrol in the Master of Nursing program at the University of Manitoba was one based on a full family consultation; however upon reflection I am convinced that none of us were fully prepared for the consequences of this decision. Although the learning opportunities and the experiences that I have gained over the course of my graduate program have been exceptional, the impact on my family has been great. To my wonderful husband Brian, I am so grateful for all you have done to manage our life and children while I was preoccupied with deadlines, papers, and travels. You have been more than patient during this time and have become the definition of a super dad! To my beautiful girls, Kennedy, Kaitlyn and Kya, you have all been so patient and understanding as my studies often crept into family time. You were so respectful of my need to work on my thesis over holidays, family vacations, and during our family movie nights. You are growing up into such intelligent, mature and lovely ladies and I am so proud of all of you. I am so lucky to have such a beautiful and exceptional family.

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CHAPTER ONE: INTRODUCTION

Problem Statement

Substance use during pregnancy is an emerging public health problem that has the potential to contribute to substantial social and medical burdens as well as severe consequences for women, children and their families (Lester et al., 2002; Marcellus, 2002). The concept of substance use during pregnancy has been defined in the published literature as the use of alcohol, tobacco, prescription drugs and illicit drugs of dependency such as cocaine, heroin, marijuana, methadone, and amphetamines, either on their own or in combination by women while pregnant (Abdel-Latif, Bajuk, Lui, & Oei, 2007; Carter, 2002).

Few Canadian studies describe the use of illicit drugs by women in the general population. The Canadian Community Health Survey (CCHS) completed in 2002 identified that 9.4 % of women over the age of 15 report using illicit drugs (Tjepkema, 2004). According to the CCHS, the use of illicit drugs by Canadian women is greatest between the ages of 15 and 25 and then begins to decline (Tjepkema, 2004). Since women in this category also are within the childbearing years, these women may be at an increased risk of using illicit drugs during pregnancy.

Few Canadian reports or studies identify the overall prevalence of substance use, other than alcohol and tobacco, during pregnancy among the Canadian population (Public Health Agency of Canada, 2009; Tait, 2000). The most recent Canadian data are found in the Maternity Experiences Survey (MES) conducted in 2007 by the Canadian Perinatal Surveillance System (CPSS), Maternal Health Section of the Public Health Agency of Canada. According to this survey, 6.7% of women reported using street drugs in the year

prior to pregnancy and only 1% reported the continued usage of street drugs after they realized they were pregnant (Public Health Agency of Canada, 2009). According to the MES, there was a dramatic decrease in the number of women who reported using alcohol while pregnant; 62% of women used alcohol in the three months prior to pregnancy but this declined to 10.5% of women who continued to consume alcohol once they realized they were pregnant (Public Health Agency of Canada, 2009). The use of alcohol and illicit substances during pregnancy is estimated to be higher than reported in this survey, as mothers who did not retain custody of their children and First Nations women living on reserves were not included in the MES study population. Tait's (2000) study, which examined the service needs of pregnant addicted women in Manitoba, estimated that 5 to 8 % of pregnant women seek treatment for addiction. This study also did not include First Nations pregnant women accessing addiction services on a reserve. As the majority of survey data are obtained through self report, drug use by women, especially in pregnant women, is often under reported due to a social desirability response bias (Kissin, Svikis, Morgan, & Haug, 2001). Therefore, the actual prevalence of illicit drug use by pregnant women is likely much higher within the general population than reported in these studies.

The use of alcohol and illicit substances while pregnant has been associated with an increase in maternal and neonatal morbidities (Wolfe, Davis, Guydish, & Delucchi, 2005). Antepartum hemorrhage, placental abruption, and spontaneous abortion have been associated with maternal illicit drug use (Abdel-Latif et al., 2007; Curet & Hsi, 2002; Kennare, Heard, & Chan, 2005; Thangappah, 2000). Premature birth, intrauterine growth restriction, low birth-weight, and small head circumference are neonatal outcomes that have been associated with maternal illicit drug use (Abdel-Latif et al., 2007; Bada et al.,

2005; Kennare et al., 2005; Shankaran et al., 2004). Prenatal exposure to alcohol may lead to Fetal Alcohol Syndrome (FAS) or Fetal Alcohol Spectrum Disorders (FASD). In Canada, FAS has been identified as the “leading cause of preventable birth defects resulting in developmental and cognitive disabilities among children” (Collin, 2006, p. 9). Although there are no studies currently available that identify the overall prevalence of FAS or FASD within the Canadian population, the Public Health Agency of Canada (2005) estimates that 9 in every 1000 babies are born affected by FASD each year.

It is difficult to estimate the extent to which maternal lifestyle choices, as well as disadvantaged social and environmental factors, impact a developing fetus as compared to substance use alone (Kennare et al., 2005; Schempf, 2007). Numerous lifestyle factors and social factors such as poverty, poor nutrition, physical abuse and stress are associated with illicit drug use and adverse effects of pregnancy (Bauer et al., 2002). These factors may significantly compound the maternal and neonatal outcomes related to illicit drug use by women during pregnancy (Bauer et al., 2002). Poor prenatal care, including absent prenatal care or late access to prenatal care, also is common among mothers who use illicit drugs during pregnancy (Heaman, Gupton, & Moffat, 2005).

There is a large gap in the availability of data surrounding the use of substances in pregnancy, specifically the use of illicit drugs. As multiple factors may impact the a mother’s use of illicit drugs during pregnancy and the outcomes associated with illicit drug use are complex, it is important to learn more about this population of women. The purpose of this study was to identify the demographic and psychosocial correlates of illicit drug use in pregnancy and to explore the life experiences and circumstances that contribute to a women’s use of illicit drugs during pregnancy. By closely examining the

characteristics of these women and the circumstances that impact their lives, a greater understanding of this population of women will be generated. The information identified during this study will assist in future program planning specifically designed to meet the needs of illicit drug using women and their families.

CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter provides a review of the literature regarding women who use illicit drugs during pregnancy and will provide rationale for the importance of this research study. Although this research study focuses on illicit drug use during pregnancy, other types of substances will be examined due to the common practice of women using multiple substances during pregnancy. In fact, many studies have shown strong associations between illicit drug use, smoking and alcohol use by women while pregnant (Havens, Simmonds, Shannon, & Hansen, 2009; McFarlane, Parker & Soeken, 1996; McGartland Rubio, Kraemer, Farrell, & Day, 2008; van Gelder et al., 2010), thus it is important to acknowledge and examine these relationships.

Substance use during pregnancy has been defined as the use of alcohol, tobacco, and illicit drugs of dependency such as cocaine, heroin, marijuana, methadone, and amphetamines, either on their own or in combination by women while pregnant (Abdel-Latif et al., 2007; Carter, 2002). For the purpose of this literature review, illicit drug use will be used to specifically describe the use of illicit drugs only and the term substance use will be used to describe the use of two or more different type of substances. As there is limited information regarding the actual prevalence of illicit drug use by women during pregnancy, the prevalence of illicit substance use among women in general will also be explored.

This literature review was conducted using PubMed (MEDLINE), Cumulative Index to Nursing and Allied Health Literature and Scopus databases as well as manual searches. This literature review examined literature published since 1995 and focused on prevalence of substance use, both licit and illicit substances, and the demographic

characteristics, psychosocial characteristics, and health behaviours associated with illicit drug use or other substances by women during pregnancy. Associated obstetrical and neonatal complications related to substance use were also explored. Literature that examined the impact of illicit drug use and other substances on the family unit as well as the costs associated with substance use in Canada was also reviewed.

Prevalence of Substance Use

The following section of the literature review will examine the prevalence of illicit drug use, alcohol use, and smoking among the general population of women as well as the prevalence of illicit drug use and alcohol use among pregnant women. In addition, the inter-relationships between alcohol, smoking and illicit drug use will also be examined.

Prevalence of Illicit Drug Use among Women

As previously noted, there are few Canadian studies that describe the actual prevalence of illicit drug use by women in the general population. The Canadian Community Health Survey (CCHS) completed in 2002 identified that 9.4 % of women over the age of 15 report using illicit substances (Tjepkema, 2004). According to the CCHS, the use of illicit substances by Canadian women is greatest between the ages of 15 and 25 and then begins to decline (Tjepkema, 2004). Since women within this age group are also within childbearing years, these women may be at an increased risk of using illicit drugs during pregnancy.

The Canadian Addiction Survey (CAS) (2004), a national survey of Canadian men and women, provides the most comprehensive picture of substance use among the Canadian population. The survey was conducted on 13,909 respondents over the age of

15 and focused on the use of alcohol and illicit drugs by Canadians (Adlaf, Begin, & Sawka, 2005). The results of this survey showed that 39.2 % of women surveyed had tried cannabis in their lifetime, with women aged 18 to 19 years being 3 times more likely to have used cannabis than women aged 15 to 17 years of age (Ahmad, Flight, Singh, Poole, & Dell, 2008). However, an increasing trend in the use of cannabis by women has been noted over the last 15 years. According to Ahmad, Poole, and Dell (2007), cannabis use among women aged 15 to 19 years of age has increased from 10.3% in 1989 to 34.1% in 2004. Cannabis use among women 20 to 24 years of age has increased from 13% in 1994 to 30.7% while the use of cannabis among women aged 25 to 34 years of age has increased from 6% to 12.7% (Ahmad et al., 2007). Additionally, women aged 35 to 44 have seen the rates of cannabis use triple from 2.9% to 8.9% (Ahmad et al., 2007). The use of cannabis by women in Canada varied by Province as well, with British Columbia (47.0%), Alberta (43.9%) and Manitoba (39.5%) having the highest proportion of women reporting the use of cannabis (Ahmad et al., 2007).

The CAS (2004) also examined the use of other illicit drugs by women including cocaine, hallucinogens, speed, ecstasy, inhalants, steroids, and heroin, and found that illicit drug use overall among Canadian women was much less common than alcohol or cannabis (Ahmad et al., 2007). Approximately 12% of the women surveyed reported a lifetime use of illicit drugs. The highest rate of hallucinogens use by women (14.8%) was found among younger women aged 20 to 24 years of age. The rates of hallucinogen use among women declined with increasing age. Cocaine use was highest among women aged 35 to 44 years of age with 21.4% of women reporting the use of cocaine. Lifetime use of speed among women aged 15 to 44 ranged from 4.2 to 9.0% and then decreased

significantly with increasing age. Lifetime use of ecstasy was highest among younger women at 11.3% between the ages of 15 to 19 years of age and then decreased with increasing age. Provinces in Canada reporting women with the highest rates of illicit drug use included British Columbia (19.4%), Alberta (15.6%), Saskatchewan (12.9%) and Quebec (12.7%). The rate of illicit drug use by women in Manitoba was reportedly 11.2% (Ahmad et al., 2007).

Prevalence of Illicit Drug use among Pregnant Women

It is difficult to determine the actual prevalence of illicit drug use among pregnant women as few Canadian reports or studies identify the overall prevalence of any substance use, other than alcohol and tobacco, during pregnancy within the Canadian population (Public Health Agency of Canada, 2009; Tait, 2000). None of the reports include First Nations women living on reserves. The Maternity Experiences Survey (MES) completed in 2007 by the Canadian Perinatal Surveillance System (CPSS), Maternal Health Section of the Public Health Agency of Canada, contains the most recent Canadian data. Approximately seven percent (6.7 %) of women surveyed reported using street drugs in the year prior to pregnancy and only 1% reported the continued usage of street drugs after they realized they were pregnant (Public Health Agency of Canada, 2009). It is estimated that the use of alcohol and illicit substances during pregnancy is much higher in Canada than reported in this survey, as mothers who did not retain custody of their children and women who did not have a live birth were excluded from the survey. In addition, First Nations women living on reserves were not included in the MES study population.

Another study by Tait (2000), which examined the service needs of pregnant addicted women in Manitoba, estimated that 5 to 8% of pregnant women seek treatment for addiction in Manitoba. Unfortunately, this study also did not include First Nations pregnant women accessing addiction services on a reserve, thus the actual prevalence among Manitoba women is likely underestimated. As the majority of survey data are obtained through self report, drug use by women, especially in pregnant women, is often under reported due to a social desirability response bias (Kissin et al., 2001). Therefore, the actual prevalence of this problem is likely much higher within the population of pregnant women.

Prevalence of Alcohol Use by Women

As few Canadian studies are able to identify the true prevalence of alcohol consumption among pregnant women, it is important to examine the prevalence of alcohol use among the female population in general. In the Canadian Addictions Survey (CAS) (Health Canada, 2004), 76.8% of women aged 15 and older consumed alcohol in the year prior to the survey. Heavy consumption of alcohol, defined as four or more drinks at one time in the CAS, was noted by approximately 3.3% of women as occurring at least once per week while 17% of women reported heavy consumption of alcohol at least once per month. This compares similarly to the Canadian Community Health Survey (CCHS) (Statistics Canada, 2002) which reported that 73.1% of females aged 12 and over had consumed alcohol in the past year. The CCHS (2002) identified that 8.3% of women reported the heavy consumption of alcohol at least once per month, defined as five or more drinks on one occasion (Statistics Canada, 2002). In the CCHS (2002), this level of drinking was highest among youth between the ages of 19 and 24 (Statistics

Canada, 2002). This is important to identify as heavy consumption of alcohol is occurring during early childbearing years. In the CAS, the proportion of women who drank alcohol on a weekly basis declined during the ages of 25 to 34 possibly suggesting an intentional reduction of alcohol use due to peak childbearing years.

Prevalence of Alcohol Use by Pregnant Women

Although there is a body of well published literature outlining the risks associated with alcohol use during pregnancy, the problem remains a major public health issue (Bailey & Sokol, 2008). Among the women in the CCHS (2002) who reported consuming alcohol in their lifetime, 14% admitted to consuming alcohol during their last pregnancy (Statistics Canada, 2002). In the CCHS (2002) most of the women reported infrequent use of alcohol while pregnant (75.4% less than once per month; 9.7% once per month; 6.5% two to three times per month; 5.3% once per week; and 1.3% drank once per day) (Statistics Canada, 2002). It was also noted that twice as many Aboriginal women compared to non-Aboriginal women reported drinking alcohol at this level (Statistics Canada, 2002).

In the Canadian Community Health Survey (2005), a decreasing number of women (10.5%) who had given birth within the last five years reported consuming alcohol during pregnancy as compared to the CCHS survey in 2002 (Public Health Agency of Canada, 2007). The results of the CCHS (2005) survey are consistent with the most recent survey of post-partum women, the Canadian Maternity Experiences Survey, which reported that 10.5% of women reported drinking while pregnant (Public Health Agency of Canada, 2009). The MES also identified that although 10.5% of women reported consuming alcohol during pregnancy, this was a dramatic decrease from pre-

pregnant rates of alcohol consumption among the sample, with 62.4% of women reporting the consumption of alcohol in the three months prior to pregnancy (Public Health Agency of Canada, 2009). Although the CCHS in 2002 and 2005 report a significant decrease in the consumption of alcohol by women during pregnancy, the rates of alcohol consumption by pregnant women between the last CCHS in 2005 and the MES in 2007 remain stable at 10.5% of women.

Prevalence of Smoking among Women and Pregnant Women

The overall prevalence rates of smoking among Canadian women in general are declining. According to data from the most recent Canadian Community Health Survey (2009), rates of smoking among Canadian women was 18% compared to 24% of women smoking in 2001 (Statistics Canada, 2009).

Smoking rates among pregnant women in Canada have also shown a declining trend with 17.7% of women reporting smoking during pregnancy in 2000-2001 compared to 13.4% reporting smoking during pregnancy in 2005 (Statistics Canada, 2002, 2005). The most recent Canadian data, found in the Maternity Experiences Survey (MES) (2009) that explored smoking rates during pregnancy has also shown that women's use of cigarettes during pregnancy declined as compared to pre-pregnancy rates. Twenty two percent of women reported smoking prior to pregnancy, either occasionally or daily smoking, compared to approximately 10.5% of women who continued to smoke during the last 3 months of pregnancy (Public Health Agency of Canada, 2009).

Additionally, the MES explored smoking rates among communities and found that higher rates of smoking were found among women in northern communities, especially communities with large Aboriginal and Inuit populations. British Columbia

and Ontario report the lowest rates of smoking during pregnancy at 8.5% and 8.8% respectively while rates of smoking during pregnancy in the Northwest Territories and Nunavut were reportedly 24.9% and 63.8% (Public Health Agency of Canada, 2009). Smoking rates among pregnant women in Aboriginal populations, including First Nations, Inuit and Métis people, may in fact be much higher than reported in this survey as Aboriginal women living on reserves were not included in the survey. One study in Manitoba, a study comparing smoking rates among pregnant Aboriginal and non-Aboriginal women, found that smoking rates among Aboriginal women were much higher at 61.2% than non-Aboriginal populations at 26.2% (Heaman & Chalmers, 2005).

Inter-relationships between Alcohol, Smoking and Illicit Drug Use

Many studies report an inter-relationship between smoking, alcohol use and illicit drug use among pregnant women and interestingly, all three of these substances have similar risk factors for use. One study by Gilman, Breslau, Subramanian, Hitsman and Koenen (2008) examined the relative importance of socio-demographic factors and psychiatric disorders with smoking during pregnancy. This study found that illicit drug use and alcohol consumption within the current year were significantly associated with smoking during pregnancy; however when education, psychiatric disorders and other socioeconomic factors were controlled, the only factors that were significantly predictors of smoking during pregnancy included having less than a high school education and nicotine dependence. Another U.S. study by Svikis et al. (1997) that compared smoking status between pregnant women who used alcohol and illicit drugs and pregnant women who did not use alcohol or illicit drugs, found that 100% of the women in the study who reported using alcohol during pregnancy or illicit drugs during pregnancy also smoked

during pregnancy. Although the sample size of this study was relatively small (N=92), the link between smoking status during pregnancy and illicit drug use by pregnant women was striking. In addition, a large population based study by van Gelder et al. (2010) that examined characteristics of pregnant illicit drug users, found that women who used illicit drugs during pregnancy were also more likely to have used cigarettes and alcohol during pregnancy compared to women who did not use illicit drugs during pregnancy.

Another study by Visscher, Feder, Burns, Brady, and Bray (2003) that examined the impact of smoking and other substance use by urban women on the birth weight of their infants identified that more than half of women who smoked cigarettes while pregnant and drank alcohol while pregnant also used at least one illicit drug while pregnant. Finally, a study by Heaman and Chalmers (2005) examined the prevalence and correlates of smoking before and during pregnancy among Aboriginal and non-Aboriginal women in Manitoba, Canada. The results of this study showed that both Aboriginal and non-Aboriginal women who smoked were more likely to use illicit drugs and alcohol during pregnancy compared to women who did not smoke during pregnancy.

Common Demographic Characteristics of Women

Who Use Substances during Pregnancy

This section of the literature review will examine common demographic characteristics of women who use illicit drugs, alcohol and who smoke within the general population as well as among the population of women who are pregnant.

Demographic Characteristics of Women who use Illicit Drugs

The majority of women who use illicit substances are young, between the ages of 19 and 39 years, and are therefore within their childbearing years (Ludlow, Evans, & Hulse, 2004). Results from the CAS (2004) indicated that women who were younger, aged 15 to 24 years of age, had higher rates of usage of hallucinogens (32.4 %), speed (19.5 %), and ecstasy (23.5 %) while women aged 25 to 44 years of age had higher rates of cocaine use (31.5%) (Ahmad et al., 2008). The lifetime use of cannabis however remained high among all ages of women in Canada. The rate of cannabis use among women was the highest among women aged 20 to 24 years (68.4%) but remained fairly high for women aged 25 to 34 years (51.9%) and women aged 35 to 44 years (52.8%) (Ahmad et al., 2008). There was a sharp decline in use noted among women at the age of 55 years (23%) (Ahmad et al., 2008). Women who were single, divorced, separated or widowed were almost 2 times more likely to use illicit drugs than married women (Ahmad et al., 2008). Women who were from high income categories were more likely to cannabis than low income categories of women (Ahmad et al., 2008). Education did not appear to be a significant factor for the use of illicit drugs, including cannabis, by women (Ahmad et al., 2008).

The most recent Canadian survey, the Maternity Experiences Survey (2009), found that women who were younger, and from a lower household income were more likely to use illicit drugs both prior to and during pregnancy than women who were older or from higher household incomes (Public Health Agency of Canada, 2009). A secondary analysis of the MES data by Merrill and Heaman (2009) examined characteristics of Canadian women who used illicit drugs prior to pregnancy compared to women who did

not and identified differences in pregnancy outcomes between the two groups. Merrill and Heaman (2009) identified that women who used illicit drugs three months prior to pregnancy were likely to be younger, from a lower household income level, more likely to smoke and use alcohol, and more likely to be of Aboriginal ethnicity than women who did not use illicit drugs in the three months prior to pregnancy. Additionally, women were also more likely to be abused in the two years prior to pregnancy, more likely to be depressed, and have a lower body mass index than women who did not use illicit drugs (Merrill & Heaman, 2009). Curet and Hsi (2002) also identified that women who use illicit substances are most often single parents, from low-income populations, are unemployed or lack education and skills to find employment. In one large population based study by van Gelder et al. (2010) that examined the characteristics of pregnant illicit drug using women supported these findings and found that women who used illicit drugs during pregnancy were more likely to be younger, have a house hold income of less than \$20,000 per year and be unemployed. Similar to Merrill and Heaman (2009), this study found that women who used illicit drugs during pregnancy were more likely to be underweight compared to women who did not use illicit drugs; however, women who used cannabis during pregnancy were more likely to have excessive weight gain during pregnancy compared to women who did not use illicit drugs (van Gelder et al., 2010). Van Gelder et al. (2010) found that women who used illicit drugs during pregnancy were also more likely to have partners who also used illicit drugs as compared to women who did not use illicit drugs during pregnancy.

Demographic Characteristics of Women who use Alcohol

When reviewing the literature regarding women who consume alcohol during pregnancy some interesting information emerges. Alcohol is the most common substance used by women (Health Canada, 2001) and is found within all age groups of women. According to the CAS (Health Canada, 2004), the highest rate of drinking occurred among younger women aged 18 to 19 years of age (90.7%) but continued to remain high among women aged 20 to 24 years of age (87.3%) and 25 to 34 years of age (82.4%). Women with a higher education reported higher rates of alcohol use. For example, women with a university degree were twice as likely to report current drinking compared to women who completed high school (Health Canada, 2004). Women who were single, divorced, separated or widowed were also more likely to currently drink alcohol (Health Canada, 2004). As well, women who had higher incomes were almost 3 times more likely to have consumed alcohol in the last year compared to lower income women (Health Canada, 2004). Women who reported drinking lesser amounts, but more frequent episodes of drinking were more likely to be older, from a higher income, more educated, single or divorced and hold higher level job positions (Health Canada, 2004).

Binge drinking by women is another important factor to examine. In the CCHS (2002), women who reported binge drinking, or who consumed a higher number of drinks per occasion tended to be younger, less educated, from a lower income level, single, and unemployed (Statistics Canada, 2002). Additionally, women who participate in binge drinking behaviours prior to pregnancy are known to be at a higher risk to continue drinking during pregnancy and to binge drink during pregnancy (Ethen et al., 2008).

It has been reported in some studies that women of Aboriginal ethnicity have higher rates of alcohol use. In the 2000 to 2001 Canadian Community Health Survey, more Aboriginal women than non-Aboriginal women reported drinking alcohol in the previous 12 months and twice as many Aboriginal women (16.9%) reported heavy consumption of alcohol on any occasion compared to non-Aboriginal women (8 %) (Statistics Canada, 2002). Kvinge et al. (2003) conducted two retrospective case-control studies that examined characteristics of Northern Plains Indian women in the United States who had children born with fetal alcohol syndrome or some fetal alcohol characteristics. This study found that women in this particular population who had children born with fetal alcohol syndrome were more likely to be older, have fewer prenatal visits, more pregnancies, and having more episodes of binge drinking compared to women who did not have children born with fetal alcohol syndrome or characteristics of fetal alcohol syndrome (Kvinge et al., 2003). It is noted that many Canadian studies, which focus on alcohol use during pregnancy or studies that seek to identify rates of FAS or FASD, target Aboriginal communities where the use of alcohol during pregnancy is known to be high. The results of these studies cannot be generalized to other Aboriginal populations (Public Health Agency of Canada, 2007).

Differences in income level and age of the women who drank alcohol during pregnancy were also noted among the sample of women in the MES. The proportion of women living in a household below the low income cut off level who drank during pregnancy was almost 8%, while 11% of women living in a household above the low income level drank during pregnancy (Public Health Agency of Canada, 2009). Interestingly, in the three months prior to pregnancy, women's consumption of alcohol

decreased as their age increased; however, women over the age of 40 reported the highest proportion of alcohol consumption during this time (Public Health Agency of Canada, 2009). During pregnancy, younger women, aged 15 to 19, reported the highest proportion of non-alcohol consumption with a decrease in proportion as age increased. Although the amounts and frequency of drinking may vary, alcohol use among women in general appears to cross all socioeconomic boundaries, ethnic groups, and is found within all age groups of women (Public Health Agency of Canada, 2009).

Demographic Characteristics of Women who Smoke during Pregnancy

The most recent data examining characteristics of women who smoke during pregnancy is found in the national MES (Public Health Agency of Canada 2009). According to the MES (2009), the highest proportion of women who smoked prior to pregnancy were younger, aged 15 to 19 years of age, and had less than a high school education (Public Health Agency of Canada, 2009). Women who smoked during pregnancy were more likely to be multiparous, and have house hold incomes at or below the low income cut off level (Public Health Agency of Canada, 2009). Additionally, almost one quarter of pregnant women reported living with someone who smoked (Public Health Agency of Canada, 2009). Although the rates of smoking during pregnancy were much lower than pre-pregnancy rates, approximately half of post partum women had resumed smoking within five to 14 months post partum (Public Health Agency of Canada, 2009). In addition to the demographic characteristics outlined in the MES (2009), other studies have identified that women who smoke during pregnancy are at a higher risk of using other substances during pregnancy compared to women who do not smoke (Burns, Mattick & Wallace, 2008; Heaman & Chalmers, 2005).

Other studies have examined differences between pregnant women and smoking among ethnic groups. Heaman and Chalmers (2005) compared prevalence and correlates of smoking between pregnant Aboriginal and non-Aboriginal women in Manitoba. This study identified that non-Aboriginal women who smoked while pregnant were more likely to be young, single, from a low income level, be less educated, to drink alcohol, to use illicit substances and receive less prenatal care than non-Aboriginal women who did not smoke (Heaman & Chalmers, 2005). Non-Aboriginal women who smoked during pregnancy were also more likely to report higher levels of stress, less family support and be abused compared to Non-Aboriginal women who did not smoke (Heaman & Chalmers, 2005). As well, Aboriginal women who smoked during pregnancy were more likely to use alcohol and illicit drugs during pregnancy compared to Aboriginal women who did not smoke (Heaman & Chalmers, 2005). The link between smoking and drug use noted by Heaman and Chalmers (2005) are similar to the American study by Jesse, Graham and Swanson (2006) that examined psychosocial and spiritual factors associated with smoking and substance use in pregnancy among white women compared to African American women. In their study, there was a strong link between smoking and the use of alcohol and drugs; however, substance use by African American women was four times greater if they smoked during pregnancy than if they did not. African American women who smoked were also more likely to report lower levels of education, higher stress and less social support compared to African American women who did not smoke (Jesse et al., 2006). In addition, white women who smoked were more likely to report being abused than white women who did not smoke (Jesse et al., 2006).

Common Psychosocial Characteristics of Women

Who Use Substances during Pregnancy

This section of the literature review examines psychosocial factors that are common among women with problematic substance use. The following sections will discuss women with a history of physical and sexual abuse, mental illness, stress, coping and lack of support as well as stigmatization.

History of Physical and Sexual Abuse

According to the report published by the Canadian Women's Health Network (2008) about women, mental health and addictions, the experience of trauma and violence, including interpersonal victimization, childhood abuse, sexual abuse, and intimate partner violence is common among women, especially those with a history of substance use or mental health problems. It is estimated that abuse among pregnant substance users is quite high (Clark, Dee, Bale, & Martin, 2001; Sales & Murphy, 2000). Substance use and mental health problems "frequently co-occur among women who are survivors of violence, trauma, and abuse, often in complex, indirect, mutually reinforcing ways" (Canadian Women's Network, 2008, p. 4). In one study, women with a history of abuse were 1.8 times more likely to report drinking during the three months prior to pregnancy and 2.5 times more likely to consume alcohol even once they realized they were pregnant (Alvanzo & Svikis, 2008). Bailey and Daugherty (2007) report that women who experience intimate partner violence while pregnant are less likely to reduce or quit smoking during pregnancy and have an increased rate of alcohol consumption.

Victimization of women from intimate partner violence is a frequent occurrence among women with substance abuse issues (El-Bassel et al., 2000; Kunins, Gilbert,

Whyte-Etere, Meissner, & Zachary, 2007; Wenzel et al., 2004). In fact, one study reported that two thirds of women presenting for substance use treatment were also victims of emotional abuse, sexual abuse or physical violence (Moylan, Jones, Haug, Kissin & Svikis, 2001). It is also been identified that many women who use substances have a history of previous childhood sexual abuse or sexual assault that may have continued into adulthood (Carter, 2002). A recent study has identified that women with a past history of childhood sexual abuse who are not currently being abused are more likely to have higher rates of depression, stress, consumption of alcohol and cigarette smoking during pregnancy compared to women who were never abused (Nelson, Uscher-Pines, Staples & Grisso, 2010). Additionally, women who had a history of childhood sexual abuse and were currently being abused were 5 times more likely to report depressive symptoms and illicit drug use compared to women who were not currently being abused (Nelson et al., 2010).

One study by Dunn and Oths (2004) identified that women who are physically abused during pregnancy are more likely to be single, younger, less educated, from a lower income level, more likely to smoke and consume alcohol during pregnancy as compared to women who were not abused. It was also identified that abused women were more likely to miss prenatal care appointments, more likely to have a previous miscarriage or abortions, were more likely to have an unwanted pregnancy and more likely to be depressed as compared to women who were not abused (Dunn & Oths, 2004).

Multiple studies identify the linkage between abusive relationships, substance use and substance using partners. As noted by Tuten, Jones, Tran and Svikis (2004), women who are in abusive relationships and are victims of physical abuse during pregnancy are

more likely to use substances during pregnancy and be abused by a partner who uses illicit drugs than women not in abusive relationships. These findings are consistent with those found by Leonardson and Loudenburg (2003), who identified that women at a higher risk for consuming alcohol during pregnancy were more likely to have a history of past sexual abuse, current or past physical sexual abuse, smoke or use illicit drugs or live with a partner or others who use substances.

The combined risk of violence and substance use during pregnancy poses serious threats to the woman and her baby (Clark et al., 2001; Heaman, 2005). As well, substance use during pregnancy may be a risk in itself for physical abuse or partner violence due to its stigma and social unacceptability (Clark et al., 2001). Additionally, a large number of women who use substances during pregnancy are involved in high risk lifestyles such as prostitution (Thangappah, 2000). When substance use is evident during pregnancy, the presence of an underlying circumstance, such as violence, may contribute to a woman's use of substances (Heaman, 2005). Additionally, women who have partners or ex-partners with a drug or alcohol use problem are at higher risk of intimate partner violence before and during pregnancy than women whose partners do not use alcohol or drugs (Chu, Goodman & D'Angelo, 2010).

Mental Illness

Psychiatric disorders among women with substance use issues are so common that it is difficult to identify which disorder occurred first or if one disorder contributed to the other (Bolnick & Rayburn, 2003). There is a positive correlation between mental health issues and illicit drug use during pregnancy (Kerker, Horwitz, & Leventhal, 2004). Women with known psychiatric conditions such as depression and anxiety are more

likely to use substances than those who do not have a psychiatric disorder (Kennare et al., 2005; Sales & Murphy, 2000). In one study that examined abused, pregnant, drug dependent women, compared to non-abused drug dependent women, higher rates of psychiatric disorders and co-morbidities were identified within the abused group (Tuten et al., 2004). Another study by Kvirine et al., 2003, which examined the characteristics of women who consumed alcohol during their pregnancy and had children born with Fetal Alcohol Syndrome identified that women who used alcohol were 2.4 times more likely to suffer from depression, 2.5 times more likely to be diagnosed with a co-occurring mental health problem and 1.7 times more likely to have attempted suicide compared to women who did not consume alcohol during their pregnancies. Untreated depression has been shown to be highly correlated with poor outcomes in pregnancy including inadequate weight gain, inadequate prenatal care and increased incidence of substance use by the woman (Marcus & Flynn, 2008).

Stress, Coping and Lack of Social Support

Women who originate from families where substance use was prevalent and whose families have been historically unstable and unsupportive are more likely to use substances while pregnant (Sales & Murphy, 2000). According to Kissin et al. (2001), women who use substances during pregnancy often lack close bonds with families and friends and need a stronger supportive social system. One study by Tuten et al. (2004) compared pregnant drug-dependent women entering a treatment program who reported current partner abuse to women that did not report current partner abuse. Women in this study were required to complete assessments that evaluated addiction severity, family and social support as well as a psychiatric assessment. This study found that abused,

pregnant, drug dependent women were more likely to have greater family and social problem severity scores than women who were not abused but substance dependent.

Pregnant women often use substances in order to cope with highly stressful and violent circumstances (Sales & Murphy, 2000), including current and past trauma and stress. As previously noted, there is a relationship between childhood sexual abuse and substance use by women. The stress associated with these traumatic events has led many women to describe their use of alcohol and other substances as a way of coping with this childhood trauma (Dunlap, Golub, Johnson, and Wesley, 2002), thus higher rates of substance use are found among women survivors of childhood abuse as way of coping with their abusive history (Seng, Sperlich & Kane Low, 2008). Pregnant women, who are abused either physically or sexually, are at an increased risk to use illicit drugs or alcohol as a way of coping with their unstable environment (Clark et al., 2001; Heaman, 2005; Martin, Beaumont, & Kupper, 2003).

Other stressful events in the lives of women have been associated with substance use during pregnancy. In one study, the most common stressful events were identified as greater number of residential relocations, increased arguments and physical fighting with partners, divorce or separation, the death or hospitalization of a loved one and financial hardship (Martin et al., 2001). Additionally, Martin et al. (2001) found that substance use during pregnancy was highly correlated with substance use by an individual close to the pregnant woman.

Stigmatization

Women who use substances during pregnancy are highly stigmatized and treated poorly, as drug use during pregnancy is viewed as socially unacceptable in our society

(Carter, 2002; Jessup, Humphreys, Brindis, & Lee, 2003; Rayburn, 2007). Stigma may cause women to be reluctant when seeking help for problem substance use. Albright and Rayburn (2009) identified that feelings of social stigmatization, shame and guilt by pregnant women with substance use issues may be identified as a barrier for seeking or accessing treatment. Tait (2000), who explored the service needs of pregnant addicted women in Manitoba, also identified that stigma, or the attitudes directed towards women who were pregnant and using substances, was a significant barrier for women who wished to seek treatment options for their addiction. The feelings of guilt and shame resulting from the stigma are internalized by many women and may lead to women feeling isolated and may prevent them from seeking the services that they require (Tait, 2000). In some cases, women may deny their drug habit and harmful effects on the developing fetus (Bolnick & Rayburn, 2003) and in some cases they may deny that they are pregnant (Hatters Friedman, Heneghan & Rosenthal, 2009). Drinking alcohol during pregnancy is also highly stigmatized and may commonly lead to denial by the mother of both the pregnancy and problems associated with drinking (Bailey & Sokol, 2008). As well, healthcare providers may feel uncomfortable approaching female patients about the subject of substance use due to the stigma associated with substance use in pregnancy (Albright & Rayburn, 2008). In addition, Sales and Murphy (2000) report that women who use illicit drugs are often viewed as being solely responsible for their addiction or at fault for their addiction and are severely stigmatized for this behaviour, especially when pregnant. As society continues to shun these women and the feelings of shame and guilt remain, women will often use substances as a coping mechanism (Tait, 2000) and the cycle of substance use continues.

Other Characteristics Associated with Women

Who Use Substances during Pregnancy

The following section of the literature review examined other characteristics that are associated with women who use substances during pregnancy. These characteristics these characteristics include inadequate prenatal care and unplanned pregnancies.

Inadequate Prenatal Care

Women who use illicit drugs during pregnancy are significantly more likely to have inadequate prenatal care, which is associated with adverse pregnancy outcomes (Heaman, Gupton, & Moffat, 2005). In one study by Hatters Friedman et al. (2009), which examined reasons why women who do not seek prenatal care, 30% of women who did not seek prenatal care were using substances during their pregnancy. Mothers who use illicit substances have been found to delay prenatal care approximately 4 to 8 weeks longer than women who do not use substances and have less number of prenatal visits (El-Mohandes et al., 2003; Thangappah, 2000). Women may avoid accessing prenatal care due to the fear of being judged by health care workers and the fear of being reported to legal authorities (Carter, 2002; Rayburn, 2007). They also may avoid care due to negative past experiences with the healthcare system or they simply may not be familiar with the treatment services that are available to them (Rayburn, 2007). Reluctance to seek prenatal care may be due to fear of stigmatization or potential legal implications such as the potential loss of other children or the apprehension of the baby in the future (Clark et al., 2001; Tait, 2000).

Unplanned Pregnancies

Unplanned pregnancies that result in abortion are associated with an increase in rate of alcohol consumption (Gladstone, Levy, Nulman, & Koren, 1997; Reardon & Ney, 2000), and illicit drug use (Reardon, Coleman & Cogle, 2004; Reardon & Ney, 2000) by women. As well, women with a history of abortion are more likely to use alcohol and illicit drugs with subsequent pregnancies (Coleman, Reardon, Rue, & Cogle 2002). In one study about unplanned pregnancies and the women's subsequent substance use during the pregnancy, Orr, James and Reiter (2008) found that women with unplanned pregnancies were twice as likely to smoke, twice as likely to consume alcohol and almost twice as likely to use illicit drugs during pregnancy compared to women who had planned pregnancies. This study also found that women with unplanned pregnancies were 5 times more likely to initiate prenatal care in the third trimester as compared to women with planned pregnancies (Orr et al., 2008). In another study, women who used cannabis and stimulants specifically were more likely to have had a previous induced abortion compared to women who did not use these drugs during pregnancy (van Gelder et al., 2010).

Obstetrical Complications Associated With Maternal Substance

Use during Pregnancy

The following section of the literature review examines obstetrical complications associated with substance use during pregnancy. Complications associated with illicit drug use, alcohol use and smoking during pregnancy are presented.

Illicit Drug Use

Mothers who use illicit drugs during pregnancy are more likely to have adverse pregnancy outcomes such as chorioamnionitis (Abdel-Latif et al., 2007), antepartum hemorrhage, placental abruption, spontaneous abortion and fetal death (Abdel-Latif et al., 2007; Curet & Hsi, 2002; Kennare et al., 2005; Thangappah, 2000). In one retrospective cohort study of 247 drug using women and 741 controls which examined the impact of illicit drug use on maternal and perinatal complications, incidence of preterm birth, low birth weight, intrauterine growth restriction and placental abruption were all significantly higher for women who used illicit drugs during pregnancy compared to women who did not (Pinto et al., 2010). After controlling for parity and smoking, women in this sample population who used illicit drugs during pregnancy had significantly less incidence of pre-eclampsia than women who did not use illicit drugs during pregnancy (Pinto et al., 2010).

In addition to obstetrical complications due to illicit drug use in pregnancy, women may suffer from acute drug toxicity whereby symptoms can mimic obstetrical complications of pregnancy, such as pregnancy induced hypertension, and may be incorrectly diagnosed by health care professionals (Rayburn, 2007). Some typical symptoms of drug toxicity include agitation, unusual behaviour, elevated or decreased blood pressure, rapid or slowed heart rate and respirations, and constricted or dilated pupils (Rayburn, 2007). Maternal drug toxicity is a potentially life threatening situation for both the mother and the baby.

Alcohol Use

The detrimental relationship between alcohol consumption by women during pregnancy and the impact on infant outcomes, most specifically the development of growth restriction, birth defects and neurodevelopmental deficits that are consistent with fetal alcohol spectrum disorders, has been widely documented (Canadian Pediatric Society, 2002; Chudley et al., 2005; Floyd et al., 2008; Public Health Agency of Canada 2006) and will be reviewed in the following section of this chapter. In addition to the impact on the developing fetus, alcohol use by women has also been associated with spontaneous abortion (Kesmodel, Wisborg, Olsen, Henriksen, & Secher, 2002; Rasch, 2003) and stillbirth (Reddy et al., 2010). Many studies have explored a relationship between alcohol use in pregnancy and preterm birth. There is mounting evidence that alcohol use in pregnancy is associated with preterm birth and low birth weight (Bailey & Sokol, 2008); however most studies have found no significant association between these factors (Albertsen, Andersen, Olsen, & Gronbaek, 2004; Dew et al., 2007; Kesmodel, Olsen, & Secher, 2000; Tough, Svenson, Johnston, & Schopflocker, 2001).

Smoking

Smoking and adverse obstetrical outcomes associated with smoking have been well documented within the published literature. Women who smoke during pregnancy have an increased risk of preterm birth, spontaneous abortion, placental abruption, ectopic pregnancy, and placenta previa (Andres & Day, 2000; Cnattingius, 2004; Shah & Bracken, 2000). Women who smoke more than 10 cigarettes per day are also shown to be at a higher risk of very preterm birth suggesting that there is a dose dependent effect on preterm birth (Kyrklund-Blomberg, Granath, & Cnattingius, 2005).

Concurrent Use of Illicit Drugs, Smoking, and Alcohol Use during Pregnancy

There appears to be little information about the obstetrical outcomes associated with concurrent use of alcohol, illicit drugs and smoking by women in published literature. One retrospective cohort study by Dew et al. (2007) examined and identified the presence of combined effects of smoking, alcohol use and illicit drug use by pregnant women on the rates of preterm birth. This study identified that women who smoked were 22% more likely to have a preterm birth compared to women who did not smoke; women who consumed alcohol and smoked were 46% more likely to have a preterm birth compared to women who did not smoke or consume alcohol during pregnancy; women who consumed alcohol, smoked and used illicit drugs during pregnancy were 46% more likely to have a preterm birth compared to women who did not smoke and use alcohol or illicit drugs (Dew et al., 2007). As the use of multiple substances by women is common, the need for additional research to examine adverse outcomes associated with concurrent use of multiple substances by women during pregnancy is crucial.

Neonatal Complications Associated With Maternal Substance Use

During Pregnancy

The following section of the literature review examines neonatal complications associated with substance use during pregnancy. Adverse neonatal outcomes associated with illicit drug use, alcohol use and smoking during pregnancy are presented.

Illicit Drug Use

There is a significant amount of evidence that maternal drug abuse has a negative impact on a developing fetus (Rayburn, 2007). Several adverse infant outcomes have been directly associated with illicit drug use by women during pregnancy including

premature birth, intrauterine growth restriction, low birth-weight, and small head circumference (Abdel-Latif et al., 2007; Bada et al., 2005; Bauer et al., 2005; Kennare et al., 2005; Shankaran et al., 2004). The use of cocaine has specifically been associated with premature rupture of membranes (Little et al., 1999).

When reviewing the published literature related to illicit drug use and infant outcomes, it was noted that the majority of available literature examines the outcome of cocaine exposed infants with many of the studies published in the 1990's. The greatest criticisms of older published studies are small sample sizes and the lack of controlling for confounding factors, especially social and environmental factors. In addition, earlier studies did not control for poly-drug use by women, which may have also influenced overall perinatal outcomes (Bolnick & Rayburn, 2003; Marcellus, 2002). The lack of controlling for these confounding variables resulted in inconsistencies among older literature. In the most recent literature, researchers have taken great effort to control for confounding factors. One study that attempted to control for confounding factors examined the dose-related effects on infant outcome found that infants exposed to cocaine prenatally have an increased risk of abnormalities of tone and posture and were more likely to be unable to sit at six months, have a poor pincer grasp and be hypertonic compared to unexposed infants (Chiriboga, Kuhn, & Wasserman, 2007). Singer et al. (2002) also examined the effects of prenatal cocaine use on child development and found that cocaine exposure remained a significant predictor of cognitive outcome. Children who were exposed to cocaine in-utero were twice as likely to have significant cognitive delay in the first two years of life compared to non-exposed infants (Singer et al., 2002). Both of these studies controlled for multiple confounding variables including poly-drug

use. In addition, some follow up studies of infants exposed to cocaine and marijuana have noted subtle long term developmental sequelae, such as cognitive deficits (Lewis, Misra, Johnson & Rosa, 2004; Schempf, 2007); however, the long term outcomes from the effects of illicit drugs have not been well studied and are generally unknown (American Academy of Pediatrics, 1998; Marcellus, 2002).

Neonatal Abstinence Syndrome, the presence of withdrawal behaviours elicited by infants exposed to drugs of dependency in-utero, has been reported in neonates following prenatal exposure to some illicit drugs, such as opiates (Marcellus, 2002). Neonatal Abstinence Syndrome is characterized by neurobehavioral symptoms such as central nervous system irritability, gastrointestinal dysfunction and seizures in the neonatal period (American Academy of Pediatrics, 1998; Curet & Hsi, 2002; Marcellus, 2002). Infants born to mothers who use substances in pregnancy are more likely to require admission to a special care nursery than other infants (Ludlow et al, 2004) and require a longer length of stay in the Neonatal Intensive Care Unit (NICU) following their birth (Miles, Lanni, Jansson, & Svikis, 2006).

Alcohol Use

The use of alcohol during pregnancy has been studied widely and the detrimental effects to the child are well published. Alcohol use during pregnancy has been identified as the leading cause of preventable birth defects and neurodevelopmental disabilities in children (Floyd et al., 2008). Alcohol use in pregnancy is widely associated with the development of Fetal Alcohol Syndrome, a leading cause of developmental disability in children, and Fetal Alcohol Syndrome Disorder, an umbrella term used to describe a wide array of associated disabilities resulting from the maternal use of alcohol during

pregnancy (Public Health Agency of Canada, 2006). The impact of alcohol use on the developing fetus can have a wide spectrum of effects with a large variation in severity, from seemingly absent effects to full neurobehavioral involvement to death (Canadian Pediatric Society, 2002). Clinical manifestations of alcohol related exposure during the prenatal period may not be easily identifiable at birth but growth restriction, decreased head circumference, increased motor activity and alterations in motor tone have been identified (Canadian Pediatric Society, 2002). Abnormal facial features such as short palpebral fissures, increased intercanthal distance, flattened face with a short nose, absent or hypoplastic filtrum and a bow-shaped mouth with a thin upper lip have also been associated as characteristics of FASD (Canadian Pediatric Society, 2002).

Neurobehavioral sequelae are the most devastating effects of alcohol use in pregnancy resulting from damaging effects on the central nervous system. These sequelae include microcephaly, issues with intelligence, activity, attention, learning disabilities, memory problems, language, motor skills and behavioural problems (Canadian Pediatric Society, 2002).

Due to the large scale impact of alcohol on the unborn child, the Canadian Pediatric Society (CPS) published a position statement in 2002 outlining the effects of alcohol use on both mothers and children and identifying recommendations to prevent the occurrence of alcohol related harm to infants and children (Canadian Pediatric Society Position Statement, 2002). The CPS provided an update to the 2002 position statement that provides Canadian guidelines for diagnosing FASD and recognizing the need for prevention, long-term intervention strategies and future research. Additionally, the CPS recognizes that although FAS and FASD may be more prevalent in some First Nations,

Inuit and Métis children, this problem is not unique to this population. Instead, social determinants of health including poverty, poor education, social isolation, untreated mental illness and physical and sexual abuse may be contributing risk factors for the problem (Canadian Pediatric Society, 2002).

The amount of alcohol, timing of exposure and duration of exposure during pregnancy may also have a significant impact on then neurobehavioral development of the infant. As noted by Chudley et al. (2005), the most significantly associated risk factor for the development of related complications in infants from the use of alcohol during pregnancy is the presence of high blood alcohol concentrations associated with binge drinking, pattern of consumption and the frequency of consumption. Another study by Kvigne et al., (2003), identified that the strongest predictors for FAS were maternal drinking, older maternal age, intentional injuries such as suicide attempts, history of depression and sexual abuse. However, due to the highly correlated factors associated with alcohol use during pregnancy, it is difficult to accurately determine the associated relative risk of the development of FAS or FASD based on maternal alcohol consumption alone (Chudley et al., 2005). Although alcohol use in pregnancy is known to have detrimental effects on both mother and infant regardless of maternal age, there is some evidence to suggest that advanced maternal age combined with alcohol consumption during pregnancy is directly related to cognitive deficits in infants (Jacobson, Jacobson, Sokol, & Auger, 1998). In one study, infants of mothers over the age of 30 and who consumed more than half an ounce of alcohol per day were 2 to 5 times more likely to be impaired than infants born to younger mothers (Stoler & Holmes, 1999). Women who had a previous child with FAS were also at an extremely higher risk of consuming

alcohol or using substances during a subsequent pregnancy (Kvigne et al., 2003; Leonardson & Loudenburg, 2003).

Although there are no national statistics that accurately describe the prevalence of FASD in Canada several studies have attempted to identify the prevalence within some communities. Health Canada's Framework for Action on FASD estimates the prevalence within the general Canadian population to be nine per 1000 live births (Public Health Agency of Canada, 2005). The prevalence may be underestimated due to the lack of standard diagnostic capability, the ability to have equal access to diagnosis may have led to the underreporting of actual prevalence within the Canadian population, the focus on sub-populations, and difficulty with generalizing findings (Public Health Agency of Canada, 2005). It has been suggested that the prevalence of FASD within First Nations communities and within the Inuit populations of Canada are higher than in the general Canadian population. One study estimated that the prevalence of FASD in one First Nations Community in Manitoba to be 7.2 per 1000 live births (Williams, Odaibo, & McGee, 1999), while another study estimated the prevalence of FAS and partial FAS in another First Nations community in Manitoba to be 55 to 101 per 1000 births (Square, 1997).

The prevalence of substance use in general within the Inuit population of Canada is difficult to ascertain due to the lack of published data; however, substance use and misuse among the Inuit population has been identified as a major health and social concern with devastating consequences as noted in the Presentation to the Standing Committee of the Conference of Parliamentarians of the Arctic Regions (2007). It was reported in the CCHS (2002) that heavy alcohol use by Inuit people (30%), is higher than

the Canadian average of 20.1%. One further study that specifically looked at the health status of the Inuit population in Nunavik identified the prevalence of alcohol use during pregnancy to be as high as 44% (Anctil, 2004).

In addition to neonatal consequences of alcohol use in pregnancy, long-term mental health effects of alcohol use in pregnancy have been identified. In a review by O'Connor and Paley (2009), which examined the mental health outcomes of individuals with prenatal alcohol exposure, it was identified that mental health problems are prominent among individuals exposed to alcohol during pregnancy beginning in early years and continuing throughout the lifespan of the individual. Some of these problems included conduct disorders, depression and suicidal tendencies.

Smoking by Women during Pregnancy

The impact of smoking on the developing fetus has been well documented in the literature. Smoking cigarettes during pregnancy has been identified as the single most important modifiable risk factor that impacts poor neonatal outcomes (Cnattingius, 2004). Smoking during pregnancy has been shown to have an effect on exposed children's growth, cognitive function and behaviour (Cornelius & Day, 2000). In addition, studies have shown an association between cigarette smoking with fetal growth restriction, preterm birth, stillbirth, and placental abruption (Cnattingius, 2004; Collet & Beillard, 2005; Shah & Bracken, 2000). Infants who are exposed to second hand smoke are also at a higher risk of Sudden Infant Death Syndrome (SIDS) (Gordon et al., 2002; Mitchell & Milerad 2006), asthma, and other respiratory disorders (Gauthier, Drews-Botsch, Falek, Coles, & Brown, 2002; Pientinalho, Pelkonen, & Ryttila, 2009).

The Impact of Substance Use on Families

Substance use by a mother has been linked to poor parenting, child abuse and neglect (Jaudes, Ekwo, & Van Horrhis, 1995) and has a negative impact on the entire family (Macrory & Boyd, 2007). Parents who use substances are found to have less positive interactions with their children, be harsher in disciplining their children, inadequately supervise their children, and provide less stimulation for their children (Hans, 2002). In an explanatory descriptive study by DiLauro (2004), which examined the relationships between psychosocial factors and parental behaviours regarding child maltreatment, parents who used substances were more likely to neglect their children than parents who did not use substances. This may have been a result of the lack of inhibitions resulting from drug use or due to the disruption in care giving responsibilities due to apathy (DiLauro, 2004). Although drug use by a mother does not always lead to child abuse or neglect, children born to substance using mothers may encounter difficult situations that may have an effect on emotional, behavioural and cognitive development (Day & George, 2005). Some of these difficulties include physical and emotional abuse or neglect; inadequate parenting or supervision; separation; poverty; poor education; exposure to criminal behaviour and social isolation (Day & George, 2005). In addition, maternal substance use and poor infant health at birth may impede the maternal-child bonding process and lead to a problematic or maladaptive attachment relationship between the mother and infant (Kumpfer & Fowler, 2007). Problems with maternal-infant attachment and bonding were also identified in a study by Quinlivan and Evans (2005). This study examined the impact of domestic violence and drug use during pregnancy on maternal attachment and infant temperament among a sample of teenage

mothers and found that drug use during pregnancy was a powerful predictor of poor infant attachment at six months of age (Quinlivan & Evans, 2005). Additionally, domestic violence and drug use by mothers had a significant effect on maternal attachment and women who used substances were more likely to describe their infants as less easy or more difficult to care for (Quinlivan & Evans, 2005).

Further disruption in maternal-infant attachment and bonding may occur if an infant is removed from the mother's custody due to substance use. For example, in the Province of Manitoba, the disclosure of substance use in pregnancy by a mother often leads to apprehension and placement of the infant into the care of Child and Family Services (CFS) (Tait, 2000). Mothers, infants and families are therefore separated and the foster care system becomes overburdened (Tait, 2000). In Manitoba, when mothers choose to enter treatment, it is often as a result of recommendations made by CFS with the promise of the return of the infant once the mother has successfully completed the treatment to the expectations of CFS (Tait, 2000). In many cases, the children are not returned to the mother following treatment, which may lead to feelings of frustration and mistrust in future contact with CFS (Tait, 2000). Mothers who have custody of their children but agree to treatment at a facility must often relinquish custody of their children to CFS, as most of the treatment facilities are not supportive or able to accommodate entire families at the treatment centers (Poole & Dell, 2005; Tait, 2000). Feelings of guilt and inadequacy are common among pregnant women and those who lose custody of their children (Tait, 2000).

Costs Associated with Substance Use during Pregnancy

Significant financial costs are associated with substance abuse. Rehm et al. (2002) identified that the overall social cost of substance use in Canada in 2002 was estimated to be \$39.8 billion which represents a cost of approximately \$1267 for every individual in Canada. Of this amount, costs associated with tobacco use accounted for \$14.6 billion (42.7 percent of total cost), costs associated with alcohol use accounted for \$14.6 billion (36.6 percent of total cost) and costs associated with illicit drug use accounted for approximately \$8.2 billion (20.7 percent of total cost). The costs identified in this study include direct costs such as healthcare costs, law enforcement and research, prevention and other direct costs, and also include indirect costs such as decreased productivity both at work and at home due to death, illness or injury (Rehm et al., 2002). Rehm et al. (2002) also notes that although the population of Canada continues to grow and the number of deaths related substance use have risen, the actual number of deaths related to substance use have exceeded the population growth rate.

Following the release of Rehm's report, Hutson (2006) released a report identifying how the cost of prenatal substance use in Canada may have a substantial impact on the overall costs associated with substance abuse as identified in the original article by Rehm et al. (2002). Prenatal substance use can increase the short term and long term cost and burden due to the effects of substances on pregnancy outcomes and future needs of affected children (Hutson, 2006). The reduction or elimination of alcohol use during pregnancy would further reduce the estimated cost of caring for an FASD affected child until the age of 21, with the cost estimated to be approximately \$21,642 in one American study by Stade et al. (2009). The cost of illicit drug use in pregnancy is

difficult to estimate due to confounding factors such as poverty and poly-drug use, which are commonly associated with prenatal illicit drug use (Hutson, 2006); however, without controlling for confounding factors, one study of cocaine exposed infants' estimates the cost associated with special education and services for affected infants as reaching as high as \$6335 per child (Lester, LaGasse, & Seifer, 1998). Estimating the cost of substance use is helpful when examining the need for programs and services that directly target substance use. In addition, estimating the cost of substance use is helpful to guide policy making in order to effectively prioritize the need for increased funding to reduce the impact of costs associated with substance use (Rehm, et al., 2006). It is even more important to recognize the potential impact that substance use in pregnancy may have on direct and indirect cost burden including the costs associated with caring for children in the foster care system.

Qualitative Studies of Women's Experiences with Illicit Drug Use

For this section of the literature review, qualitative studies that explored women's experiences with illicit drug use and women's experiences with illicit drug use during pregnancy were reviewed. Overall, there was a lack of published qualitative studies that specifically examine the lives of pregnant women who use illicit drugs during pregnancy and the circumstances or life experiences that may have had an impact on their use of illicit drugs. The majority of qualitative literature identified in the search were related to women and treatment for illicit drug use (Berkowitz, Brindis, & Clayson, 1996; Howell & Chasnoff, 1999; Wong, 2009); provider perceptions of risk and screening of prenatal patients (Herzig et al., 2006; Taylor et al., 2007); barriers to substance use treatment for women (Jessup et al., 2003; Tait, 2000); and examination of treatment programs,

innovative treatment models and services for women who use substances (Lefebvre et al., 2010; Nardi, 1998; Nicher et al., 2008; Salmon, Joseph, Saylor, & Mann, 2000; Sword, Niccols, & Fan, 2004) . Some literature also directly focused on post-partum mother's experiences with recovering from addiction and parenting (Coyer, 2001; Dowdell, Fenwick, Bartu, & Sharp, 2009).

Few articles relating directly to women's experiences with illicit drug use or illicit drug use while pregnant were found during this literature search. One study by Hathazi, Lankenau, Sanders and Bloom (2009) described the experiences of pregnancy among a sample of homeless injection drug using youths in Los Angeles, California. This study included 41 participants, both men and women, who were homeless and were injection drug users. The study lasted two years and had multiple follow up interviews during this time. Key findings from this study included the infrequent use of contraception, pregnancy as a motivator to secure housing at least temporarily, and persistent drug use among the sample of women. Although some women reported a decrease during pregnancy, none of them stopped completely and in fact many women continued to use multiple substances throughout the pregnancy. Following the birth of the baby, an increase in substance use was noted by the women in the sample. Sexual victimization, ranging from childhood sexual abuse into adulthood, was also commonly reported by women in the sample population. Although this study included the experiences of both women and men, the findings were clearly outlined as being related to women or men and are relevant to women's experiences of illicit drug use.

Another study by Poole, Greaves, Jategaonkar, McCullough, and Chabot (2008) examined the connections between stressors, violence and substance use among women

presenting at women's shelters in British Columbia, Canada. This study contained both quantitative and qualitative methods. The results of the qualitative portion of this study indicated that women use substances as a way to cope with stressful and violent situations in their lives and led to problematic substance use by the women. There were cyclical connections noted between substance use, health and social problems and the use of substances to cope with these problems. In addition, partner stressors and social support problems also contributed to a women's use of substances. Although this study did not specifically address substance use during pregnancy, the results of this study could be generalized to pregnant women who live in similar violent, abusive circumstances.

One further study examined the life experiences of 30 women who had co-occurring mental health, substance use disorders and abuse (Nehls & Sallman, 2005). This phenomenological study found that women who had these three co-occurring disorders had a history of childhood abuse; sexual, verbal or physical. Women recalled being thrown into a cycle of abuse, substance use and mental illness at many points in their lives from childhood, adolescence and into adulthood. Women described the cycle of physical or sexual abuse as occurring prior to their substance use or in other cases, the substance use was present before the cycle of abuse began. Women also described a life filled with fear; fearful of the violent circumstances of their lives. The women identified the importance of having their voices heard and of telling their stories. Although this study also did not examine the experiences of pregnant women who use illicit drugs during pregnancy, the findings of this study remain relevant to other populations of women with substance use problems.

Summary

In summary, the population of pregnant women who use illicit substances while pregnant is complex and the reasons for their use of illicit drugs are multifaceted. Based on published literature, women who are young, single, from a lower income level and unemployed are more likely to use illicit drugs during pregnancy. Women who use illicit drugs are more likely to smoke and consume alcohol. Women who use illicit drugs are also more likely to have reported physical or sexual abuse; to have reported mental health problems such as anxiety and depression; have less support; have high levels of stress and perceived stigma associated with illicit drug use while pregnant. Additionally, women who use illicit drugs while pregnant are less likely to receive adequate prenatal care and more likely to have unintended pregnancies. Obstetrical complications associated with illicit drug use include antepartum hemorrhage, placental abruption, spontaneous abortion and fetal death. Additionally, preterm birth, low birth weight, and intrauterine growth restriction are associated with illicit drug use during pregnancy. As well, the impact on the family unit due to illicit drug use is immense. Substance use by a mother has been linked to poor parenting, child abuse and neglect. Additionally, children born to substance using mothers may encounter difficult situations that may have an effect on emotional, behavioural and cognitive development including inadequate parenting or supervision; separation; poverty; poor education; exposure to criminal behaviour and social isolation (Day & George, 2005, p. 254). Illicit drug use by a mother may also impede maternal-infant attachment and bonding.

It is difficult to determine the actual relationship of illicit drug use to pregnancy outcomes due to the often concurrent use of multiple substances by women in addition to

the confounding effects of social, cultural, economical, environmental and genetic factors (Bolnick & Rayburn, 2003). In addition, it is difficult to determine the effects of a certain drug or substance due to the impurity of street drugs (Bolnick & Rayburn, 2003). The impact of all forms of substance use in pregnancy encompasses more than just the women but extends further into the family, the community and society as well (Bolnick & Rayburn, 2003). As well, the impact on the health care system and society is immense, both in relation to increased costs and burden (Hutson, 2006; Rehm et al., 2006).

Although relatively good population data exists that describes the prevalence of illicit drug use among women in Canada, the actual prevalence among the general population of Canadian women is likely still underestimated. Although the Maternity Experiences Survey provided an exceptional overview regarding the perinatal health status of Canadian women, high risk populations of women who may be more likely to use illicit drugs in pregnancy were not included in the study; therefore the actual prevalence of illicit drug use by women prior to and during pregnancy is likely underestimated. Aside from prevalence, there continues to be large gaps in information about women who use illicit drugs during pregnancy and the circumstances that may contribute to the use of illicit drugs while pregnant. There are limited qualitative studies that explore the experiences of women who use illicit drugs while pregnant. Additionally, there are no known research studies in recent years that utilize a mixed methods approach, with both quantitative and qualitative research methods, to gain a better understanding about the characteristics of women who use illicit drugs during pregnancy and the life experiences that may have impacted their use of illicit drugs. This research study will assist in closing this gap in knowledge as it will provide new information about

the lives of women who use illicit drugs while pregnant. This study is important as it will provide a better understanding about women who use illicit drugs during pregnancy by utilizing a mixed methods approach, whereby rich, concrete data will emerge to support the findings. Without concrete data to identify the extent of the problem, solutions to resolve the issue of substance use in pregnancy among Canadian women remain elusive. The findings of this study will provide knowledge that may help support the development of future programming for women, especially for the population of women from inner-city areas and guide policy changes. This study will help identify unique challenges that face this population of women.

Study Purpose

The purpose of this study is to identify demographic and psychosocial correlates of illicit drug use among pregnant women within inner city neighbourhoods of Winnipeg, Manitoba. In addition, this study will explore the life experiences of women who use illicit drugs during pregnancy and identify the circumstances that contribute to women's use of illicit drugs during pregnancy.

Research Questions

1. What are the demographic correlates of women who use illicit drugs while pregnant?
2. What are the psychosocial correlates of women who use illicit drugs while pregnant?
3. What life experiences or circumstances contribute to women's use of illicit drugs before and during pregnancy?

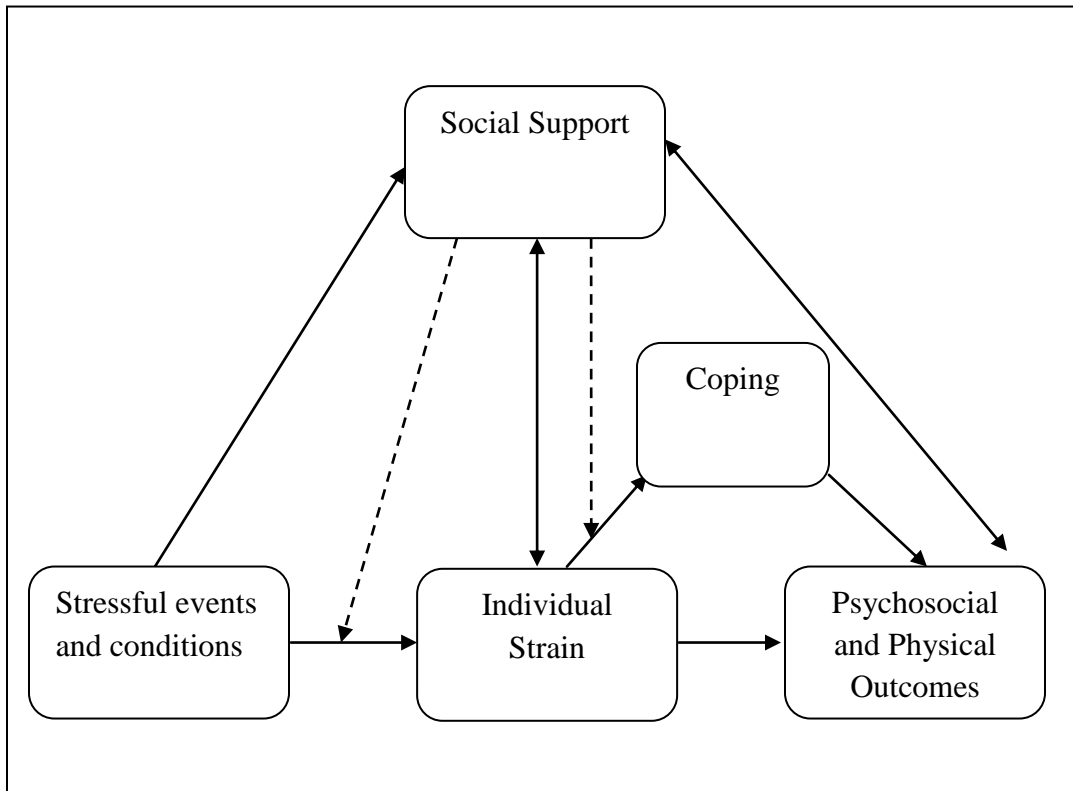
Significance of the Study

As there are limited Canadian data currently available that identify the characteristics of women who use illicit drugs while pregnant, this study will provide important information about this unique population of women. This study will also provide important and insightful information about the lives of the women and identify circumstances that may influence the use of illicit drugs by women during pregnancy. The findings of this study may provide new knowledge and information about the factors associated with illicit drug use in pregnancy. This information will assist policy makers in their decisions regarding future development of innovative treatment programs and services in order to meet the needs of this unique population.

CHAPTER THREE: CONCEPTUAL FRAMEWORK

Few models exist that accurately describe the phenomenon of substance use within the female population (Tucker, 1982). Lack of social support, especially in lower socioeconomic groups, has been cited as a common characteristic of women who use substances during pregnancy (Jansson et al., 1996; Marchenko & Spence, 1995; Sales & Murphy, 2000). The presence of stress, from multiple sources including abuse, violence, and mental health issues, has also been noted as a correlate of substance use during pregnancy (Carter, 2002; Kennare et al, 2005; Sales & Murphy, 2000). The social support-stress-coping paradigm is a model that was developed by Tucker to explain female substance use and may provide a useful approach to studying drug use in pregnancy (Figure 1).

Figure 1. Social Support-Stress-Coping Paradigm (Tucker, 1982)



From "Social support and coping: Applications for the study of female drug abuse" by B. Tucker, 1982, *Journal of Social Issues*, 38(2), 117-137. Copyright 1982 by John Wiley and Sons. Reprinted with permission (see Appendix A).

The model includes the concepts of social support, stress and coping, which are characteristics associated with substance use during pregnancy. The social support-stress-coping model originates from the social support theory. In addition to the concepts central to the social support theory, the social support-stress-coping model includes the concept of coping and emphasizes the importance of bi-directional relationships within the model. The model identifies the influence of social support, stress and coping on an individual, and acknowledges the importance of the interactions between these concepts within the model itself. The application of this model to the problem of illicit drug use during pregnancy may be important in the development of nursing knowledge about this population.

One strength of the social support-stress-coping model is that it is applicable to the study of female substance use and that the concepts central to the model are relevant to the study of female substance use. However, one major weakness of this model is that the author does not provide any clear definitions of the concepts central to the model. Thus, definitions of the concepts used in this study will be derived from literature that is referenced by Tucker in the theory description (1982) or as defined by the tools used to measure the concepts. Definitions of the concepts central to the model are presented in the conceptual and operational definition section of this proposal.

Theory Description

Purpose of the Theory

The purpose of a theory is to provide a systematic explanation of a phenomenon of interest by identifying interrelated concepts common to the phenomenon and proposing relationships between the concepts (Speziale & Carpenter, 2007). The purpose

of the social support-stress-coping model is to describe the relationship between social support, stress and coping and illustrate the effect of these concepts on individual strain, as well as physical and psychological outcomes (Tucker, 1982). The model proposes that strain on an individual is caused by stressful events, conditions or situations in a person's life that may elicit a stressful reaction by the individual. Some examples of situations that may cause a stress reaction include bereavement, pregnancy, physical or emotional abuse and unemployment. Social support, such as friends and family, are viewed as a buffer to stress with the individual's coping response noted as the central focus of the stress reaction. The influence of support received, either positive or negative, during a stressful time influences the person's psychological and physical outcome and may also influence or alter the coping response of the individual. The bi-directional capabilities of the model are an important aspect of this model. The model is bi-directional as the individual strain and individual outcomes, such as consequences of drug use, may influence the willingness of the support system, such as family and friends, to provide support to the individual. The bi-directional interaction between the variables within the model, such as social support, stress and coping, is a continual process that affects the psychological and physical outcomes for the individual (Figure 1).

Worldview

A worldview is a philosophical view of the world that is guided by a set of beliefs or assumptions (Creswell & Plano Clark, 2007). Tucker's model is guided by the simultaneity and totality paradigm worldview as identified by Parse (1987). According to this worldview, a person is more than and different from the sum of its parts and is in constant exchange with the environment. Health is viewed as a combination of physical,

social, mental and spiritual well being. This is consistent with the social support-stress-coping model as one of the key assumptions within the model is that the environment has an important influence on the health of the individual. As well, within the model, the physical or psychological outcome of the individual is influenced by the actions of the social support system, coping and the environment. This worldview of interactions and processes guide the model.

Major Assumptions

An assumption is a philosophical belief about a phenomenon that must be accepted as true, despite a possible inability to empirically prove the belief as true (McEwen & Wills, 2007). Assumptions may be implied, or clearly stated (McEwen & Wills, 2007). There are many assumptions evident within the social support-stress-coping model. The first major assumption that is explicitly stated within the description of the model is that there is interplay between psychological tendencies of the individual and environmental demands. For example, coping responses of an individual are situation dependent and may be influenced by the social environment of the individual. The stress response of an individual may also be influenced by perceptions of stress. The assumption for the social support-stress-coping model is that social support may have a positive or negative influence on an individual. This may have an impact on the individual's choice in activating the social support system. Another assumption that is explicitly stated is that social support may be seen as a buffer to stress but in some circumstances may cause stress to the individual. An example of this would be a negative social support response to stress on the individual. This negative response may lead to another stress reaction or response by the individual. Another important assumption in

this model is that the individual under strain must activate the social support system. The existence of social support does not guarantee that an individual under strain will activate the support. In fact, if an individual under stress believes that they will receive a negative response from their support system, they may not activate their social support. If activation does not occur, the social support system will be unable to act as a buffer to the stress on the individual.

Context for the Use of the Model

The social support-stress-coping model was developed for use within the context of substance use and may be helpful to explain the problem of illicit drug use within the pregnant female population. It appears to provide an “especially useful approach to the study of female substance use” (Tucker, 1982, p. 125). The use of a theory with a basis in social support is relevant to the problem of substance use as stress can be viewed as a motivator and as an indicator for substance use (Tucker, 1982). As social support and stress have been identified as influencing the use of illicit drugs in pregnancy, this model may be particularly beneficial in explaining the problem of illicit drug use in pregnancy and may assist in guiding future therapeutic interventions for this population.

Conceptual and Operational Definitions

This study sought to identify correlates of illicit drug use during pregnancy. A correlate is defined as a “phenomenon that accompanies another phenomenon, is usually parallel to it, and is related in some way to it” (Merriam-Webster, 2009), but is not necessarily a predictor or cause. The results of this study identified specific demographic and psychosocial characteristics that are common to women who use illicit drugs while

pregnant. The following section provides theoretical and operational definitions for each of the key variables.

The dependent variable in this study was illicit drug use by a woman during pregnancy and was identified as the coping variable in this study based on Tucker's model (1982). As Tucker does not provide a concrete definition of coping but refers to Pearlin and Schooler's literature in the coping section of her theory description, coping was defined as any behaviour or response to life strains that helps prevent, avoid or reduce emotional distress (Pearlin & Schooler, 1978). Illicit drug use has been identified in the literature as a coping response used by some pregnant women to reduce the impact or cope with life strains such as physical or emotional abuse (Sales & Murphy, 2000). Substance use in pregnancy has also been defined in the literature as the use of alcohol, and other illicit drugs of dependency (Abdel-Latif et al., 2007; Carter, 2002), as well as the inappropriate use of prescription drugs, or failure to use over-the-counter prescriptions as directed (Crome & Kumar, 2007). Kuczkowski (2007) describes the abuse of substances as the self administration of drugs that deviate from medically or socially accepted use, leading to physical or psychological dependence. Although it is evident that several broad definitions of substance use are present within the literature, this study focused solely on illicit drug use in pregnancy.

The independent variables for this study, based on Tucker's model (1982), included stressful events or conditions, social support, and individual strain. These variables are highly correlated with illicit drug use in pregnancy. A variety of stressful events or conditions were assessed, including abuse, and racial discrimination.

Social Support

According to Tucker (1979) common elements of social support found within the literature contain three elements. These are material support, such as money, shelter and food; cognitive support, such as information and counselling; and emotional support that conveys feelings of value such as love, importance and praise (Tucker, 1979). Sources of social support tend to be either from family, friends or acquaintances, or professional support systems (Tucker, 1979). In this study, social support was measured using two concepts, interpersonal support and family hardiness. Interpersonal support was defined as the various resources provided by interpersonal relationships, such as support given to an individual by friends and family (Cohen & Hoberman, 1983). Interpersonal support was measured by the ISEL tool (Cohen & Hoberman, 1983). The ISEL tool consists of a list of 48 statements regarding the perceived availability of social support resources. The items are counterbalanced for desirability, that is, half of the statements are positive statements about social support resources while the other half of the statements are negative statements about social support resources. Respondents are asked to indicate whether the statements are “probably true” or “probably false about themselves” on a 4-point scale (Cohen & Hoberman, 1983, p. 103). The ISEL tool was designed to measure four separate functions or subscales of social support resources. The subscales combined, provide a total scale score. Social support resources include tangible resources or perceived availability of material aids, the appraisal subscale that measures the perceived ability to talk about one’s own problems, the self-esteem subscale that measures how one perceives themselves compared to others, and the belonging subscale that measures the perceived availability of other people to do things with. This tool is considered to be a

reliable measure of social support with a Cronbach's alpha of .77 for the entire scale. The ISEL tool was moderately correlated with previously validated tools used to measure perceived social support, such as the Inventory of Socially Supported Behaviours, with $r = .46$ (Cohen & Hoberman, 1983).

For the purpose of this study, family hardiness was defined as a family's patterned approach to life hardships and the usual way of assessing the hardships that leads to overall change within the family functioning (McCubbin, McCubbin, & Thompson, 1987). The Family Hardiness Index (McCubbin et al., 1987) is a 20-item scale that was used to measure the inner strength and durability of the family unit. The scale consists of 20 statements that participants are asked to rate on a 4 point scale from 0, meaning false, to 3, meaning true, as the item applies to their family. This instrument produces scores for each subcategory of control, challenge and family commitment. The subscale totals are combined to provide a total scale score for the Family Hardiness Index. This scale has proven reliability with a strong internal consistency, Cronbach's alpha of 0.88 (McCubbin et al., 1987). Adequate construct and content validity has also been well documented (McCubbin et al., 1987)

Individual Strain

For the purpose of this study, high levels of perceived stress and low self-esteem were indicators of individual strain. Perceived stress was defined as the degree to which a person feels that situations in their life are stressful, or the degree to which a person feels their life "is unpredictable, uncontrollable and overloading" (Cohen, Kamarack, & Mermelstein, 1983, p. 385). The 4-item version of Cohen's Perceived Stress Scale (Cohen et al., 1983) was used to measure the participants' perceived level of stress during

the last month of their pregnancy. The scale consists of four statements that measure the degree to which the participant feels that their life in the past month is uncontrollable, unpredictable or overloaded. The measurement tool inquires about the levels of stress in a person's life. The responses are measured on a five-point scale and total scores are tabulated by summing the scores of all four items with responses to two of the items being reverse scored. Higher total scores indicate higher levels of perceived stress. Although this measurement tool is considered to be sound, it has shown only a moderate internal consistency with a Cronbach's alpha of 0.60. The shorter 4-item version of the test was chosen in the original study by Heaman, Moffatt, Sword, Helewa, and Elliott (2010) to decrease the length of the overall questionnaire for the participants.

Self-esteem was defined as "a favourable or unfavourable attitude towards oneself" (Rosenberg, 1965, p.15). Rosenberg's 10-item Self-Esteem Scale (Rosenberg, 1965) was used to measure overall self-esteem. The scale consists of 10 statements related to overall feelings of self-worth or self-acceptance. The items are answered on a 4-point scale ranging from strongly agree to strongly disagree. The responses for the 10 items are scored, with five of the questions reverse scored. The higher the score of the participant is related to a higher self-esteem. This scale has proven reliability and validity, has been specifically validated for use with substance using individuals, and has shown strong internal consistency with a Cronbach's alpha of 0.78 (Rosenberg, 1965).

Stressful Events and Conditions

Abuse during pregnancy and experiences of racial discrimination during pregnancy were examined as examples of stressful events that may lead to individual strain. Abuse was divided into two categorical variables, abuse during pregnancy (present

or not present) and abuse prior to pregnancy (present or not present). The presence of abuse was indicated by women's responses to questions from the abuse assessment screen (McFarlane, Parker, Soeken, & Bullock, 1992) used in Heaman et al.'s (2006) study; particularly questions 139 to 141 (see Appendix B). Racial discrimination, a categorical variable for this study, was dichotomized as being either present or not present and was measured by the response of the woman to questions 97 to 102 from Heaman et al.'s study, that were adapted from an instrument developed by Krieger and Sidney (1996). If a woman answered yes to any of questions 97 to 102, racial discrimination was indicated. As self-reported racial discrimination has been identified as a psychological stressor and has been known to contribute to preterm birth and low birth weight, this variable is important to explore in regards to illicit drug use in pregnancy (Mustillo et al., 2004).

Demographic Variables

Women, who are young, single, under educated and with lower incomes, have been identified in the literature as more likely to use illicit drugs during pregnancy; therefore demographic variables such as age, marital status, income, education, as well as race/ethnicity were examined in this study. Data were also collected on smoking and alcohol use because several studies have indicated an association between the use of these substances and illicit drug use during pregnancy (Gilman et al., 2008; Jesse et al., 2006). The presence of smoking was determined by the responses of the women to question 38 on the questionnaire used in Heaman et al.'s (2010) study. Question 38 states "Did you smoke cigarettes after you knew you were pregnant?" (see Appendix B). An affirmative response to this question was indicative of smoking during pregnancy.

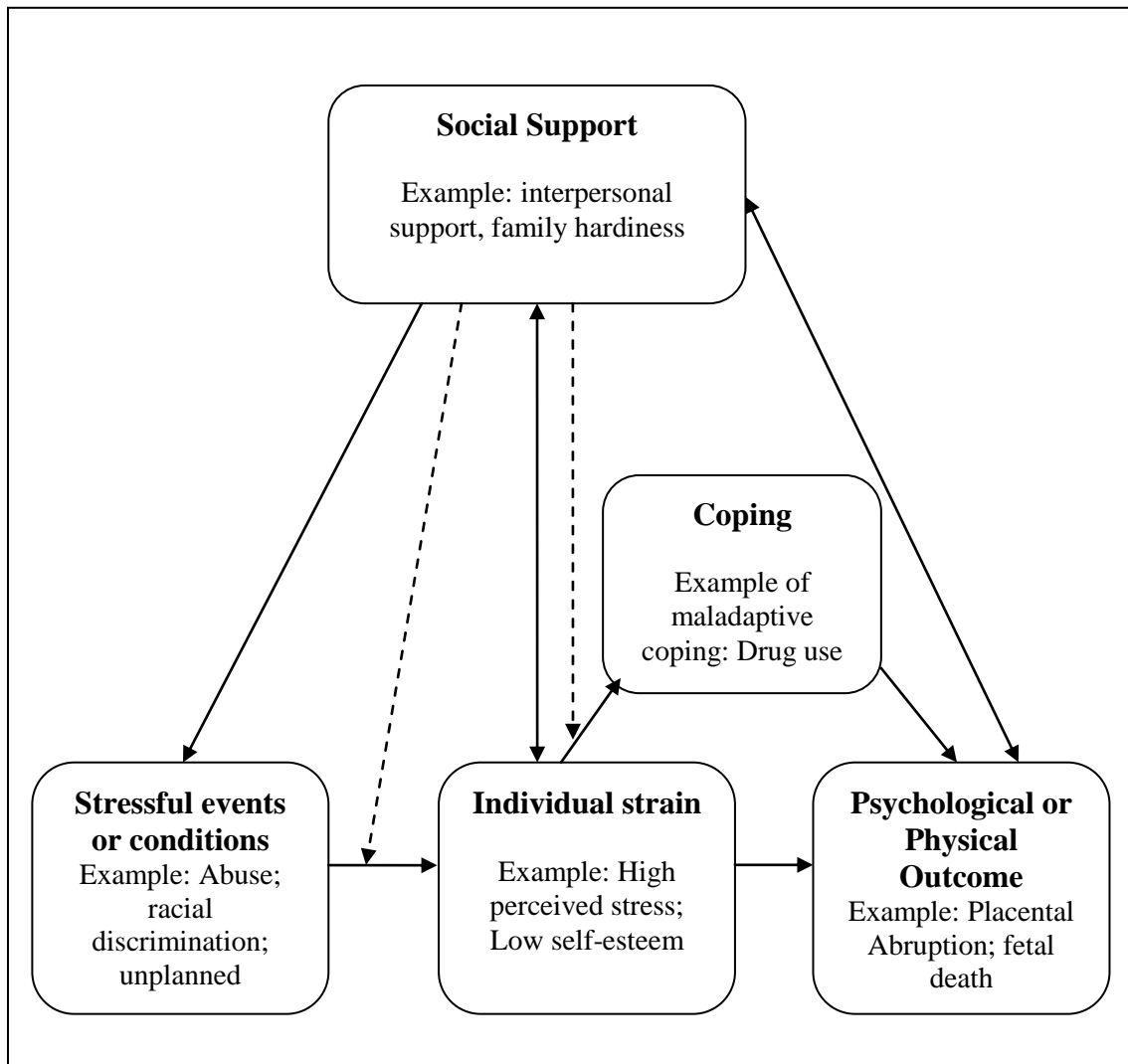
Smoking was dichotomized as being present or not present. The use of alcohol during pregnancy was determined by the responses of the women to question 41 on the questionnaire used in Heaman et al.'s study. Question 41 states, "How often did you drink alcohol during your pregnancy (e.g. beer, wine, hard liquor, liqueurs)?" (see Appendix B). Any use of alcohol during pregnancy disclosed by the woman in question 41 was considered indicative of alcohol use during pregnancy. Alcohol use was dichotomized as being either present or not present.

Coping

The use of illicit drugs has been identified as a coping mechanism used by pregnant women to deal with stressful events in their lives (Sales & Murphy, 2000), and was used as an indicator of maladaptive coping in this study. Although the original questionnaire developed by Heaman et al. (2010) that was used for the secondary analysis did not include any other measures of coping, the use of illicit drugs by women as a source of coping was explored further in the qualitative portion of the study.

Figure 2 illustrates how the social support-stress-coping model was adapted for this study related to illicit drug use in pregnancy. The model includes some of the variables identified within the literature that were explored during this study. It is important to note that although psychological and physical outcomes are present in Tucker's model (1982), this study did not examine the outcomes of illicit drug use during pregnancy. Variables associated with pregnancy outcomes were not the focus of the original study by Heaman et al. (2010) and therefore were not available for this study.

Figure 2. Adaptation of the Social Support-Stress-Coping Model (Tucker, 1982) to Illicit Drug Use in Pregnancy



From “Social support and coping: Applications for the study of female drug abuse” by B. Tucker, 1982, *Journal of Social Issues*, 38(2), 117-137. Copyright 1982 by John Wiley and Sons. Adapted with permission (see Appendix A).

CHAPTER FOUR: METHODS

A mixed methods design, consisting of a quantitative component (secondary analysis of data from a case–control study) and a qualitative component (descriptive exploratory design) was used in this research study. The quantitative component of the study addressed research questions one and two while the qualitative component of the study addressed research question three. Mixed methods research is “a dynamic option for expanding the scope and improving the analytic power of studies” (Sandelowski, 2000, p. 254). Mixed methods, a unique type of research design, integrates more than one type of research method within a single study (Borkan, 2004; Creswell, 2003; Creswell, Fetters & Ivankova, 2004; Sandelowski, 2000) and attempts to recognize multiple perspectives and viewpoints that are present within both types of research methods (Johnson, Onwuegbuzie & Turner, 2007). The central principle of mixed methods research is that the integration of qualitative and quantitative approaches will lead to an enhanced understanding of research problems than either method on its own (Creswell & Plano Clark, 2007). As the complexity of phenomenon continues to increase, a multifaceted research design such as a mixed methods design may be required to answer complicated research questions by expanding the scope and depth of a study (Sandelowski, 2000). As illicit drug use during pregnancy is a complex problem, a mixed methods design assisted in answering complicated research questions and expanded the scope of the investigation. By combining quantitative and qualitative research methods a richer understanding of the problem of illicit drug use in pregnancy occurred.

Several types of mixed methods designs are found within the literature. The sequential explanatory design described by Tashakkori and Teddlie (2003) and Creswell and Plano Clark (2007) was used to guide this study. The design consisted of two phases that began with a quantitative data collection phase and was followed by a qualitative data collection phase (Creswell & Plano Clark, 2007). In this type of mixed methods design, the quantitative phase of the study is given priority or is more heavily weighted than the qualitative phase of the study (Creswell & Plano Clark, 2007; Tashakkori & Teddlie, 2003). The purpose of sequential explanatory design is to utilize the results of the qualitative phase to explain and support the findings of the quantitative phase of the study (Tashakkori & Teddlie, 2003). The results of the study are reported as two separate phases, the quantitative phase and the qualitative phase, followed by a discussion that provides a link between the results of the two phases (Tashakkori & Teddlie, 2003).

A sequential explanatory mixed methods design is straightforward and relatively simple to implement as there are two clearly delineated phases within the study (Tashakkori & Teddlie, 2003). The quantitative portion of Heaman et al.'s original study began in 2006 and was completed in December 2009, while data collection for the qualitative portion of the study began in December 2009. Therefore, the majority of the quantitative phase was completed before the start of the qualitative phase. The results of the qualitative component of the study enhanced the results obtained in the quantitative component of the study; thus, a greater understanding of women's use of illicit drugs in pregnancy transpired.

Quantitative Component

Design

This research study was designed to identify demographic and psychosocial correlates of illicit drug use during pregnancy. The quantitative component of this study involved the secondary analysis of data collected for a case-control study, which examined factors associated with inadequate prenatal care among inner city women in Winnipeg (Heaman et al., 2010). A case control study is a common type of non-experimental observational study used in epidemiology (Rothman & Greenland, 1998) to determine “the effects of exposure variables or risk factors on the incidence or prevalence of a disease” (Cheng & Chu, 2008, p. 3733). The purpose of a case-control study is to identify factors that differ in frequency between participants that have a certain condition or disease (cases), and participants that do not have the condition or disease but are similar in characteristics (controls) (Marshall, 2004). For the secondary analysis, the control group consisted of women who did not report illicit drug use during pregnancy and the case group included women who self reported the use of illicit drugs during pregnancy. The dependent variable in this study was illicit drug use in pregnancy. A variety of demographic and psychosocial variables were examined to determine if there was an association between these variables and illicit drug use during pregnancy. Twenty four independent variables were examined including interpersonal support, family hardiness, perceived stress, self-esteem, abuse, racial discrimination, age, marital status, income, education, depression, race/ethnicity, smoking, and alcohol use.

Setting and Sample

Participants for Heaman et al.'s study (2010) were recruited from the Labour, Delivery, Recovery and Postpartum unit (LDRP) and the postpartum unit at the St. Boniface General Hospital as well as from the LDRP unit and postpartum units at the Women's Hospital at the Health Sciences Center in Winnipeg, Manitoba. These hospitals are large tertiary care centers and the only hospitals in the City of Winnipeg that provide labour and delivery services as well as postpartum care for women. In the 2009 to 2010 fiscal year, there were 11,044 births between the two centers (S. Hopkins, Administrative Director, Women's Health, Winnipeg Regional Authority, personal communication December 22, 2010).

Inclusion and Exclusion Criteria

Women were eligible to participate in Heaman et al.'s study (2010) if they had given birth to a live infant at St. Boniface General Hospital or the Women's Hospital at the Health Sciences Center in Winnipeg, Manitoba and lived in one of eight inner-city areas of Winnipeg with rates of inadequate prenatal care of 5 percent or higher. Inadequate prenatal care was defined as no prenatal care, prenatal care that started in the third trimester, or a first prenatal visit occurring in the first or second trimester and having one visit if delivery occurred at ≤ 29 weeks, 1-2 visits if delivery occurred at 30-31 weeks, 1 to 3 visits if delivery occurred at 32-33 weeks or 1-4 visits with delivery at 34+ weeks gestation. Adequate prenatal care was defined as the first prenatal visit occurring in the first trimester and having four or more visits if delivery occurred at 22-25 weeks, five or more visits if delivery occurred at 26-29 weeks, six or more visits if delivery occurred at 30-31 weeks, seven or more visits if delivery occurred at 32-33

weeks, eight or more visits if delivery occurred 34-35 weeks, or nine or more visits if delivery occurred at 36+ weeks gestation. A prenatal visit was defined as a visit to a health care professional, such as a physician, midwife or nurse where some kind of medical act was performed to take care of the pregnancy; visits intended only to confirm the pregnancy were not considered as a prenatal visit (adapted from Delvaux, Buekens, Godin, & Boutsen, 2001).

In order to gain a broad perspective, women with a singleton or multiple birth, women aged less than 18 years, women whose infants were placed under the care of Child and Family Services, and women who speak English, French, or one of the most common immigrant languages such as Tagalog, Punjabi, Arabic or Vietnamese were included. Exclusion criteria included women with a known severe psychiatric disorder that preclude participation in the interview, and an early neonatal death, as it would have been inappropriate for ethical reasons to interview these women during the grieving process.

Procedure for Data Collection

In Heaman et al.'s study (2010), all women who met the inclusion criteria were identified by hospital staff and screened by the research nurse for eligibility. Postal codes were used to determine if the women resided in one of the targeted eight inner-city neighbourhoods in Winnipeg. Women who were eligible to participate were approached by the nursing staff in the hospital to ask permission for the research nurse to discuss the research study with them. All potential participants were provided with a written and verbal explanation about the study by the research nurse and were given an opportunity to ask questions about the study. Benefits and risks of participating in the study were

explained to each participant. Participants signed a consent form that indicated their agreement to participate in a structured interview questionnaire, and granted permission to access their health records to collect additional data.

The majority of case control studies use a questionnaire as the primary source of data collection with the questionnaire completed either in person, via the telephone or self administered (Correa, Stewart, Yeh & Santos-Burgoa, 1994). In Heaman et al.'s study (2010), a standardized, structured questionnaire was completed during a face-to-face interview with the study participants (see Appendix B). The research nurse asked the participant each question and recorded their answers.

Measurement Instruments

The structured questionnaire used in Heaman et al.'s study (2010) (see Appendix B) consisted of a series of closed-ended questions regarding barriers and motivators to utilization of prenatal care. The questionnaire also collected data on demographic characteristics, smoking and substance use in pregnancy, and psychosocial aspects of the participants' lives, including perceived stress, self-esteem, family hardiness, and interpersonal support. Depression was assessed based on a single item question adapted from a questionnaire by Johnson et al (2003).

Data Analysis

Data analysis began with a secondary analysis of the dataset from the original study by Heaman et al. (2010). Data analysis was performed using the Predictive Analytic Software (PASW) Version 18 for Windows, a statistical software program. A statistician was consulted regarding data analysis and interpretation. The first step of the analysis consisted of coding the subjects as either cases, defined as women who identified

their use of illicit drugs during pregnancy, or controls, defined as women who did not identify illicit drug use during pregnancy as indicated by their response to question 44 in Heaman et al.'s original study questionnaire (see Appendix B). Bivariate logistic regression analyses were then conducted to determine associations between each of the independent variables and the dependent variable of illicit drug use during pregnancy. *T* tests were used to compare differences in the continuous independent variables among illicit drug using women and non-illicit drug using women (maternal age, education level in years, perceived stress, self-esteem, family hardiness, interpersonal support, number of prenatal visits and number of times the woman moved in one year and within five years.). A chi-square test was used to test for statistically significant differences in categorical independent variables between women who used illicit drugs during pregnancy and women who did not use illicit drugs. Categorical variables were dichotomized as follows: marital status - married or common-law versus others; family income - less than \$20,000 per year versus others; abuse during pregnancy - present or not present; smoking during pregnancy- present or not present; alcohol use during pregnancy – present or not present; racial discrimination- present or not present. Bivariate logistic regression analyses were conducted to obtain crude odds ratios and 95% confidence intervals for each of the associations. Statistical significance was defined as $p < .05$. Following the bivariate analysis, backward stepwise multivariate logistic regression models were constructed by entering the predictors for which there were evidence of a significant association from the bivariate analysis (defined as $p < .05$). Statistical interaction testing was conducted to adequately control for any bias. Two final models, one model without interaction terms and one model with interaction terms, were developed. Adjusted odds ratios and 95%

confidence intervals were reported. The significant correlates for illicit drug use in pregnancy were derived from the results of the multivariate logistic regression models.

Ethical Considerations for the Quantitative Component

Ethical approval was obtained from the Education/Nursing Research Ethics Board at the University of Manitoba for the secondary analysis of the quantitative portion of the study (see Appendix C). The researcher was provided with an anonymized version of the dataset from Heaman et al.'s study (2010). The dataset was kept in a locked research office in the Faculty of Nursing at the University of Manitoba. Data output was stored in a locked filing cabinet. All information obtained through the secondary analysis will be retained for seven years after the study is completed and then destroyed. Any individual level information obtained through the secondary analysis will be kept strictly confidential. Only aggregate data was reported, and participants will not be identifiable by descriptive data that are used in any reports or articles that may be created from this study.

Qualitative Component

Design

The qualitative portion of the study was guided by a descriptive, exploratory design as described by Sandelowski (2000). According to Sandelowski (2000), a qualitative descriptive study provides a “comprehensive summary of an event in the everyday terms of those events” (p. 336), and provides an accurate description of the event in a “coherent and useful manner” (p. 336). Qualitative descriptive designs are the best method to use when the goal of the study is to provide a direct description or explanation of a phenomenon of interest (Sandelowski, 2000, p. 339) Descriptive

exploratory studies are guided by the philosophical underpinnings of naturalistic inquiry, where the phenomenon of interest is viewed in its natural state, or as close to its natural state as possible and free of manipulation by the researcher (Patton, 2002; Sandelowski, 2000). In this type of study, patterns and themes are identified through qualitative content analysis and assist in developing a descriptive summary of the phenomenon of interest (Sandelowski, 2000). The goal of the qualitative component of this study was to provide a descriptive summary of the life experiences and circumstances that may have contributed to women's use of illicit drugs before and during pregnancy.

Sample

In a descriptive exploratory study, purposive sampling is an appropriate technique to use in order to access and recruit information rich participants (Sandelowski, 2000). By using purposive sampling techniques in this study, women who were using illicit drugs while pregnant were the population of interest and were recruited to participate. Criterion purposive sampling was used as the main sampling technique to guide the selection of the women in the initial phases of the qualitative portion of the study. Criterion sampling is a type of purposive sampling technique whereby participants are chosen based on pre-determined criteria (Patton, 2002). In this portion of the study, participants were chosen based on the following criteria. The first criterion was the self-reported disclosure of illicit drug use while pregnant. The second criterion was that the woman must be over 18 years of age to participate in the study. The third criterion was that a social worker or Child and Family Services worker was aware of the woman's use of illicit drugs to prevent the researcher from having to disclose the woman's drug use. The fourth criterion was that the woman must be both pregnant and greater than 20 weeks

gestation at the time of the interview or in the immediate post-partum period at the time of the interview. The fifth criterion was that the woman must have resided in one of 8 pre-determined inner-city neighbourhoods, as identified in Heaman et al.'s study (2010). In order to have a wider diversity of participants, maximum variation sampling was utilized. Variation among participants in age, parity, ethnic background, and inner-city neighbourhood was sought during the recruitment period. In addition, a balance of participants who were pregnant or post-partum at the time of the interview, as well as those who were in a treatment program and not in a treatment program, was recruited. The sample size of a qualitative research study is not predetermined, as required in quantitative research studies, but rather is determined by the number of participants required to reach saturation of data as determined by the researcher (Patton, 2002; Speziale & Carpenter, 2007). Saturation occurs when despite the continuation of data collection from participants, the data is repeating and no new information is emerging from the data (Speziale & Carpenter, 2007). Recruitment for this study continued until saturation of data occurred. Once data saturation was accomplished and the researcher believed that no new themes or data were forthcoming, recruitment of study participants ceased. A total number of ten participants were recruited for this study.

The sample population for this study included pregnant or post-partum women 18 years of age and over who admitted to using illicit drugs while pregnant and who resided within the same eight inner-city areas of Winnipeg, Manitoba that were identified in the quantitative portion of the study. Women who were enrolled in drug treatment programs and those who were not in treatment programs at the time of the study were included. Although some literature regarding substance use during pregnancy recognizes

underlying psychiatric conditions as an indicator for drug use, as noted by Sales and Murphy (2000), women who suffered from severe psychiatric disorders that may have precluded them from answering interview questions were excluded from the study.

Setting

The participants for this study were recruited from the Women's Hospital at the Health Sciences Center, an inner-city tertiary care center that serves the sample population. This setting was appropriate for recruitment of participants for this study, as the majority of women from inner-city Winnipeg receive prenatal care in the outpatient department of this hospital and deliver their babies at this location. Interviews took place either in a private office within the hospital setting or in a private room located on the post-partum ward of the hospital. Interviews ranged from one to two and a half hours in length.

Data Collection Procedures

Access to potential participants is an important strategy to address when designing the study (Speziale & Carpenter, 2007). The identification of major stakeholders and gatekeepers as well as strategies to entice them to support the study was an important aspect of successful recruitment of participants for the study (Speziale & Carpenter, 2007). Once ethical approval was obtained for the study from the University of Manitoba Education/Nursing Research Ethics Board (see Appendix C), approval to access participants from the Women's Hospital, Health Sciences Center, was obtained (see Appendix D). Nurses and social workers in the Women's Hospital participated in screening for potential participants for this study. Once a potential subject was identified, permission for the researcher to approach the woman was obtained by the nurse or social

worker. The researcher approached the women who agreed to be contacted and further explained the study and answered any questions. After explaining the study in its entirety and if the woman freely agreed to participate in the study, a consent form was signed by both the woman and the researcher (see Appendix E). A copy of the consent form was provided to the woman with complete study information, including data collection procedures, participant rights, contact information for the researcher and her thesis advisor, as well as details regarding the provision of a \$20 honorarium in appreciation of the participant's time for participating in the interview.

Data collection strategies consistent with the descriptive exploratory approach described by Sandelowski (2000) were used in this study. These include semi-structured, open-ended interviews and observation. A short demographic questionnaire was completed by the researcher at the end of the interview to collect information about age, parity, pregnancy gestation at time of interview, as well as neighbourhood, education, income level, and use of prenatal care by the woman (see Appendix F). The demographic questionnaire was completed with the researcher asking the questions and recording the woman's responses. To maintain a safe environment for both the participant and researcher during the interview, a location that was comfortable and familiar for the participant and safe for both the participant and researcher was agreed upon in advance.

During the interview with the pregnant women, probing, cyclical open-ended questions were used to assist the researcher in gaining more information about the women's experiences while the interview guide assisted the researcher in exploring the experiences in more depth (see Appendix G). Other qualitative data collection techniques such as the tape-recording of participant interviews and verbatim transcription of the

interviews were used (Speziale & Carpenter, 2007). Permission to tape record the interviews was obtained prior to each interview. Following each interview session, a contact summary sheet was completed to document intuition, feelings, ideas and any other observations that may influence findings or assist in the understanding of the experience (Speziale & Carpenter, 2007).

Prior to the start of the study and during each phase of the research process, all assumptions and biases that the researcher had about the phenomenon of interest, in this case illicit drug use during pregnancy, were acknowledged, bracketed and set aside (Speziale & Carpenter, 2007). Bracketing was necessary to ensure that the researcher's views do not influence participant responses or prevent pure description of the phenomenon by the participants (Speziale & Carpenter, 2007). Bracketing helped to decrease or neutralize personal biases as well as prior knowledge about the topic of interest (Wojnar & Swanson, 2007). Some of the researcher's assumptions included the belief that illicit drug use during pregnancy was increasing in prevalence and severity, and that a high number of women who use illicit drugs during pregnancy were addicted before they became pregnant. Another assumption about the problem was that women who use illicit drugs during pregnancy want to stop but do not have the resources to stop using illicit substances. An additional assumption was that women who use illicit drugs during pregnancy have low self-esteem, stressful lives and poor family support and that all of these factors contributed to their decision to use drugs. Large amounts of stigma associated with illicit drug use during pregnancy exist; therefore, the bracketing of preconceived thoughts, feelings and ideas was required to reduce bias and improve the validity of the study.

During the data collection phase, some difficulties were anticipated. Confidentiality and privacy was discussed at great length during the initial contact with these women and throughout the study. Building a positive rapport with the participants in the study was important in order to make the participants feel comfortable enough to share their innermost private thoughts and feelings with the researcher (Speziale & Carpenter, 2007).

Data Analysis

Content analysis is the method of choice for data analysis in a qualitative descriptive exploratory design (Sandelowski, 2000, p. 338). Content analysis is an analytical process of examining qualitative data and identifying core consistencies and meanings within the data (Patton, 2002). Patterns and themes emerge from the core meanings identified during the content analysis of the data (Patton, 2002). The goal of content analysis is to identify concepts and categories that describe a phenomenon and assist in providing a “condensed and broad description of a phenomenon” (Elo & Kyngas, 2008, p. 108).

Qualitative content analysis is an interactive process characterized by “simultaneous collection and analysis of data” (Sandelowski, 2000, p. 338), whereby data analysis begins at the onset of data collection (Speziale & Carpenter, 2007). New information is continually absorbed and processed by the researcher while the coding system is modified as new data emerges (Sandelowski, 2000). Several important steps that were used in the data analysis portion of the study are common to all qualitative methods. The first step included transcribing all interviews verbatim. The researcher carefully read through all of the interview transcripts to obtain a general sense of the content and the emergence of themes from the data collected. By reviewing the written

transcripts and listening to the taped interviews at the same time, the accuracy of the transcripts was ensured and the process of being immersed in the data was initiated (Speziale & Carpenter, 2007). While immersed, the researcher became more familiar with the data which assisted in the analysis and in the extraction of significant themes (Speziale & Carpenter, 2007). The next step in the analysis was to review the transcripts, extract significant statements and code the statements in order to identify common themes and categories. The transcribed interviews were entered into NVIVO 8 software (Qualitative Solutions for Research International Proprietary Limited) to assist with the coding of data and data management. The demographic information collected from the study participants was entered into and analyzed using Predictive Analytic Software (PASW) Version 18 for Windows.

The final step of the content analysis was the formation of a descriptive summary of the women's experiences that was "organized in a way that best contains the data collected and that will be most relevant to the audience for whom it is written" (Sandelowski, p. 339).

Rigor

Koch (1994) describes rigor as the trustworthiness of a study in a qualitative research design. The issue of trustworthiness is of great importance to the rigor of the study. Trustworthiness of the data collection and development of the research questions depends greatly on the ability of the researcher to separate their own knowledge from the participant's experiences (Koch; Speziale & Carpenter, 2007).

Lincoln and Guba (1985) describe several techniques that assist in demonstrating the trustworthiness of a qualitative inquiry. To ensure credibility, Lincoln and Guba suggest

the use of triangulation or the use of more than one research design or research method, to collect data. In this study a mixed methods approach that employs both quantitative and qualitative methods of data collection and analysis was used. In the quantitative phase of the study, the use of a questionnaire was the method of choice for interviewing participants, while in the qualitative phase of the study, open-ended taped interviews with participants was utilized. By using more than one method of data collection, findings from both phases were compared and the results were used to either support or refute each other. This improved the credibility of the study.

A second method of ensuring credibility that was identified by Lincoln and Guba (1985) and was used in this study was member checking. Member checking is a formal or informal way of validating the accuracy of data or findings with the participants of a study (Speziale & Carpenter, 2007). In order to ensure that the information obtained by the researcher for this study was an accurate representation of the participant's views, the researcher used an informal technique of member checking. Throughout the interview process, the researcher summarized key points made by the participant and obtained immediate feedback from the participant in terms of the accuracy of the information. This process provided an immediate opportunity for the participant to verify or refute the findings and also provided additional information to the researcher. If the findings were true to the participant's views, the trustworthiness of the information was enhanced and the rigor of the study was improved (Koch, 1994). In addition, once the data analysis was complete and the overarching themes and categories had been identified, the researcher attempted to contact each participant to review the findings and check for accuracy of the findings. Three of the participants were located and findings were reviewed with the

women. Opportunity for the women to provide additional information and clarify the meaning of the data was given. The findings of the study were validated by each of the women as a true representation of their experiences.

Another strategy identified by Lincoln and Guba (1985) that was utilized in this study was the use of a clearly delineated audit trail. An audit trail improves the trustworthiness of a study by providing clear documentation of the decision trail of a study. The audit trail should be transparent, straightforward and easy for others to follow (Koch, 1994; Speziale & Carpenter, 2007). By maintaining a clear description of the processes in the study, providing clear connections between the steps of the study and organizing relevant data extracted from the interviews, rigor of the study was improved (Koch, 1994; Speziale & Carpenter, 2007).

One further strategy that improved the rigor of the study was the development of a trusting relationship between the researcher and the participant prior to the start of the interview. Due to the sensitive topic of discussion, it was important for the researcher to establish a rapport with the women and to ensure that the women were comfortable in their decision to participate in the study. As well, by building a trusting relationship, the women may have felt more comfortable sharing their personal experiences with the researcher and the women may have been more forthcoming with their information.

Ethical Considerations for the Qualitative Component

Many ethical issues and principles emerge in the discussion of human subjects and research. Some important ethical qualities of research studies include protecting subjects from harm or beneficence, autonomy that allows participants to make their own decision to participate in a study, and justice that protects the confidentiality, dignity and

respectful treatment of participants (Speziale & Carpenter, 2007). Due to the sensitive nature of the vulnerable population of women in this qualitative component of the study, strict adherence to ethical guidelines was an important aspect of this study

Prior to the initiation of this study, ethical approval was obtained from the Education/Nursing Research Ethics Board at the University of Manitoba for the qualitative component of the study (see Appendix C). Access Approval from the Research Ethics Board at the Health Sciences was received prior to the recruitment of participants for this study (see Appendix D). According to the Tri Council Policy Statement (1998), informed consent “is a process that begins with the initial contact of the subject and follows through to the end of the involvement of the research subject in the project” (p. 2.1). Informed consent is the dialogue, information sharing and the process through which participants engage in a study (Tri Council Policy Statement, 1998). For this study, subjects were fully informed that participation in this study was entirely voluntary and that refusal to participate in any aspect of the study would not affect any services that they received or required. Participants were fully informed of the nature of the study as well as their rights as research subjects, including their right to withdraw from the study at any time without negative consequences and their right to withhold answering questions that they were not willing to discuss with the researcher or feel uncomfortable discussing. A signed, informed consent was obtained from each participant and a signed copy was provided to each participant along with a copy of the information letter and contact information for the researcher and her thesis advisor (see Appendix E).

All subjects who participated in the study were given a 20-dollar honorarium in the form of a grocery store coupon. The honorarium was intended to compensate participants for their time and due to the nominal amount, did not pose undue coercion to participate in the study for financial gain.

All confidential personal information such as participant name, address and phone number or any other identifying information was removed from the data and was replaced with a study subject number. A list linking the study participant number and name was kept in a secure place, separate from the completed data collection forms and audiotapes. All information was kept in a locked filing cabinet in a locked research office at the University of Manitoba. The personal information of each participant was destroyed once the content analysis of the data had been completed. All information collected during the study will be retained for seven years after the study is completed. Following this time, all data that was collected for study purposes will be destroyed. According to the Tri Council Policy Statement (1998), "all information that is disclosed in the context of a professional or research relationship must be held confidential" (p. 3.1). Every participant was assured that all information that was shared was kept private and would be kept strictly confidential as noted on the consent form. The participants were not identified by name and were not identifiable by direct quotes or descriptive data used in any reports that may be created from this study. Because the information shared during these interviews was for research purposes only, the disclosure of information by the participants during the interview process, including the information that was tape recorded, was not disclosed to anyone except in cases of child abuse or neglect that was required to be reported by law. A disclosure statement regarding the legal requirement for

researchers to inform the appropriate authorities in instances of disclosure of child abuse or neglect during a research study was placed in the study consent form and was explained to each study participant during the initial contact stages with participants.

Due to the sensitive nature of the questions posed during the interview portion of the study and the vulnerable population of women who were included in the study, emotional stress may have occurred during and following the data collection phase. The potential for emotional stress was stated in the consent form and was discussed with each subject prior to obtaining consent. Information about resources in the community that might be of assistance to the woman was provided to all participants at the time of the interview, regardless of the women's emotional state during or immediately following the interview.

CHAPTER FIVE: RESULTS

This chapter describes the results of both the quantitative and qualitative components of the study. The first section will describe results from the quantitative component of this mixed methods study while the second section will describe results from the qualitative component of the study.

The first section of this chapter will answer the first two research questions of this study. The first research question was: What are the demographic correlates of women who use illicit drugs while pregnant? The second research question was: What are the psychosocial correlates of women who use illicit drugs while pregnant? This chapter will provide a description of the demographic characteristics of the study subjects including age, race/ethnicity, income, education, and marital status. The cases or women who used illicit drugs during pregnancy are compared to the controls, or women who did not use illicit drugs during pregnancy. Variables that showed significant differences between the groups as identified from a bivariate logistic regression analysis are described. The final portion of the quantitative results section describes the results of the backward stepwise multivariate logistic regression model. The purpose of a multivariate analysis is to provide a set of factors that independently correlates with illicit drug use during pregnancy after controlling for all other factors in the model, once all variables that were shown to have significant differences from the bivariate analysis were entered into the model. Two models were examined. The first model did not include interactions among variables, while the second model demonstrated interactions between variables specifically pertaining to age and First Nations ethnicity.

The second part of the chapter examines the results of the qualitative analysis and answers the third research question: What life experiences or circumstances contribute to women's use of illicit drugs before and during pregnancy? Data from a demographic questionnaire was analyzed using descriptive statistics to produce means (*M*), range, minimum and maximum, and standard deviations (*SD*) for demographic characteristics of the participants. Ten women were recruited to participate in the qualitative component of the study and represented six inner-city Winnipeg neighbourhoods. Data analysis in the form of content analysis began at the time of the first interview and carried through to the completion of data analysis. Content analysis was used to develop overarching themes and categories common among the experiences of the participants. Four overarching themes were developed with multiple categories within the themes. These themes and categories are examined in the second portion of this chapter.

Part One: Results of Quantitative Component

Descriptive Analysis of the Sample Population

The sample for the secondary analysis consisted of a total 618 subjects. Subjects ranged in age from 14 to 44 years of age ($M = 26.2$, $SD = 6.1$). Total years of education ranged from zero to 25 years ($M = 12.11$, $SD = 3.03$). Income of the subjects ranged from <\$10,000 to \$100,000 and over. Forty two percent of the participants had an income <\$10,000 and 22.6 percent were in the \$20,000 to \$39,999 income range. Sixty three percent of participants were married or common-law. First Nations ethnicity was reported by 42 % ($n = 261$) of the subjects.

Approximately half of the women in the sample population (49.0%) reported having a paid job during their pregnancy. Forty three percent ($n = 269$) of the women

smoked cigarettes during their pregnancy. Approximately 11% ($n = 67$) of the women reported drinking alcohol during their pregnancy. Participants ranged from having had one to 16 pregnancies ($M = 2.97$, $SD = 2.24$), and number of births including the current delivery ranged from one to 12 ($M = 2.3$, $SD = 1.60$).

Descriptive Analysis of Cases and Controls (Continuous Variables)

As the purpose of the study was to identify demographic and psychosocial correlates of illicit drug use during pregnancy, two independent groups were identified for the secondary analysis. The first group consisted of 110 cases, or women who used illicit drugs during pregnancy and the second group consisted of 508 controls, or women who did not use illicit drugs during pregnancy, for a total of 618 participants.

Characteristics including age, education, marital status, and income of cases and controls are outlined in Table 1.

Comparisons between groups were made for both continuous and categorical variables. When the variables involved were continuous in nature, the independent 2-tailed, t -test was carried out to test for differences between the cases and the controls. Results are presented in Table 2.

Table 1.

Characteristics Including Age, Education, Marital Status and Family Income of Study Subjects.

Characteristic	All Subjects	
	Cases <i>n</i> =110 <i>n</i> (%)	Controls <i>n</i> =508 <i>n</i> (%)
Age (<i>n</i> =618):		
≤18	29 (26.4)	102 (20.1)
20-24	31 (28.2)	106 (20.9)
25-29	33 (30.0)	143 (28.1)
30-34	10 (9.1)	102 (20.1)
≥35	7 (6.4)	55 (10.8)
Education (<i>n</i> =615):		
< High school completed	79 (72.5)	193 (38.1)
High school completed	10 (9.2)	91 (18.0)
> High school completed	20 (18.3)	222 (43.9)
Marital status (<i>n</i> =615):		
Married	6 (5.5)	185 (36.6)
Common-law	41 (37.6)	152 (30.0)
Single	59 (54.1)	155 (30.6)
Divorced/Separated	3 (2.8)	14 (2.8)
Family income (<i>n</i> =572):		
No Income	4 (4.0)	12 (2.5)
< \$ 10,000	33 (33.0)	93 (19.7)
\$ 10-19,999	35 (35.0)	85 (18.0)
\$ 20-29,999	11 (11.0)	57 (12.1)
\$ 30-39,999	7 (7.0)	59 (12.5)
\$ 40-49,999	3 (3.0)	39 (8.3)
\$ 50-59,999	2 (2.0)	33 (7.0)
\$ 60-69,999	2 (2.0)	22 (4.7)
\$ 70-79,999	2 (2.0)	29 (6.1)
>\$ 80,000	1 (1.0)	43 (9.1)

Table 2.

Comparison of Demographic and Psychosocial Characteristics between Cases and Controls, using t-Test for Independent Groups

Characteristic	All Subjects		t-test	p value
	Cases n =110 M (SD)	Controls n = 508 M (SD)		
Age in years (n=615):	24.43 (5.44)	26.48 (6.19)	3.48	.019
Total years of education (n=613):	10.38 (2.06)	12.48 (3.07)	8.80	<.001
Interpersonal Support (ISEL) score: (n=611);	48.42 (8.46)	53.72 (6.38)	6.15	<.001
Subscale-Tangible Support: (n=616)	15.83 (3.48)	17.67 (2.86)	-5.17	.001
Subscale-Belonging Support: (n=616)	16.38 (3.31)	18.03 (2.37)	-4.94	<.001
Subscale-Appraisal Support: (n=613)	16.21 (3.26)	18.02 (2.58)	-5.41	<.001
Family hardiness score(n=613):	43.07 (9.98)	49.25 (7.30)	6.08	<.001
Self-esteem score (n=612):	18.87 (6.34)	23.28 (5.00)	6.83	.003
Perceived stress score (n=613):	7.03 (3.73)	4.74 (3.12)	-5.95	.019
Number of times moved in last year (n=615):	1.92 (2.97)	0.81 (1.07)	-3.86	<.001
Number of times moved in last 5 years (n=613):	5.53 (11.16)	2.53 (2.34)	-2.77	<.001
Number of prenatal visits during pregnancy (n=587):	6.15 (4.37)	10.24 (4.39)	-8.52	.045

Demographic characteristics. Statistical testing showed significant differences in mean age between the cases and controls with cases being younger than the controls ($M = 24.43$ vs. 26.48 years). Cases had significantly less years of education ($M = 10.38$, $SD = 2.06$) compared to the controls ($M = 12.48$ years).

The stability of residence was also examined to determine if there was a potential relationship between this variable and women who use illicit drugs during pregnancy. Women were asked how many times they moved in the last year and in the last five years. The controls moved, on average, less than once per year ($M = 0.81$; $SD = 1.07$) as compared to cases, who moved approximately two times per year ($M = 1.92$; $SD = 2.97$). This was a significant difference between the groups. Over a five year period, the controls moved significantly less often ($M = 2.53$, $SD = 2.34$) than the cases ($M = 5.53$, $SD = 11.16$).

Psychosocial characteristics. Perceived stress was assessed using the score from the 4-item version of the Cohen's Perceived Stress Scale, with possible scores ranging from zero to 16. In this sample, scores ranged from zero to 15. Higher levels of perceived stress are identified by higher scores. Cases had significantly higher perceived stress scores ($M = 7.03$, $SD = 3.73$) compared to controls ($M = 4.74$, $SD = 3.12$).

Self-esteem was assessed using Rosenberg's 10-item Self-Esteem Scale, with possible scores ranging from 0 to 40. In this sample, the total scores ranged from 1 to 30. The mean score of the controls was significantly higher ($M = 23.28$, $SD = 5.0$) than the mean score of the cases ($M = 18.87$, $SD = 3.73$).

Family hardiness was assessed using the Family Hardiness Index, a 20-item scale that was used to measure the inner strength and durability of the family unit. Total

possible scores range from zero to 60. Higher scores indicate stronger family hardiness. In this sample, scores ranged from 12 to 60. There was a significant difference in mean scores between the controls ($M = 49.25$, $SD = 7.30$) and cases ($M = 43.07$, $SD = 9.98$).

Interpersonal support was assessed using the shortened version of the ISEL tool, a list of 15 statements describing the perceived availability of social support resources. Total possible scores ranged from 15 to 60. In this sample, scores ranged from 28 to 60. There were significant differences in mean scores between the controls ($M = 53.72$, $SD = 6.38$) and the cases ($M = 48.42$, $SD = 8.46$) with cases demonstrating significantly lower interpersonal support as compared to the controls. There were also significant differences between cases and controls noted in relation to sub-category scores with cases having lower mean scores for tangible support, belonging support and appraisal support as compared to the controls.

Health behaviours. Differences between women's utilization of prenatal care was also explored. There was a significant difference in the mean number of prenatal visits during pregnancy between the groups, with cases reporting approximately six visits ($M = 6.15$, $SD = 4.37$) during their pregnancy compared to approximately 10 visits among the controls ($M = 10.24$, $SD = 4.39$).

Descriptive Analysis of Cases and Controls (Categorical Variables)

When the variables involved were categorical in nature, the Pearson Chi-square test was carried out to test for differences in proportions between the cases and the controls.

Results are presented in Table 3.

Table 3.

Comparison of Demographic and Psychosocial Characteristics between Cases and Controls using Chi-Square for Independent Groups

Characteristic	All Subjects		χ^2	p value
	Cases n =110 n (%)	Controls n = 508 n (%)		
<u>Demographic Variables:</u>				
Age group (n=618):				
≤25	67 (60.9)	235 (46.3)	7.78	.006
>25	43 (39.1)	273 (53.7)		
Education (n=615):				
<High school	79 (72.5)	193 (38.1)	42.86	<.001
≥High school	30 (27.5)	313 (61.9)		
Marital status (n=615):				
Married or common-law	47 (43.1)	337 (66.6)	21.08	.006
Other (Single; Divorced; Separated)	62 (56.9)	169 (33.4)		
Family income (n=572):				
<20,000	72 (72.0)	190 (40.3)	33.50	<.001
≥20,000	28 (28.0)	282 (59.7)		
First Nations ethnicity (n=615):	78 (71.6)	182 (36.1)	46.11	<.001
Having a paid job during pregnancy (n=615):	27 (24.8)	277 (54.7)	32.23	<.001
<u>Psychosocial Variables:</u>				
Low self-esteem (n=612):				
Score ≤29	58 (52.7)	120 (23.9)	36.34	<.001
Low interpersonal support (ISEL): (n=611)				
Score ≤49	57 (52.8)	113 (22.5)	40.68	<.001
High perceived stress (n=613):				
Score ≥8	52 (48.1)	101 (20.0)	37.64	<.001
Low family hardiness (n=613):				
Score ≤43	50 (46.7)	105 (20.8)	31.55	<.001

Depression (n=616):	38 (34.5)	43 (8.5)	53.68	<.001
Abuse during pregnancy (n=603):	25 (22.9)	31 (6.6)	29.42	<.001
Discrimination (n=618):	63 (57.3)	185 (36.4)	16.37	<.001
Thinking about having an abortion (n=617):	28 (25.5)	32 (6.3)	37.73	<.001
Unplanned pregnancy (n=615):	71 (64.5)	253 (50.1)	7.56	.006
Unwanted pregnancy (n=617):	13 (11.8)	27 (5.3)	6.29	.012
Worried about the apprehension of their baby (n=617):	23 (20.9)	23 (4.5)	35.12	<.001
Attendance at religious services at least once per month (n=611):	15 (13.8)	165 (32.9)	15.73	<.001
<u>Health Behaviours:</u>				
Alcohol use during pregnancy (n=614):	28 (25.5)	39 (7.7)	29.15	<.001
Smoking during pregnancy (n=606):	88 (80.0)	179 (36.1)	70.44	<.001
No regular health care provider prior to pregnancy (n=617):	58 (53.2)	191 (37.6)	9.09	.003
Inadequate prenatal care (n=618):	63 (57.3)	93 (18.3)	72.75	<.001

Demographic characteristics. Statistical testing showed significant differences between the cases and controls in age group, marital status, family income, education, employment, and First Nations ethnicity. Sixty-one percent of cases were younger, less than 25 years of age, while 46% of controls were less than 25 years of age. A lower proportion of cases (43%) reported being married or common law compared to the controls (67%). Seventy-two percent of the cases had an annual family income of less than \$20,000 compared to 40% of the controls. Seventy-three percent of the cases had less than a high school education compared to 38% of controls. Seventy-five percent of the cases responded that they did not have a paid job compared to 45% of controls. Differences in ethnicity were identified among the populations, with a significantly higher proportion of the cases (71.6%) reporting being of First Nations ethnicity compared to the controls (36.1%).

Psychosocial characteristics. Significant differences between the cases and controls were noted in regards to depression, abuse during pregnancy, discrimination, perceived stress, self-esteem, family hardiness and interpersonal support. A higher proportion of cases (34.5%) reported that they were depressed compared to controls (8.5%). In addition, a higher percentage of cases (22.9%) identified being abused during pregnancy compared to controls (6.6%). Cases reported higher proportions of discrimination (57.3%) as compared to the controls (36.4%).

Total scores for perceived stress were calculated. As the scores for this sample were not normally distributed, a cut off score for high stress was selected using the upper quartile. Scores of 8 or higher, or those falling into seventy fifth percentile or greater,

were designated to indicate higher perceived stress. A higher proportion of cases (48.1%) reported higher perceived stress than controls (20.0%)

Total scores for self-esteem were calculated. As the scores for this sample were also not normally distributed, a cut off score for low self-esteem was selected using the lower quartile. Low self-esteem scores that were less than the twenty-fifth percentile or ≤ 29 were indicative of lower self-esteem. A higher proportion of cases (52.7%) reported low self-esteem compared to the controls (23.9%).

Total scores for family hardiness were calculated. As the scores for this sample were also not normally distributed, a cut off score for lower family hardiness was selected using the lower quartile. Scores less than or equal to 43, or those score below the twenty-fifth percentile, were indicative of low family hardiness. A higher proportion of cases (46.7%) reported low family hardiness compared to the controls (20.8%).

Total scores for interpersonal support were calculated. As the scores for this sample were also not normally distributed, a cut off score for low interpersonal support was selected using the lower quartile. Interpersonal support scores that were less than the twenty-fifth percentile or ≤ 49 were indicative of low interpersonal support. A higher proportion of cases (52.8%) reported lower interpersonal support than controls (22.5%).

Women's feelings about pregnancy and intention to become pregnant were also examined to determine if a relationship existed between these factors and illicit drug use by a woman while pregnant. Significant differences between cases and controls were noted in relation to unplanned pregnancies, unwanted pregnancies, thoughts about having an abortion, and being worried about the potential apprehension of the baby by Child and Family Services (CFS). Sixty five percent of cases reported having an unplanned

pregnancy compared to 50% of controls. A higher proportion of cases (11.8%) had unwanted pregnancies compared to the controls (5.3%). In addition, cases represented a higher percentage of women (25.5%) who were thinking about having an abortion compared to the controls (6.3%). A higher proportion of cases (20.9%) were worried about the apprehension of their babies compared to the controls (4.5%). Additionally, a significantly higher proportion of controls (32.9%) attended religious services at least once per month compared to the cases (13.8%).

Health behaviours. Significant differences between the cases and controls were noted in smoking behaviour and alcohol usage during pregnancy. The use of alcohol was more common among cases with 25.5% of cases reporting alcohol consumption while pregnant compared to 7.7% of controls. Smoking during pregnancy was also higher among the cases with 80.0% reporting smoking compared to 36.1% of controls.

Two other health behaviours that were examined included not having a regular health care provider and inadequate prenatal care. A higher proportion of cases (53%) did not have a regular health care provider prior to pregnancy compared to the controls (38%). As well, 57% of cases received inadequate prenatal care compared to 18% of the controls.

Bivariate Logistic Regression Results

Twenty-four variables were examined using bivariate logistic regression. Odds ratios and 95% confidence intervals are reported in Table 4.

Table 4.

Bivariate Logistic Regression Results of Factors Associated with Illicit Drug Use in Pregnancy, with Unadjusted Odds Ratios and 95% Confidence Intervals

Variable	Cases	Controls	OR (95 % CI)
	n =110 n (%)	n = 508 n (%)	
Age <25 * (n=615)	67 (60.9)	235 (46.3)	1.81 (1.19, 2.76)
Single marital status *** (n=615)	62 (56.9)	169 (33.4)	2.63 (1.73, 4.01)
Family income <\$20000 *** (n=572)	72 (72.0)	190 (40.3)	3.82 (2.37, 6.13)
< High school education *** (n=615)	79 (72.5)	193 (38.1)	4.27 (2.70, 6.75)
First Nations ethnicity*** (n=613)	78 (71.6)	182 (36.1)	4.45 (2.83, 7.01)
Primiparous *** (n=618)	34 (31.0)	218 (42.9)	0.59 (0.38, 0.93)
Had a paid job *** (n=615)	27 (24.8)	277 (54.7)	0.27 (0.17, 0.44)
Alcohol use during pregnancy *** (n=614)	28 (25.5)	39 (7.7)	4.07 (2.37, 6.98)
Smoking during pregnancy *** (n=606)	88 (80)	179 (36.1)	7.1 (4.29, 11.70)
High perceived stress (≥ 8.0)*** (n=613)	52 (48.1)	101 (20.0)	3.71 (2.40, 5.74)
Low family hardiness (≤ 43)*** (n=613)	50 (46.7)	105 (20.8)	3.35 (2.17, 5.18)
Low self-esteem (≤ 29)*** (n=612)	58 (52.7)	120 (23.9)	3.55 (2.32, 5.44)

Low interpersonal support (≤ 49)*** (n=611)	57 (52.8)	113 (22.5)	3.86 (2.50, 5.94)
Depression *** (n=616)	38 (34.5)	43 (8.5)	5.68 (3.44, 9.39)
Discrimination *** (n=618)	63 (57.3)	185 (36.4)	2.34 (1.54, 3.56)
Abused during pregnancy *** (n=603)	25 (22.9)	31 (6.3)	4.4 (2.50, 7.90)
Unplanned pregnancy *** (n=617)	88 (80)	301 (59.4)	2.74 (1.66, 4.51)
Unhappy about pregnancy * (n=617)	13 (11.8)	27 (5.3)	2.38 (1.19, 4.78)
Thought about having an abortion *** (n=617)	28 (25.5)	32 (6.3)	5.10 (2.90, 8.86)
Worried about apprehension of baby*** (n=617)	23 (20.9)	23 (4.5)	5.56 (2.99, 10.4)
Attended religious services *** (n=611)	15 (13.8)	165 (32.9)	0.33 (0.18, 0.58)
Inadequate prenatal care *** (n=618)	63 (57.3)	93 (18.3)	6.0 (3.85, 9.28)
No regular health care provider* (n=617)	58 (53.2)	191 (37.6)	1.89 (1.24, 2.86)

Note. *OR*=crude odds ratio; *CI*=confidence interval

* $p < .05$ ** $p < .01$ *** $p < .001$

The results of the bivariate analysis showed that women less than twenty-five years of age were almost 2 times more likely to use illicit drugs than women who were over twenty-five years of age ($OR = 1.81, p = .006$) and women who were single were more than 2.5 times more likely to use illicit drugs than women who were married or common law ($OR = 2.63, p < .001$). Women who had an income less than \$20,000 per year were almost 4 times as likely to use illicit drugs than women who had a higher income ($OR = 3.82, p < .001$). Women with less than a high school education were over 4 times more likely to use illicit drugs than women who had completed high school ($OR = 4.27, p < .001$). Women who reported being of First Nations ethnicity were over 4 times more likely to use illicit drugs during pregnancy than non-First Nations women ($OR = 4.45, p < .001$). Women who reported using alcohol during their pregnancy were over 4 times more likely to also use illicit drugs during their pregnancy ($OR = 4.07, p < .001$) while women who smoked during their pregnancy were more than 7 times more likely to use illicit drugs during their pregnancy than women who did not smoke ($OR = 7.1, p < .001$).

When examining psychosocial differences between the groups, several significant differences were noted. Women who reported being depressed were more than 5.5 times more likely to use illicit drugs during pregnancy than women who did not report being depressed ($OR = 5.68, p < .001$). Women who experienced discrimination were more than twice as likely to use illicit drugs during pregnancy compared to women who did not experience discrimination ($OR = 2.3, p < .001$). Women who reported high levels of perceived stress were more than 3.5 times more likely to use illicit drugs during pregnancy compared to women who had lower levels of stress ($OR = 3.71, p < .001$).

Women who reported low family hardiness were more than 3 times as likely to use illicit drugs during pregnancy than women with higher family hardiness ($OR = 3.35, p < .001$) while women with low interpersonal support were almost 4 times as likely to use illicit drugs during pregnancy than women with higher interpersonal support ($OR = 3.86, p < .001$). Women with low self-esteem were also more than 3.5 times as likely to use illicit drugs during pregnancy as women with higher self-esteem ($OR = 3.55, p < .001$). Women who reported being abused were over 4 times more likely to use illicit drugs during pregnancy compared to women who were not abused ($OR = 4.4, p < .001$).

Other variables examined in the bivariate analysis showed significant differences between the cases and controls. Women with an unplanned pregnancy had more than 2.5 times the odds of using illicit drugs during their pregnancy than women whose pregnancy was planned ($OR = 2.7, p < .001$). Women who were unhappy about their pregnancy were more than twice as likely to use illicit drugs during their pregnancy compared to women who were happy about their pregnancy ($OR = 2.38, p < .05$). Women who were thinking about an abortion had more than 5 times the odds of using illicit drugs during their pregnancy than women who were not thinking about having an abortion ($OR = 5.10, p < .001$). Women who were worried about their infant being apprehended by Child and Family Services were 5.5 times more likely to use illicit drugs during their pregnancy than women who were not worried about apprehension of their infant ($OR = 5.56, p < .001$). Women who received inadequate prenatal care had 6 times the odds of using illicit drugs during their pregnancy than women who received adequate prenatal care ($OR = 6.0, p < .001$). Women who did not have a regular health care provider prior to

pregnancy were almost twice as likely to use illicit drugs as women who had a regular health care provider ($OR = 1.89, p < .01$).

Interestingly, two variables were negatively associated with illicit drug use during pregnancy. Women who attended religious services at least once per month were significantly less likely to use illicit drugs during their pregnancy compared to women who did not attend religious services ($OR = 0.33, p < .001$). Women who reported having a paid job during pregnancy were significantly less likely to use illicit drugs during their pregnancy than women who did not have a paid job ($OR = 0.27; p < .001$).

Multivariate Logistic Regression Results

Multivariate logistic regression analyses were performed to further explore the results from the bivariate analysis, and to determine the relationship between multiple independent variables to the dependent variable of illicit drug use in pregnancy. Backwards stepwise multivariate logistic regression models were constructed to estimate odds ratios (OR) for correlates or predictors of illicit drug use in pregnancy, producing an adjusted odds ratio (AOR) and 95% confidence interval. The multivariate logistic regression models were constructed by entering all variables showing a significant difference ($p < .05$) in the bivariate analysis, with the least influential variable being dropped at each step of the model. Although there were significant differences between the cases and controls regarding utilization of prenatal care noted in the bivariate analysis, inadequate prenatal care may in fact be an outcome of illicit drug use during pregnancy and not a correlate. Due to this reason, the inadequate prenatal care variable was not entered into the logistic regression model.

Results of the final step of the model without interactions and controlling for all variables are presented in Table 5.

Table 5.

Final Multivariate Logistic Regression Model without Interactions Showing Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI)

Variable	AOR (95% CI)	<i>p</i> value
Smoking during pregnancy	3.78 (2.18, 6.57)	<.001
Alcohol use during pregnancy	2.62 (1.60, 4.29)	<.001
First Nations ethnicity	2.10 (1.25, 3.51)	.005
Depression	2.01 (1.10, 3.70)	.024
Low self-esteem	1.89 (1.10, 3.25)	.022
Low family hardiness	1.76 (1.02, 3.03)	.042
Attended religious services at least once per month	0.44 (0.23, 0.87)	.018

Note: Variables entered into the model include: low family hardiness; low self esteem; low interpersonal support; primiparity; attended religious services at least once per month; discrimination; high perceived stress; marital status; income; education; alcohol; smoking; age; unplanned pregnancy; unhappy about pregnancy; thinking about having an abortion; worried about apprehension; depression; regular health care provider; paid job; abuse during pregnancy; First Nations ethnicity.

Seven independent variables remained significant in the final logistic regression model without interactions; these variables are correlates that have an independent association with illicit drug use in pregnancy after adjusting for all other variables in the model. Women who smoked during their pregnancy were more than 3.7 times more likely to use illicit drugs while pregnant ($AOR = 3.78, p < .001$) compared to women who did not smoke. In addition, women who consumed alcohol while pregnant had 2.5 times the odds of using illicit drugs during their pregnancy ($AOR = 2.62, p < .001$) compared to women who did not consume alcohol while pregnant. Women who were of First Nations ethnicity were more than twice as likely to use illicit drugs while pregnant ($AOR = 2.10, p = .005$) as compared to non-First Nations women. Women who were depressed were 2 times more likely to use illicit drugs during pregnancy ($AOR = 2.01, p = .024$) compared to women who were not depressed. Women with low family hardiness had almost 2 times the odds of using illicit drugs during pregnancy than women who had stronger family hardiness ($AOR = 1.76, p = .042$). Women with low self-esteem were almost twice as likely to use illicit drugs during pregnancy ($AOR = 1.89, p = .022$) compared to women with higher self-esteem. Interestingly, attending religious services at least once per month had a negative association with illicit drug use during pregnancy, thus women who attended religious services at least once per month were significantly less likely to use illicit drugs during pregnancy ($AOR = 0.44, p = .018$).

Testing for Interactions

After using multivariate logistic regression modelling to adjust for other factors associated with illicit drug use, statistical interaction testing or effect-measure modifications were conducted to ensure that all bias had been adequately controlled. An

interaction effect is “the effect of two or more independent variables that act in combination (interactively) on a dependent variable” (Polit & Beck, 2008, p. 756).

Interactions or effect-measure modification is a property of the effect under study that should be detected during the analysis and is a finding that should be reported (Rothman, Greenland & Lash, 2008). During the analysis, interactions were explored with the variables of First Nations ethnicity, age greater than or equal to 25, and primiparity. Significant interactions were entered into the model. The final multivariate logistic regression models are presented in Table 6.

Table 6.

Final Multivariate Logistic Regression Model with Interactions Showing Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI)

Variable	AOR (95 % CI)	p value
Smoking during pregnancy	2.14 (1.09, 4.23)	.028
Alcohol use during pregnancy	3.13 (1.88, 5.21)	<.001
Non-First Nations ethnicity	0.18 (0.06, 0.52)	.002
Depression	4.79 (1.88, 12.18)	.001
Low self-esteem	1.90 (1.13, 3.20)	.016
Age \geq 25	0.91 (0.37, 2.20)	.826
Primiparous	1.50 (0.76, 2.98)	.241
No regular health care provider prior to pregnancy	0.80 (0.40, 1.58)	.512
Interaction of Non-First Nations and smoking	4.58 (1.33, 15.79)	.016
Interaction of age \geq 25 years and depression	0.21 (0.78, 0.94)	.036
Interaction of age \geq 25 years and not having a regular health care provider	3.06 (1.12, 8.35)	.029
Interaction of age \geq 25 years and primipara	0.21 (0.05, 0.91)	.036

Note: Variables entered into the model included: low family hardiness; low self-esteem; low interpersonal support; primiparity; attended religious services at least once per month; discrimination; high perceived stress; marital status; income; education; alcohol use during pregnancy; unplanned pregnancy; unwanted pregnancy; thought about having an abortion; worried about the apprehension of baby; depression; no regular health care provider; having a paid job during pregnancy; age \geq 25; abused during pregnancy; smoked during pregnancy; primiparity; non-First Nations ethnicity; interaction of non-First Nations ethnicity and low-hardiness; interaction of non-First Nations ethnicity and low interpersonal support; interaction of non-First Nations ethnicity and attendance at

religious services; interaction of non-First Nations ethnicity and age ≥ 25 years; interaction of non-First Nations ethnicity and single marital status; interaction of non-First Nations ethnicity and income; interaction of non-First Nations ethnicity and unplanned pregnancy; interaction of non-First Nations ethnicity and depression; interaction of non-First Nations ethnicity and thought about having an abortion; non-First Nations ethnicity and having a paid job during pregnancy; non-First Nations ethnicity and smoking during pregnancy; age ≥ 25 and low interpersonal support; age ≥ 25 and primiparity; age ≥ 25 and discrimination; age ≥ 25 and higher stress; age ≥ 25 and single marital status; age ≥ 25 and income; age ≥ 25 and education; age ≥ 25 and alcohol use during pregnancy; age ≥ 25 and no regular health care provider; age ≥ 25 and unplanned pregnancy; age ≥ 25 and depression; age ≥ 25 and thought about having an abortion; age ≥ 25 and worried about apprehension of the baby; age ≥ 25 and having a paid job during pregnancy; age ≥ 25 and abused during pregnancy; age ≥ 25 and primiparity.

Six variables remained as significant independent correlates of illicit drug use during pregnancy in the final model with interactions. Women with low self-esteem were almost twice as likely to use illicit drugs compared to women with higher self-esteem ($AOR = 1.90, p = .016$). Women who consumed alcohol during their pregnancy were more than 3 times as likely to use illicit drugs during pregnancy compared to women who did not consume alcohol while pregnant ($AOR = 3.13, p < .001$). Women who smoked cigarettes were more than twice as likely to use illicit drugs during pregnancy compared to women who did not smoke ($AOR = 2.14, p = .028$). Women who were non-First Nations were less likely to use illicit drugs compared to First Nations women ($AOR = 0.18, p = .002$); however non-First Nations women who also smoked cigarettes were more than 4.5 times more likely to use illicit drugs during pregnancy ($AOR = 4.58, p = .016$). Women with a history of depression were over 4.5 times more likely to use illicit drugs during pregnancy compared to women who were not depressed ($AOR = 4.80, p = .001$). Age served to modify the effects of the other factors in the model. For instance, women who were over the age of twenty five and had a history of depression were significantly less likely to use illicit drugs ($AOR = 0.27, p = .026$). As well, women over the age of 25 without a regular health care provider prior to pregnancy, were 3 times more likely to use illicit drugs during pregnancy ($AOR = 3.06, p = .029$). Primiparity also served to modify the effects of other factors in the model. For example, women who were over 25 years of age and a primiparous woman were significantly less likely to use illicit drugs during pregnancy ($AOR = 0.21, p = .036$).

Summary of the Quantitative Component

The first part of this chapter summarized the demographic characteristics of the total sample of women in this study and then compared women who used illicit drugs during pregnancy to women who did not use illicit drugs during pregnancy. Multiple variables including demographic, psychosocial, and health behaviour characteristics were examined and a bivariate logistic regression analysis was conducted. Variables that showed a significant difference between groups were entered into backward stepwise multivariate logistic regression modelling equation with the least significant variables dropped at every step in the model. Based on the results of the multivariate logistic regression modelling, several demographic and psychosocial correlates of illicit drug use during pregnancy were identified, answering the first and second research question in this study.

Based on the bivariate logistic regression analyses, the majority of women in this inner-city population who used illicit drugs during pregnancy were single, less than 25 years of age, from a lower income level (less than \$20,000 per year), were First Nations ethnicity and had less than a high school education. A higher proportion of the women who used illicit drugs during pregnancy also used alcohol, smoked cigarettes, were physically abused and were depressed. Women who used illicit drugs during pregnancy had higher levels of perceived stress, lower self-esteem, lower family hardiness and lower interpersonal support. Women who used illicit drugs during pregnancy were more likely to report discrimination, have an unplanned pregnancy, be unhappy about their pregnancy and had thought about having an abortion. Furthermore, women who used illicit drugs during pregnancy were worried about their baby being apprehended, and were more

likely to have received inadequate prenatal care than women who did not use illicit drugs during pregnancy. Having a paid job and attending religious services at least once per month had a negative association on illicit drug use during pregnancy.

After using multiple logistic regression to adjust for other factors associated with illicit drug use in pregnancy and after testing for interactions, six correlates remained as significant independent variables associated with illicit drug use during pregnancy while three variables were negatively associated, or had a protective effect on with illicit drug use during pregnancy. Variables that were significantly associated with illicit drug use in pregnancy included women who smoked cigarettes during pregnancy, consumed alcohol during pregnancy, were depressed and had a low self-esteem. Although maternal age and not having a regular health care provider were not significant factors on their own, women who were 25 years of age or older and also did not have a regular health care provider were more likely to use illicit drugs during pregnancy. Women of non-First Nations ethnicity were also significantly less likely to use illicit drugs during pregnancy than First-Nations women; however, if a woman was of non-First Nations ethnicity and also smoked cigarettes during their pregnancy, they were significantly more likely to use illicit drugs during pregnancy.

In addition to women of non-First Nations ethnicity, factors that were protective for illicit drug use during pregnancy were also observed. Although women who were primiparous, or pregnant with their first child, was not a significant variable on its own, women who were 25 years of age or older and were pregnant with their first child were less likely to use illicit drugs during pregnancy compared to women less than 25 years of age who were pregnant with their first child. Although depression was found to be a

significant variable in the final model, women who were 25 years of age or older and also were depressed were less likely to use illicit drugs during pregnancy as compared to women less than 25 years of age and who were also depressed.

Part Two: Results of the Qualitative Component

The purpose of the qualitative component of this research study was to answer the third research question that explored life experiences and circumstances that may have impacted a women's use of illicit drugs during pregnancy. All women who participated in this part of the study had used illicit drugs during their current pregnancy. In most cases, women were using multiple substances. In this chapter, differentiation between illicit drug use and other substance use will be identified where possible; however, it is acknowledged that the experiences and life circumstances of the women impacted the use of all substances, not only illicit drug use. The term substance use will be used to describe drugs other than illicit drugs or when a combination of illicit drugs and other substances was described or used by the women.

This chapter will provide a descriptive analysis of the demographic characteristics of the women who participated in the study. The interviews with the women were tape-recorded, transcribed verbatim, and analyzed as previously noted. Four broad themes described the life experiences and circumstances of the women that may have had an impact on their illicit drug use. Multiple categories were identified within each theme.

Descriptive Analysis of Demographic Characteristics of Participants

A total of 10 women were recruited to participate in the qualitative component of this study. The ages ranged from 20 to 35 years of age with a mean age of 28.4 years (*SD* 5.9). Eight of the participants were single, one was common-law and one participant was

divorced. All of the subjects reported a total family income less than \$20,000 per year with seven of the subjects having a total family income of less than \$10,000 per year. Four of the women in the sample had completed high school, six women reported having less than a high school education and four of these six women had less than a junior high education. The majority of women in this sample, or nine of the women, reported being of Aboriginal descent, with eight of these women of First Nations ethnicity and one of the these women being Métis. One of the participants was Caucasian. Half of the women in the study were in a drug treatment program at the time of the interview, while the other half were not receiving treatment for illicit drug use. Women were between 27 weeks pregnant and two days post-partum at the time of their interviews, with five of the women being pregnant and five of the women being post-partum at the time of the interview. The participants had a range of one to 12 pregnancies with a mean of six pregnancies per woman and a range of one to 11 births with a mean of four births per woman. All of the women in the study received some prenatal care during their current pregnancy with a mean of seven visits to a health care provider during their pregnancy. Women in this sample had a mean gestational age of 14.3 (SD=4.9) weeks at the time of their first prenatal visit with a health care provider. Women represented six out of eight inner-city Winnipeg neighbourhoods that were targeted for this study (see Table 7 and 8).

Seven of the women who were interviewed for this study acknowledged that their babies would be apprehended following their birth or had already been apprehended at the time of the interview. The three remaining women identified that they would retain custody of their babies following their birth.

Table 7.

Demographic Characteristics of the Sample Population with Range, Mean (M) and Standard Deviation (SD)

Demographic Characteristic	Range	M (SD)
Age	20-35 years	28.4 (5.9)
Gravidity	1-12 pregnancies	6.0 (3.6)
Parity	1-11 births	4.4 (3.4)
Gestation at First Prenatal Visit	9-22 weeks	14.3 (4.9)
Number of Prenatal Visits during Pregnancy	2-12 visits	7.1 (3.4)

Table 8.

Demographic Characteristics of the Sample Population Showing Frequencies of the Sample

Demographic Characteristic	Frequency N =10
Marital Status:	
Single never married	8
Common-Law	1
Divorced	1
Total Family Income:	
<\$10,000	7
\$10,000-19,999	3
Highest Level of Education:	
Less than Junior High	4
Less than High School	2
High School	3
>High School	1

Themes and Categories

Four broad themes were identified in this portion of the study. These include: (1) living a chaotic life as a child; (2) complicated life circumstances; (3) social support system; (4) the road to recovery (see Table 9). The themes and corresponding categories will be described in the following section.

Table 9.

Themes and Categories of Women's Experiences that Impacted Their Use of Illicit Drugs during Pregnancy.

Themes	Categories
Living a Chaotic Life as a Child	<ul style="list-style-type: none"> • Exposure to family and friend's use of alcohol and drugs • Unstable home life • Abuse • Traumatic losses in their lives
Complicated Life Circumstances	<ul style="list-style-type: none"> • Chaotic lives • Stressful lives • Emotional distress and feelings of guilt
Social Support System	<ul style="list-style-type: none"> • Relationships with family and friends who "use" • Relationships with family and friends who are "clean"
The Road to Recovery	<ul style="list-style-type: none"> • Motivation to reduce the use of drugs or alcohol • Experiences in treatment • Barriers to treatment

Living a Chaotic Life as a Child

The majority of women in this study described chaotic events in their childhood, which impacted their use of illicit drugs or other substances. These chaotic events included a history of alcohol and drug use among their parents and other family members, living in foster care homes, and enduring multiple forms of abuse as a child. Each of these categories is explored in more detail in the following sections.

Exposure to family and friend's use of alcohol and drugs. Many of the women described a childhood characterized by drug and alcohol use in the home. The majority of the women had parents, siblings or other family members who struggled with alcoholism as well as illicit drug use. For many women, this experience characterized their initial exposure to drug or alcohol use. Two of the women described their parent's use of substances as they were growing up:

And like my mom she's been addicted to pills for a long time. And my dad, him he's just as bad as my mom. But he wasn't addicted like all, all my growing up, like they would drink. (Participant 2)

He [her dad] was a drinker too. But he was, like bad. But when we could, my mom tried to stay away from him. She wanted nothing to do with him, but as we got older...he would follow us around and he found us in [name of a city/town] and then my mom was like, "we'll move again". It wasn't like a big bad thing like he beat her or anything, he didn't...I think she just, just was just sick of him and his drinking. His drinking was bad. (Participant 7)

The use of illicit drugs and other substances by family members impacted the use of illicit drugs by the women in the study. One woman explained how her problems with drug use escalated once she moved back in with her parents in her late teen years as she needed a place to stay temporarily. Both of her parents had substance use problems at the time and she found herself in an environment filled with substance use. The woman

explained that because of this exposure to an environment filled with drug using, her illicit drug use escalated:

Yeah, my parents were using drugs...and then we got like, we wanted to move so we moved in with my mom and dad till we found a place, me, my common-law and my daughter and then we started using once we moved in with my mom and dad. And then I got addicted. (Participant 2)

Along with parental substance use, many siblings of the women were also using alcohol and drugs, and in some cases all of the siblings in the family were addicted to some form of substance. Sibling's use of drugs and alcohol was described by the women as having a direct impact on their own use of illicit drugs and other substances as a child. One woman describes her first experience with alcohol as follows:

My brother, my older brother would throw a party. I think that's when I had my first drink. I was probably twelve or thirteen. But I didn't like the taste but everybody else drank it so. (Participant 9)

In addition, substance use problems were often deeply rooted within a family and involved extended family members as well. This also had an impact on illicit drug use by women, as it presented additional opportunities for the women to use illicit drugs.

Another woman remembers her first experience with using illicit drugs and obtaining them from a family member:

Participant: [I was] Thirteen [when I started to drink alcohol]. And I was doing drugs when I was about twelve, um my first acid trip.

Interviewer: And who gave it to you?

Participant: My cousin. And when I was growing up I was smoking weed, then I cut down, started doing acid, hash, and mushrooms. (Participant 8).

Sometimes, when life became overwhelming and difficult, the women described seeking out other family members for assistance. Due to the widespread problems with substance use among family members, help seeking actually encouraged the substance

use. One woman moved in with her sister at fifteen years of age and she explained how her sister encouraged her use of alcohol:

Participant: When I was about fifteen years old, my sister took me in finally, my oldest sister. And then she realized what I was doing, drinking alcohol. I was drinking since I was thirteen, smoking cigarettes since I was nine.

Interviewer: And what did she [the sister] do?

Participant: Nothing. She started, she started buying my booze and everything. (Participant 8).

In addition to the exposure to illicit drug use and other substances by family members, many of the women in this study described obtaining illicit drugs and alcohol through older friends that they associated with as young children. This impacted the women's use of illicit drugs as association with older friends provided opportunity and access to drugs. As some of the women described:

[The friends I was hanging out with] they were the ones that actually had the access [to drugs] and everything too because they were older. Participant 9

My very first time I started using was when I was ten and then alcohol around that same time and then crack cocaine when I was fifteen. [I got it from] friends, yeah. I had older friends so they were allowed to go to the drug dealer and get it. So there was a big group of us. (Participant 4).

In other circumstances, women reported that curiosity with a friend's usage of illicit drugs had an impact on their own desire to try the drugs for themselves. This curiosity had a great impact on the initiation of some of the women's illicit drug use:

I just wanted to try it and then it was good and it's very addicting....if I never, like that would have never been a part of my life, if I wasn't there [with her family who was using drugs]...I was just curious. (Participant 1).

Unstable home life. At some point in time, all of the women in the study had experienced the foster care system as children. Sometimes as children, they were placed in care voluntarily by their own mothers, as they were not able to care for them. In other

situations, as children, they were involuntarily apprehended from their families and placed in foster care due to unstable home lives characterized by parental drug and alcohol use. Ironically, the majority of women described living in foster care as children, as a place that provided further opportunity for exposure to substance use, especially in group home settings where older girls would buy drugs and alcohol for the younger girls. One woman believed that living in foster care had a direct impact on her use of drugs and alcohol in the beginning. In addition to the accessibility of drugs, through older friends, entering into the foster care system led to the loss of her parenting figure, her father, which also had an impact on her substance use:

Participant: I don't know. It [living in foster care] was... I don't know it was rough. Just the fact that cause I was drinking like every weekend. The girls would take me out and so I don't know.

Interviewer: What kind of an impact do you think it had [on your use of drugs and alcohol]?

Participant: Lots, because that's where I started drinking...and if I wasn't [in foster care], 'because my dad was a really strict guy and if we were still living with my dad then none of this probably would have happened. (Participant 3).

Abuse. For the women in this study, abuse in the form of physical, sexual or emotional abuse was a commonality, and had a direct impact on their use of illicit drugs. Four of the women in this study reported being sexually abused as children. In some instances, the perpetrator was known to the women and consisted of a family member or close family friend. In other circumstances, the perpetrator of the abuse was a stranger. Some of the women had disclosed the abuse to their parents in some of the cases with positive results; other women had disclosed the abuse and endured negative reactions from their families. The reactions of the families greatly impacted the woman's ability to cope with the abuse. In one woman's case, as a child, she had been apprehended from her

family and placed in numerous foster care homes run by extended family members. She suffered multiple instances of sexual abuse. Eventually she became pregnant as a result of her uncle sexually assaulting her repeatedly. This event led the woman to heavy use of illicit drugs. As she stated:

Yeah, I've seen my aunties and uncles all abuse their sisters and everything so I'm kind of just still angry because I got no chance...They know, yeah [about the molestation and rape] but they don't want to believe it, but I don't give a damn if they don't. I know what happened to me. I'm willing to take them down, take them to court but he's already dying on his own, so just let him. The creator will take care of him too, after he dies. (Participant 4).

Eventually the woman was adopted into a stable adoptive family. This same woman spoke about her feelings about being taken away from her abusive foster family:

I was able to sleep, I wasn't scared, I wasn't having one eye open and not always so cold, always hearing the floor squeak or knowing that my grandpa or anybody else in my family was going to come into the room and start touching me. (Participant 4).

Other women described their experiences with sexual abuse as a young child that may have impacted their use of illicit drugs:

I was sexually abused when I was five by my cousin...I just always felt like I was dirty kind of and just like, like, I didn't tell anyone until I was seventeen....because before I didn't know, like I knew it, like I wasn't too sure if it was right or wrong. (Participant 6).

When I was like, when I was five years old...my mom's ex-boyfriend touched me....and then my own cousin raped me when I was nine. (Participant 8).

For some women, living in foster care as children, provided a safe environment; however for other women as children, sexual abuse occurred in the foster care homes. Tales of forced prostitution and severe physical and sexual abuse as children were described:

I started working the streets when I was thirteen. My foster parents told me to do it...I didn't have no choice. That or be dead. (Participant 8).

In the majority of cases, the abuse sustained as a child contributed to the women's future use of substances as a way to cope with the chaotic events experienced during their childhood. In most cases, abuse was a contributing factor to illicit drug use in combination with other experiences. For example, one woman acknowledged that she could not blame her drug addiction and life choices solely on being sexually abused as a child. She believed that her use of illicit drugs was a result of a combination of reasons, not just a single incident. She viewed her experience in this regard:

He molested me when I was six...and it came out when I was in rehab....and a couple of other sisters came out...that's put a huge family strain on things as well...because you can't nail it down to one thing...like I don't blame, you know, I don't want to sit here and play the victim, and oh, it's his fault....he's not the one who put the needle in my hands, he's not the one who shoved pills up my nose you know, so. (Participant 10).

Traumatic losses in their lives. In some cases, emotional trauma stemmed from violent traumatic incidents that occurred to family members of the women when they were children. One woman described the impact of her mother's murder when she was 10 years old while another woman talked about her father being murdered by her boyfriend when she was in her mid-teens. The impact of these traumatic events was significant for these women and the women described an increase in substance use following these traumatic events. As one of the women described:

...my dad found us and that's where we stayed until we got older, yeah, about fourteen or fifteen. My dad died. My ex-boyfriend beat him up...he put him into a coma....I can say I started drinking lots [after the death of her father] and I really didn't care what happened to me when I was drunk...I started smoking pot a lot and I would just pass out anywhere. (Participant 9).

Complicated Life Circumstances

The majority of women in this study described complicated lives characterized by chaos including an escalation in illicit drug use that led to severe consequences and

multiple losses in their lives. Some of these included the loss of money, homes, and children. For many of the women, there was a cyclical pattern to drug use, treatment attempts, and relapse. As well, highly stressful lives filled with emotional distress and feelings of guilt further added to the complexity of their lives. The use of illicit drugs by these women was used as a way of coping with the difficult circumstances of their lives.

Chaotic lives. Chaotic lives refers a period of time when the escalation of illicit drug use by the women led to multiple losses in their lives including the loss of their children, their money and their homes. For the majority of women in the study, illicit drugs and other substances were used as a coping mechanism to deal with the complex and often increasingly chaotic nature of their lives.

Typically, the drug use by the women in the study would escalate in both amounts and strength of the drug used, often moving from drugs such as marijuana to crack cocaine, Oxycontin or heroin over a short period of time. As the escalation intensified, the route of administration would often change as well, with women changing from swallowing pills or smoking the drugs to snorting crushed pills or injecting the drugs. The amounts of drugs used during this time escalated to the point where the consequences of drug use were becoming problematic for the women. This was the time where women would find themselves in precarious situations with the care of their children, having difficulty finding money to support their addiction, putting their safety at risk and making poor choices. These consequences in turn impacted their use of illicit drugs. As one woman who was in treatment at the time of her interview described the escalation:

Well I was um, like I mean I, I was pawning stuff, I was stealing, I was you know. It was bad enough that I was compromising my own values for it you know. And I

was, I was shooting up, I was sharing needles, so I mean it was, it was to a dangerous, deadly point you know. I was playing with guns and playing with deadly people ...just insane when I think about it...because of the drug use it's kind of foggy too...you almost feel like looking back at someone else's story... 'cause you can't believe you actually did some of the things you did. (Participant 10).

Access to money to support the drug addiction was problematic for the women in the study and impacted the use of drugs by the women. In order to pay for the drugs, some women used money from their social assistance or child tax credit benefits until the money was gone. Once resources were depleted, most often the women resorted to prostitution or other criminal activity in order to afford the drugs and alcohol that they craved. The money earned from the theft of drugs from other people, shoplifting and prostituting had a major impact on their use of illicit drugs and contributed to their chaotic lives. Without the money, the women would not be able to afford to purchase drugs. Two of the women describe how they obtained money for their drugs through prostitution:

Yeah, buying it [the drugs] on the street...The people that I know on the street, especially the hookers and because hookers become to be your friends, closer friends than sisters and brothers. You want to trust them as much as you want to get your fix. [I got the drugs] by prostituting, stealing from people. Taking whatever you can get. (Participant 4).

I worked the streets [to support her drug addiction]. [That life] wasn't a good one, it was shitty. I hated it. I didn't like what I was doing, but I did it because I wanted the drugs. (Participant 5).

The cyclical nature of using illicit drugs, escalation of use, spiralling out of control and suffering the consequences of drug use was described by several of the women in this study and characterized the chaos in their lives. The consequences led to increased use by the women. During this cycle, the women would manage to remain

sober for a period of time and appear to cope with the care of her children at home, but the need for drugs would surface eventually and the cycle would start again. One woman described her experience:

[I had my son] for about, till he was a year and a half and then CFS took him and then he went and my mom started taking care of him. ..I was like, well, I don't have a baby to look after. I can start using again. But this time I won't do it every day. It won't be a problem. So I thought. And then I started going downhill again and I ended up in jail. (Participant 5).

As the women's drug use continued to escalate, their lives became more chaotic and the care of their children suffered. The consequence of using illicit drugs was the loss of their children which impacted their use of substances. Once the woman started using illicit drugs again, the use escalated quickly and she found that she spent all of her money on drugs. It became quickly apparent that the woman couldn't afford to both use illicit drugs and provide for her other kids, so she placed her children into foster care as a voluntary apprehension:

It wasn't as often [using crack] but it was once in, when I got a check I'd spend a bit, and then it got to be where I spent everything. So I lost everything and I phoned Child and Family Services because I couldn't support them [children]. I would spend my money [on drugs]. (Participant 1).

The mother went on to describe how her intention was to enter treatment following the voluntary placement of her children with CFS; however with the loss of her children, and then her home, the chaos of her life continued and her use of illicit drugs increased instead. Consequently, she became pregnant once again. She described:

I gave up my kids to CFS, while, so I could get help. And then I lost them [my kids], and I lost my place and I was on the streets and doing the drugs everyday for about a year or two years. And then I got pregnant with my third while I was doing all of that and then I went, and that's when I quit. I went in to treatment. (Participant 1).

Stressful lives. A stressful life refers to stressful events in the lives of the women that may have had an impact on their use of illicit drugs. The use of illicit drugs and other substances was identified as one way to relieve some of the hurt and stress that the women currently endure or have endured over the course of their lives. In their interviews, women explained how they used illicit drugs in order to cope with stressful life situations. Unplanned pregnancies, difficult relationships with partners and using illicit drugs while pregnant were identified as stressful events by the women in this study.

Unplanned pregnancies caused significant stress in the lives of women in this study and the stress impacted the women's use of illicit drugs. One woman, who had initially decreased her illicit drug use once she found out about her pregnancy, increased her use of illicit drug use during her pregnancy due to stress from her ambivalence about her pregnancy. She described her feelings:

I guess when I was considering parenting, it was really, it's a scary thing and I was thinking that my freedom was going to be, like, was going to be gone...and I was going to school and working...throughout my pregnancy...I got back to using...I deserve a bit of a break, you know, some relaxing....[I had mixed emotions] happy and scared and nervous and not knowing if I could do it. (Participant 6).

Difficult relationships with partners were identified as having a direct impact on a woman's use of illicit drugs. For many women, relationships were unstable and stressful for the women. One woman described how the relationship with her boyfriend contributed to her illicit drug use:

I was just happy with my baby, but everything else was just like killing it for me...I'm not going to blame him for, but I want to, but...just the way he [my boyfriend]made me feel. He just made me want to do it [use methamphetamines] more...So, like I'd be fine until he brings it up [her illicit drug use] and makes everything about that... [It made me feel] like doing it. (Participant 9).

Another woman described her stressful relationship with her partner:

No [I have had different partners]...Not the best... They're just all the same. "We don't, I don't hit women", that's all I ever heard and I'd get punched in the face and kicked around...This baby's dad is, likes to pick up young girls [prostitutes] and especially my own daughter [prostituting on the street]. I couldn't believe it, I just couldn't believe it. I didn't want to. (Participant 4).

Women in the study also identified their use of illicit drugs as a way to relax with the pressures of everyday life; a way to reduce stress and relax. As one woman described:

Um, I smoke pot, but I don't get like stoned...I mean I don't get as stoned. I'll have a puff here and a puff there...It really helps me sleep at night, just to unwind and stuff...I do smoke throughout the day daily, but I don't want to say I'm stoned all day long. (Participant 10).

Emotional distress and feelings of guilt. The use of illicit drugs was often used as a way to cope with emotional distress from past life experiences, mental health issues such as depression and anxiety, and with bouts of loneliness. The physical effects of the drug allow the women to escape from reality and relieve some of their emotional pain.

One woman described her use of drugs as a coping mechanism; a way to hide from the past:

It's to, it was always to hide, just to hide the past and because I have back flashes of when I see parents with their children I, I feel, I feel relieved, I feel happy, but then I look at myself, how come I'm not happy, so I go back, I go back drinking again....I'm using more rock than alcohol because crack is, rock is where you don't have to feel anything, where you don't feel anger, where you just, you just don't care. (Participant 4).

The same woman went on to describe the reasons for her drug use. She spoke of using illicit drugs so that she doesn't have to feel or think about the painful circumstances of her life:

[I use drugs] So that I don't have to feel or think anymore that I have kids, that I have a family. Uncles, brothers, sisters, that's why I use because they never were there for me when I needed them. My father's gone, my mother's dead. (Participant 4).

Another woman described using substances to cope with emotional distress:

[The use of alcohol was for]...passing the time, just try not to think about not having my kids, not having my mom. Altering my reality, just for the day, to get through the day. To not think about anything that was hurtful. (Participant 7).

Women also identified that they suffered from bouts of anxiety and depression that impacted their use of illicit drugs and other substances in order to cope with their symptoms. One woman described herself as extremely shy and suffered from severe anxiety in social situations. She approached her doctor who prescribed a multitude of prescription medications to help her deal with her anxiety problems. She felt that by using drugs and alcohol she decreased her inhibitions, became more outgoing and was able to cope with social situations. Her anxiety levels had a direct impact on her use of illicit drugs. Sadly, her use escalated into addiction and she found herself buying her drugs on the street.

[I started taking pills] I'd say when I was fourteen. And it's just been since, plus I have anxiety...Well I first got a prescription for them but then I started like I guess abusing them and then from there, my doctor wouldn't give me no more so I just started buying them like off the street..Valliums, resterol and like muscle relaxers and seroquel. I would usually take three a day but then that increased to like 30 a day. It just made me more talkative like cause I was a shy person. I would never say anything and that's what I think helped me talk and stuff like that. (Participant 3).

Another woman explained how severe depression during her pregnancy impacted her use of illicit drugs. As her pregnancy progressed, the depression worsened and thoughts of suicide entered her mind. The use of illicit drugs increased as her depression worsened.

She used the drugs to cope with her feelings of depression and stress:

[My drug use] um, it was getting worse. Actually, I think that is when it got the worst. I don't know if you can get post-partum [depression during pregnancy]. I know I had depression. Everything just seemed dark and gloomy and I was starting to think suicide...And then I was stressed out too because I was scared for

the baby and being high just made me feel better in a way. But then it also intensified everything else, it's hard to explain...yeah coming down was really bad. (Participant 9).

Another woman also described feelings of severe depression and her thoughts of suicide that impacted her use of illicit drugs:

...I've taken pills. I've tried to commit suicide so many times. It didn't work, it never worked. (Participant 4).

Feelings of loneliness were identified by other women in the study as having an impact on their use of illicit drugs. The women became quite emotional when discussing how lonely they felt and as they reflected on their reasons for using (Fields notes). As two of the women described:

Cause I, when I use, when I use [lengthy pause]I just feel lonely all the time....I'm always blaming myself. (Participant 8).

Um, I'm not even sure...Um I thought it was because I was alone...because I noticed, I started to notice like even now crack heads like the ones that I know of and the ones that I've met they were all alone, a lot of them do it alone...So, I figured that that must be why, that must have been why, but I'm not exactly sure. (Participant 9).

All of the women in the study had interactions with Child and Family Services (CFS) over the course of their lives. The emotional distress of the apprehension of their children had a direct impact on their use of illicit drugs and other substances. In many instances, the apprehension of children led to an increase in substance use. As one woman described:

...I guess the staff [of the treatment center] told I was abusing pills and then CFS came there and took him because they said when I came to the office, I looked high and I was like slurring my words. [CFS came to get him and] I wouldn't let them. They had to call the cops because I wouldn't let him go. Then after that I started drinking again heavy. (Participant 3).

Some women described how emotionally distressing it was when they missed important times in their children's lives as a consequence of their drug use. One woman described how she missed her baby's first steps because she was in jail and only heard about it over the phone. She felt that she had lost the bond with her baby; that her baby had instead bonded with her mother who had been caring for the child. The woman believed that she continued to use drugs because she had lost the bond with her son and that was difficult for her to live with. She stated:

I missed my baby's first steps and heard about it over the phone but just not being there I was, I don't know, I was mad at myself. And when I got out of jail I just kept doing what I was doing once in a while...I think that's what made me use [with her last pregnancy] was not having the bond with the kids and letting it slip away. (Participant 5).

For most of the women in the study, pregnancy was a time of realization about the potential impact of illicit drugs and other substances on their unborn babies. In many instances pregnancy had a positive influence in reducing the use of illicit drugs during pregnancy. Women identified feelings of guilt for using a substance that could potentially harm their unborn babies and were fearful of the impact that their illicit drug use would have on their unborn babies. For many women, the emotional distress of causing harm and the ensuing guilt either reduced or stopped the use of illicit drugs during pregnancy.

As one woman described:

When I did [use illicit drugs], I felt like I was committing the biggest crime. (Participant 9).

Another woman explained that she tried to quit using alcohol and drugs when she was three months pregnant:

Because I just remember it sticking out in my head that three months, that's important. Oh my gosh, what have I done? The effects of, I, what I had, what I

had done already. The damages I would have already did....That I prayed for the best. That there was no damage that I caused. (Participant 7).

While another woman described her thoughts about quitting later in her pregnancy:

But the pills, I just didn't think nothing because it's just part of my everyday life, right? I didn't think it would harm my babies, but I knew the crack did...But I still just pushed it aside...I knew I had to quit and eventually I would...even though I should have done it sooner, but I couldn't help it. (Participant 1).

Although some of the women tried not to think about the consequences of using drugs while pregnant, an awareness of the impact of the illicit drugs on the baby remained in the minds of the women. As two of the women explained about their use of illicit drugs while pregnant:

Uh, you don't think about it until after. Like when you come down you feel really guilty and you wish you didn't but then you can't help it. Even though you know you're hurting your baby, you still do it, like you don't care, like once you're on that drug, it takes over and then I always used to say, okay this is the last time, this is the last time. That's how it always went. (Participant 1).

...cause it's embarrassing...it's hard to admit to something that, you could damage your, your own baby. (Participant 7).

The experiences of the women who had used illicit drugs in previous pregnancies without having the drug use discovered also had an impact on their use of illicit drugs with future pregnancies. As one woman explained:

...Like I got away with it the last time. I did think, I did worry....but I got away with it [drug use] with [last baby] then cause they didn't seem like it was a crime. They didn't talk like I'd done something really wrong. (Participant 9).

Social Support System

Women in this study described two different support systems that had an impact on their use of illicit drugs during pregnancy. These two support systems were family and friends who were currently use illicit drugs, or “use”, and family and friends who were

not currently using illicit drugs, or were “clean”. The impact of these relationships on illicit drug use during pregnancy was explored.

Relationships with family and friends who “use”. Six of the women interviewed in the study described support systems consisting of friends and family members or other drug users, who supported their use of illicit drugs. These supporters were often actively using drugs or other substances themselves and provided incentive and opportunity for the women to use during pregnancy. One woman discussed how her relationship with her mother, who was also using substances, impacted her use of alcohol while pregnant. She stated:

She [her mother] doesn't care; she just supports it all the way. (Participant 3).

For women who wanted to reduce their illicit drug use, separating themselves from their friends, partners or families was required in order to be successful. If they did not remove themselves from the presence of others who were actively using drugs or other substances, the temptation to use was sometimes too much to resist and drastically impacted their ability to reduce their illicit drug use. As one woman described the difficulty of trying to get clean while still living with her parents who were using illicit drugs:

[My partner and family say] “Oh, you could do it”...like do the program, the treatment... it's hard. Like they use and also when I went to detox and then...methadone...I was using a little bit, like not lots...like one pill here and there, not every day, but like once a week. And then I get angry at myself, so I'm trying to get out of my parents house [because they're using]. They're no support. (Participant 2).

Relationships with family and friends who are “clean”. In other cases, women found continued support from their families after years of struggling with the women's addiction and severe consequences of their drug use. Four of the women interviewed in

this study identified positive support from their partners, siblings who were sober or who had overcome their own past addictions, or from their parents. These supportive relationships had a direct influence on the reduction of illicit drugs and other substances. One woman described the support she received from her partner who was also in treatment for drug use. When the woman felt like quitting the treatment program, her partner was the one who encouraged her to go back. As the women described:

I was lonely ...so I took off and then I went to see him and then he told me to go back, go home and call [the treatment center] and try to get back in the next day...he said it's [her leaving treatment] going to get us farther back from getting our daughter's back...he completed treatment...and now he's in a recovery home. It made me really want to go and get help for myself now. (Participant 2).

Another woman described her relationship with her sister:

[Her sister] didn't even talk to me for the longest time until I entered [treatment center] and that's when she started talking to me...I always used to phone her for money and she would never give me [the money]. Now that I'm in [treatment center] she told me she would support me all the way....she has two kids, she has her own place, so that's kind of where I want to be [in the future]. (Participant 3).

The Road to Recovery

The road to recovery refers to the journey of the women from problematic illicit drug use during pregnancy to entering a substance use treatment program. The pregnant or post-partum women interviewed in this study identified the motivation to quit using illicit drugs, entering a substance treatment program for illicit drug use, treatment experiences that impacted their recovery and barriers to treatment that impacted their illicit drug use. All of the women in the study had, at some point, been to treatment for their drug use and many of them had attempted treatment multiple times. The road to recovery from illicit drug use by women was described as difficult and was motivated by many factors. In many instances, pregnancy was the motivation for women to enter

treatment or to reduce their use of illicit drugs. In some cases, treatment was court ordered or social service ordered in order for the woman to retain custody of her baby or to regain custody of other children in care of social services. In other cases, the woman herself was motivated to enter treatment on her own. The women in the study described treatment experiences that were characterized as both positive and negative. These experiences had a direct impact on their use of illicit drugs and other substances with positive experiences promoting a reduction in use, while negative experiences led the women to avoid treatment and in some cases caused an increase in the use of illicit drugs.

Motivation to reduce the use of drugs or alcohol. In this sample of women, pregnancy and the desire to keep their baby as well as regain custody of their other children were motivators for the women to quit using illicit drugs. Pregnancy was a time that women recognized the need to reduce their use or stop using illicit drugs completely. One woman described her reduction in use when she found out she was pregnant:

...I was more sober than not throughout my pregnancy, but I did use...quite a bit...like especially the first three months that I didn't really know that I was pregnant I used heavily. [Once I found out that I was pregnant] I was clean for three months and then I was off and on [with the use of drugs]. (Participant 6).

Another woman described the impact that her pregnancy had on her illicit drug use:

[The biggest impact on my use of illicit drugs was]...because I found out I was pregnant. I think that...if I wasn't pregnant I would still be ...still be out there. (Participant 3).

Regaining custody or keeping custody of their children was also noted as the motivating factor in reducing their use of illicit drugs. As the women described:

...But, I'm going to do whatever I have to this time, stay sober and keep this little guy in my life...and what's helping me is this little guy here and myself wanting to be sober more than ever now and I guess I am actually thinking about what's going to happen in the future now. Like you can't keep using cause it's getting me

nowhere and it doesn't help by having more kids and just letting them go like that. (Participant 5).

Well, my plans are now is I'm waiting to get myself [steady in treatment] and go into [treatment program] for 28 days....then to go into a second stage home, a recovery home... [and then] try to get them [her kids] back. (Participant 2).

[My goal is]Just to get my son back and stay sober. (Participant 3).

For other women, the impact of their drug use on the relationships with their children was the motivation to reduce their use. One woman, following the birth of her fifth child, began to realize how drug use has impacted her bond with her children. She described how she didn't want to lose the mother-child bond with her baby as she did with her other children. She desperately wanted to restore her relationship with her other children who were previously apprehended from her care. She described:

...I don't want to use anymore...like looking at my other son, my two year old with my mom, like the bond that they have that should have been mine, and I was using, that was an excuse to use and now ..that made me realize that I wanted that bond back and I want to do whatever it takes to get my babies close to me like that again...it's hard for me to sometimes tell them that I love them 'cause I don't know how to say it. (Participant 5).

The majority of the women in the study described their children as the motivation to enter treatment programs and reduce their use of illicit drugs. Women entered treatment to maintain or regain custody of their children. Several women described their motivation for entering treatment:

[The motivation to enter treatment was] to get my kids back...I just want my kids back, but I will give the benefit of the doubt that there might be something else, but I know there isn't. So, I want to get parenting out of it...and dealing with addictions stuff and actually they did start the onethey just started on Tuesday, it's going on right now, understanding emotions. (Participant 7).

[The motivation to enter treatment was]My kids...because they were in care and we had to do treatment and everything to get them back. (Participant 2).

Experiences in treatment. Treatment programs that the women described in this study included detoxification, abstinence and behaviour modification, methadone maintenance therapy and attempts at harm reduction. All of the women in methadone maintenance therapy described positive experiences with the program that had a direct influence on their reduction in drug use:

...I thought no one was like me, like no one, there's nobody who could be addicted the way that I am, but there's lots...there's more. It's [Methadone treatment] been very good. I don't have to worry about buying the pills...and I can do everyday things, like just get up and do things...and I feel good about myself, like it just helps. But like you don't get high off it, you just feel normal...and I never felt normal for about ten years...and you don't have to live with the pain and the withdrawals. (Participant 1).

It [methadone treatment] helps a lot...like I don't have to use, so it's helping me. (Participant 2).

For women who had attended other forms of treatment, the experiences were described as difficult both physically and emotionally. For women who were pregnant, the physical labour of the work programs were difficult. One woman described:

Um, you really just got to get used to the environment you're in where they don't allow you to make phone calls, they don't allow you to have money, you have to be escorted everywhere...days of getting used to that kind of, accepting that you know, don't get what you want um kind of thinking...even physically, it was hard for me to do [the physical work of the program]. (Participant 7).

Some women found the treatment programs difficult and lots of work; however they did feel that it was beneficial in regards to reducing their illicit drug use. As one woman described:

[Treatment program] Yeah, it was very...they make you do more work...like the way we have a binder, work every day, there's homework, there's a lot of talking, like it wasn't easy, but it did help. (Participant 1).

Despite the hard work and difficult programming, one woman described her experience and her reason for continuing with the program:

Sometimes I want to give up but I always think about my two daughters. So I just keep trying to do what I got to do. (Participant 2).

Many of the women described that they started but did not complete treatment programs and they resumed their use of illicit drugs once they left the program. Many of the women in the study described a cyclical pattern of using illicit drugs, entering treatment programs and then using illicit drugs again. One woman described her experience:

So I stayed there for three months [at the treatment center] and the day I left, the night I left there, I started drinking...and I think I drank the whole month of February, every day. (Participant 5).

Well, I went into [treatment center] when I was about eight months pregnant...I got kicked out [for using illicit drugs]. Then I went to [another treatment center] and I didn't last there. I only lasted about two weeks and then I got kicked out of there for using. (Participant 3).

Barriers to Treatment. For some women, the barriers to treatment were a deterrent and led to their inability to receive treatment. This had a direct impact on their ability to reduce their illicit drug use and other substances.

Many women spoke about the difficulty with wait times as a barrier to treatment. Although pregnant women were considered a priority for treatment, women still reported having to wait for a treatment spot to become available. Wait times for treatment were even longer for women who were not pregnant. The long wait times made it difficult for the women, as by the time a treatment spot became available, the window of opportunity for them was closed and their drug use continued. When a treatment opening became available, the women no longer wanted treatment or could not go for other reasons. As one woman described:

About going to treatment...a lot of times...it took too long...like to wait and then when the day came saying oh you can go into treatment, there's a treatment opening for you. I didn't really want to go after. (Participant 2).

For other women, the biggest barrier to treatment was their readiness to enter treatment. Being forced or pushed into going for treatment had a negative impact on the women's use of substances. Instead of promoting a decrease in use, the substance use either continued or became worse. Women explained that they wanted to enter treatment when they felt that they were ready; on their own terms. Women talked about their resentfulness of being forced to enter treatment and in many cases would leave the treatment program before completion or would refuse to go. Some of the pressure to enter treatment came from women's partners or families while other sources of pressure to enter treatment came from CFS or was court endorsed. One woman described her experience of being pushed into a treatment program and her reasons for resistance:

Well, I went through the orientation...to find out if I needed to take anything there [programs at a treatment facility]...there was one that [was] offered and that I agreed to but once my worker started to push me, I didn't want to because I wanted to do it on my own...it was my choice and it was something she was pushing me to do...that's just how I am....people pushing me [makes me stop wanting to go]. (Participant 9).

In addition, emotional readiness to enter treatment impacted women's use of illicit drugs. Many of the women described their experiences with not being emotionally ready to participate in treatment programs. As one woman described:

I did once [try to go to treatment] but it didn't help me because I was not ready...I forced myself to go...I made myself go but I was not ready to, to sit there and talk about my feelings. I was scared so I went back to using. (Participant 8).

Self motivation was also noted to have a direct impact on a women's use of illicit drugs and their readiness to enter a treatment program. As one woman described:

...I kept saying, "I'll do it tomorrow [treatment], I'll do it tomorrow" and never getting to it until I really had to...Like I went through treatment not just because she told me too, but because...I wanted to. I wanted to do it, yeah...(Participant 1).

Self motivation and a woman's readiness for treatment were also described by another woman. A woman with a long history of illicit drug use described how it took years for her to be ready to enter treatment and described how her illicit drug use escalated until she was ready to enter on her own:

...they tried to get me into counselling and they put me in a group home, you know and I'd just run away from there...just, you know, rebel more...I mean you can't really help someone until they want to help themselves unfortunately...it took us years to get to that point. (Participant 10).

In addition, the level of awareness regarding how to access treatment or other resources also impacted a women's use of illicit drugs and other substances. Most of the women had experiences with treatment in the past and knew exactly how to access treatment on their own. Two women explained:

Participant: I was staying at [treatment center]...I went in there when I was about eight months pregnant.

Interviewer: And how did you hear about that program?

Participant: On my own.

Interviewer: And was it difficult to get into the program?

Participant: No, it took me about a week and a half to get into it...and it was because I was pregnant, first priority.

Interviewer: ...did someone tell you [about the treatment center]?

Participant: No, I knew that... Because I got a pamphlet from [community program]. (Participant 3).

In other instances, women who did not know how to access treatment programs sought out incarceration as an option to reduce their illicit drug use. One woman, recognizing the need to reduce her illicit drug use, and who was wanted on an outstanding warrant for her arrest, turned herself in to authorities in order to force herself into detoxification by going to jail:

I got breaches for leaving [name of the treatment center]...so I had a warrant for my arrest...I turned myself in because I was starting to use again and I, it, was getting worse. I wanted it to stop and that was the only way I knew how because I

didn't know how to ask for help any other way...I thought if I turned myself in, I'd be cured again. (Participant 5).

Summary of the Qualitative Component

This portion of Chapter 5 presented the findings of the qualitative component of this mixed methods research study. The demographic characteristics of the sample were presented. Four themes were described including the categories that were found within each theme. The four themes included: (1) living a chaotic life as a child, (2) complicated life circumstances, (3) social support system, (4) and the road to recovery. The following chapter will include a discussion of the findings of the research study; mixing of the quantitative and qualitative findings; the appropriateness of the research model; nursing and policy implications; future research implications; limitations of the study; and conclusions about this research project.

Chapter Six: Discussion

This study was designed to examine the demographic and psychosocial correlates of illicit drug use and explore the life experiences and circumstances that contribute to women's use of illicit drugs during pregnancy. Few studies have examined the circumstances that may have motivated a woman to use illicit drugs during pregnancy. There are no studies known to date that have utilized a mixed methods approach to examine women's experiences with illicit drug use during pregnancy. Findings from this research study will enhance existing knowledge on demographic and psychosocial correlates of illicit drug use during pregnancy while providing an in depth understanding about experiences that may motivate women to use illicit drugs while pregnant.

In this chapter, the results of the quantitative component, including findings from the logistic regression analyses, and the results of the qualitative component of the study will be discussed in the context of the published literature. In keeping with the sequential explanatory mixed methods design, the results of the qualitative component will inform the results of the quantitative component. An assessment of the suitability of the conceptual framework by Tucker (1978) will be discussed as well as an explanation of how the findings relate to the framework. Limitations of the study, implications for nursing practice and directions for future research will also be explored.

Discussion of Research Findings: Quantitative Component

This section will discuss the key findings from the quantitative component of this mixed methods study. A number of demographic, psychosocial, and health behaviour variables were found to differ significantly between women who used illicit drugs during pregnancy and those who did not.

Demographic Variables

First Nations ethnicity. The multivariate logistic regression analysis without interactions showed that there was a statistically significant independent relationship between being of First Nations ethnicity and the use of illicit drugs during pregnancy. In addition, the model with interactions showed that women of non-First Nations ethnicity in this study were significantly less likely to use illicit drugs during pregnancy than First Nations women. These findings are consistent with a study by Merrill and Heaman (2009) that examined characteristics of Canadian women who used illicit drugs in the three months prior to pregnancy. The study was a secondary analysis of data collected through the national Maternity Experiences Survey (Public Health Agency of Canada, 2009), and identified that women of Aboriginal ethnicity (including women of First Nations ethnicity living off reserve) were 2.5 times more likely to use illicit drugs in the three months prior to pregnancy than non-Aboriginal women. It could be assumed that women who had higher rates of illicit drug usage prior to pregnancy may be at an increased risk to use illicit drugs during pregnancy.

There is limited information regarding the association between being of First Nations ethnicity and illicit drug use especially by women. This is mainly due to the fact that the majority of population based surveys, such as the Canadian Addiction Survey (Health Canada, 2004), the Maternity Experiences Survey (Public Health Agency of Canada, 2009) and the Canadian Community Health Surveys (Tjepkema, 2004; Statistics Canada, 2002, 2009) do not include First Nations people living on reserves. Additionally, First Nations ethnicity is often combined with Inuit and Métis ethnicity and declared as an Aboriginal ethnicity, making the distinction between true First Nations

populations and other populations more difficult. For example, a study by Gfellner and Hundleby (1995) that examined drug use by Aboriginal people within Manitoba living off-reserve identified that Aboriginal people's use of drugs, including marijuana, non-medical tranquilizers, non-medical barbiturates, LSD, PCP, other hallucinogens and crack, were significantly higher than non-Aboriginal groups (Gfellner & Hundleby, 2005). There was however no distinction between the groups identified as Aboriginal.

It appears that illicit drug use among First Nations may be problematic. In a Federation of Saskatchewan Indian Nations study (1984) that examined the issue of drug use among First Nations adult and adolescent youths, 57 % of adults used illicit drugs in the previous year, with almost 27 % of those adults using drugs on a regular basis. Youths reported similar use of illicit drugs with 57 % of youths using illicit drugs in the previous year and 19 % using illicit drugs on a regular basis. In addition, one publication by Health Canada (1998) that evaluated the National Native Alcohol and Drug Abuse Program (NNADAP) describes a leadership questionnaire regarding First Nations communities and the problem of addiction. Of the leadership respondents, 83 % felt that alcohol use was a frequent or constant problem in their community and 71 % felt that illicit drug use within their community was frequent or constant (Health Canada, 1998). Although the survey did not differentiate between gender differences within the community, the fact that leaders within the First Nations communities felt that alcohol and illicit drug use was highly problematic is important. Despite lack of actual known prevalence rates of illicit drug use among women of First Nations ethnicity, these statistics support the suspicion that problematic use likely exists to some degree within First Nations communities.

In order to understand the health of Aboriginal women, including First Nations women, it is important to recognize the impact of their social, political, and economic situations as well as their history (Stout, Kipling, & Stout, 2001). The impact of colonialism on First Nations populations, including the trauma from residential schools, as well as poverty, community stress and violence may contribute to the substance use problems noted among this population (Stout et al., 2001). By acknowledging their complex history and being sensitive to the challenges that First Nations women and families have endured, a greater understanding of the issues that impact women who use illicit drugs during pregnancy will result.

Other demographic variables. Many other demographic variables were examined in the bivariate logistic regression analyses. Consistent with previous studies, age ≤ 25 years, single marital status, low income, and having less than a high school education were all significantly associated with illicit drug use during pregnancy. However, after adjusting for other demographic, psychosocial and health behaviour factors in the multivariate logistic regression analysis, none of these demographic factors remained significantly associated with illicit drug use in pregnancy. Interestingly, a study by Havens et al. (2009) which examined factors associated with substance use in pregnancy, also did not find an association with substance use and age based on a multiple logistic regression that controlled for other demographic and psychosocial variables. Although the proportion of women who use illicit drugs during pregnancy in most studies are younger, normal childbearing years fall between the ages of 19 and 35, and thus there may not be significant differences among ages of women in most samples. In regards to marital status, Havens et al. (2009) found after controlling for all other

variables, women who were married had a significantly lower likelihood of using substances during pregnancy than women who were unmarried. The results from this study were not consistent with Haven's findings, possibly because this study controlled for different factors that may have been stronger correlates of drug use than marital status.

Health Behaviour Variables

Smoking and alcohol use during pregnancy. The multivariate logistic regression analysis showed a strong independent association between both smoking and alcohol use with women's use of illicit drugs during pregnancy. Women in the study who smoked during pregnancy were more than twice as likely to use illicit drugs as women who did not smoke, after adjusting for other variables in the model. These findings are consistent with multiple other studies that have found an association between smoking and illicit drug use (Burns, Mattick, & Wallace, 2008; Heaman & Chalmers, 2005; Jesse, Graham, & Swanson, 2006; McDermott, Dobson, & Russell, 2004).

In addition, women in the study who were consuming alcohol had 3 times the odds of using illicit drugs during pregnancy compared to women who were not consuming alcohol during pregnancy, after adjusting for other variables in the model. This finding is consistent with other studies that have found that alcohol use in pregnancy to be a risk factor for illicit drug use by women during pregnancy (Ebrahim, & Gfroerer, 2003; Gladstone et al., 1997; Haynes, Dunnagan, & Christopher, 2003).

Although the reason for the strong association between both smoking and alcohol use during pregnancy and illicit drug use is not well understood, concurrent use of these substances has been reported in the literature (Gilman et al., 2008; Heaman & Chalmers,

2005; Svikis et al., 1997; van Gelder et al., 2010). In some instances, women may begin with one addictive substance, such as cigarette smoking, and progress to other stronger substances. Perhaps this is true of women from vulnerable populations, including women who are younger, less educated, single or from a low income population, who may seek out progressively stronger substances to cope with difficult life circumstances. In addition, women from First Nations populations where tobacco use is highly prevalent and has its origins in cultural tradition may be more likely to smoke as compared to other populations.

Psychosocial Variables

Depression. Women who were depressed were more than 4 times as likely to use illicit drugs while pregnant compared to women who were not depressed, after adjusting for other variables in the multivariate logistic regression model. The findings from this study are supported by previous work that showed that depression is associated with illicit drug use by women during pregnancy (Kerker, Horitz, & Leventhal, 2004; Turner, Russell, & Brown, 2003). According to the CCHS (2002), women who reported being depressed in the last year were almost 4 times as likely to use illicit drugs compared to women who did not report depression in the last year (Statistics Canada, 2002). This finding was consistent with the results of a study by Merrill & Heaman (2009) that explored women's use of illicit drugs in the three months prior to pregnancy. They found that women who were depressed were almost twice as likely to report using illicit drugs as women who were not depressed. Although Merrill and Heaman's study did not examine women who continue to use illicit drugs during pregnancy, women who use illicit drugs prior to pregnancy and who may be dependent on the illicit drugs in addition

to being depressed, may be at a higher risk of using illicit drugs during pregnancy.

Additionally, Turner et al. (2003) examined the use of illicit drugs by young Australian women and found that both being pregnant and being depressed were significantly associated with poly drug use by women.

In addition, many studies have examined the use of substances by women and have found that women who use substances, including illicit substances, commonly report depression and emotional distress as reasons for using substances (Benowitz, & Hatsukami, 1998). In Canada, women who have problematic alcohol use and illicit drug use are between 2 to 4 times more likely to develop depression compared to women who do not develop substance use problems (Ross, 1995; Tjepkema, 2004). In most studies, rates of depression and substance use are higher for women than men. Women who are dependent on illicit drugs in the previous year are almost 8 times more likely to experience depression than men (Tjepkema, 2004).

The relationship between depression and illicit drug use is not surprising considering that women with a history of illicit drug use have often reported depression, early trauma, and posttraumatic stress disorder (PTSD). In one study by Moylan, Jones, Haug, Kissin, and Svikis (2001), pregnant drug-dependent women with PTSD were twice as likely to have a lifetime mood disorder compared to pregnant drug-dependent women without PTSD. Early life stress, such as childhood sexual abuse, is also significantly associated with the risk of developing psychiatric illnesses such as depression and substance abuse especially among women (Weiss, Longhurst, & Mazure, 1999; Wilsnack, Vogeltanz, & Klassen, 1997). Childhood sexual abuse is also a known risk factor for women who use illicit drugs. Additionally, it has been found that women

compared to men who experience life stressors, are at greater risk for major depression (Maciejewski, Fleming, & Streiner, 2001); thus women who use illicit substances and have a history of childhood sexual abuse or trauma may report higher rates of depression. In many instances the use of illicit drugs by women is concurrent with the use of other substances and in response to traumatic life events.

Low self-esteem. Multivariate logistic regression analysis revealed a significant independent association between low self-esteem and illicit drug use by women during pregnancy. Women who had low self-esteem were almost twice as likely to use illicit drugs during pregnancy compared to women with higher self-esteem, after adjusting for other variables in the model. Similar findings were noted in a study by Curry (1998) that examined the relationship between substance use, abuse and psychosocial stress during pregnancy. Curry found that women who used substances and were also physically abused were significantly more likely to have low self-esteem, low partner support, low support from others, and higher stress. The reason for this association could be that women with low self-esteem may not have the resources, the personal strength or supportive relationships to cope with difficult circumstances. In this case, women with low self-esteem may turn to the use of illicit drugs as a way to cope with their stress and feelings of low self-worth.

This finding is also supported by a qualitative study of 32 women that examined factors that contributed to relapse among substance using women in the United States (Sun, 2007). Sun (2007) identified women with low self-esteem who had quit using illicit drugs as more likely to relapse back into a life of using illicit drugs. Sun reported that women's self-esteem or self-worth was directly related to her male partner. Sun

identified that for women who use illicit drugs, losing a partner is equal to losing their self-worth. A woman may use, quit and relapse because they do not want to lose the man in their life (Sun, 2007). For example, a woman may use illicit drugs to please her partner because her partner uses, then quit because he quit and then relapse because her partner relapses. Additionally, when the male partner leaves her, she may perceive her life as empty, purposeless and meaningless without her partner. Additionally, women may tend to be reliant on the male partner as women who use illicit drugs may lack resources and employment (Sun, 2007).

Interaction of non-First Nations ethnicity and smoking. Multivariate logistic regression analysis showed a significant association between women who were of non-First Nations ethnicity and who smoked during pregnancy with illicit drug use during pregnancy. Non-First Nations women who smoked had 4.5 times the odds of using illicit drugs during pregnancy after adjusting for all other variables in the model. Smoking may have a stronger association with illicit drug use among non-First Nations women than First Nations women, because of the high smoking rates among First Nations women in general.

Interaction between age 25 years or greater and no regular health care provider. Women aged 25 years and greater who did not have a regular health care provider before they became pregnant were more than 3 times as likely to use illicit drugs during pregnancy after adjusting for all other variables in the multivariate logistic regression model. This finding may indicate that women who are older and do not have a regular health care provider may not be as concerned with their overall health. Women may avoid having a regular health care provider due to not wanting to reveal their drug

use, or rely on walk-in clinics or other inconsistent forms of health care due to an unstable and chaotic lifestyle. It is important for all women to have a regular health care provider and women who are over the age of 25 should have had some contact with a health care provider for regular checkups. This finding could also indicate a problem with access to health care professionals for routine health care of women in the inner-city areas, perhaps due to a shortage of family physicians, who would normally be expected to provide care to women.

Interaction between age 25 years or greater and depression. Multivariate logistic regression analysis showed a significant association between women aged 25 years or greater who are depressed and illicit drug use during pregnancy. Women 25 years of age and older who are depressed were less likely to use illicit drugs during pregnancy compared to younger women who were depressed after adjusting for all other variables in the model. This finding could indicate that women who are older are more likely to acknowledge their depression and access services or assistance to treat their depression instead of using illicit drugs to cope with their depression symptoms. Younger women may not recognize their symptoms of depression and may not feel as comfortable disclosing feelings of depression or have the ability to access services to treat their depression. Thus, younger women may use illicit drugs to cope with their depressive symptoms.

Interaction between age 25 years or greater and being a primipara. Multivariate logistic regression analysis showed that women who were older, age 25 years and greater, and pregnant with their first baby, a primipara, were less likely to use illicit drugs while pregnant after controlling for all other variables in the model. This

finding could indicate that women who are older and pregnant for the first time are more aware of the impact of illicit drug use during pregnancy on the health of a fetus as compared to younger women and may avoid illicit drug use while pregnant. Additionally women who are older may plan their pregnancies more often as compared to younger women who may be more likely to have an unplanned pregnancy. Women with planned pregnancies may be less likely to use illicit drugs during pregnancy than younger women with unplanned pregnancies.

Discussion of Research Findings: Qualitative Component

This section of the discussion will examine the themes and categories that were identified in the qualitative component of this study and relate them to other literature.

Living a Chaotic Life as a Child

The first theme that was identified from the interviews with the women was living a chaotic life as a child. This theme captures chaotic childhood events that impacted the woman's use of illicit drugs. Women described childhoods characterized by their parents and other family member's use of illicit drugs in the home, living in foster care, and living through painful events in their lives such physical and sexual abuse.

Exposure to family and friend's use of alcohol and illicit drugs. Women in this study reported being exposed to drugs and alcohol in the home at a young age. In many cases, this was the first experience with alcohol and drugs by the women. The practice of using illicit drugs and other substances may often be deeply rooted within a family and into the extended family as well (Nehls & Sallman, 2005). In some instances the use of illicit drugs and alcohol is so common among families that it becomes just a normal part of the women's life. This is consistent with findings from a study by Derauf et al. (2007)

where a significant association was found between prenatal methamphetamine use by women and a family history where substance use was normalized. Perhaps the impact of women growing up in a family environment watching the use of substances by family members, in many cases including their own mothers, made their use of illicit drugs and other substances acceptable in their own minds. Family modelling of substance use behaviours have been found to be specifically related to the use of substances by adolescent children (Alati et al., 2005; Hayatbakhsh et al., 2008). The use of substances in many cases may continue into early adulthood and for women into the child bearing years. The modelling of substance use behaviour by the mother and other family members is an important finding of this study that is well supported within the literature.

In addition to family members' use of illicit drugs and other substances, women reported that having friends that use illicit drugs had an impact on their own use of illicit drugs. This finding is consistent with a longitudinal study of 4138 subjects by Korhonen et al. (2008) that explored factors that predict the use of cannabis and other illicit drugs among Finnish twins. This study found a significant association between illicit drug use and peers' use of illicit drugs. In fact, as the number of friends who use illicit drug increases, the odds of illicit drug use by an individual increase dramatically (Korhonen et al., 2008). This is not a surprising finding in that peer pressure and the need to be accepted by friends may be an important motivator for women to both start using illicit drugs and to continue using. Smoking by peers was also shown to have a significant impact on a person's use of illicit drugs; however, the impact was shown not to be as great as having peers who use illicit drugs (Korhonen et al., 2008).

Unstable home life. Due to their parents' issues with drugs and alcohol and the use of these substances in the home environment around their children, women in the study identified being placed in foster care as children. All of the women in the study were in foster care homes at some point in their lives. The majority of women described living in multiple different foster care homes in their childhood and described being back at home with their families for brief periods though out their childhood. This is consistent with other studies that have found that a disruption in the family structure and changes in maternal marital status often predicts substance use into adolescence and young adulthood (Hayatbakhsh, Najman, Jamrozik, Mamun, & Alati, 2006; von Sydow, Lieb, Pfister, Holfner, & Wittchen, 2002). Being in foster care was described by the women as having had an impact on their use of illicit drugs as they lost the parental figures in their lives. The lack of a consistent parental figure and inconsistent parental monitoring while in foster care may have also contributed to the women's use of illicit drugs. This finding has also been reported in other studies where a lack of parental monitoring and supervision may have a significant effect on the initiation of childhood substance use (Chilcoat, & Anthony, 1996; Dishion, & McMahon, 1998). In the case of children in foster care, substance use may begin at an earlier age if the children are not well monitored or supervised on an ongoing basis. As many of the foster care homes also had older children living in care, younger children had access to illicit drugs and alcohol due to having older friends in the foster home. Not only did the older friends use illicit drugs and alcohol, but they also provided it to the younger children as well. Without the opportunity of exposure to illicit drugs and alcohol by older children and with proper supervision by adults in the foster care environment, the opportunity of exposure to these

substances may not have arisen. Without proper monitoring and supervision, friendships with peers who use illicit drugs and alcohol may provide opportunity and increase the likelihood of using illicit drugs and alcohol as well (Korhonen, 2008).

Abuse. Among the sample of women who participated in this study, four of the 10 women reported having a history of childhood sexual abuse. In most cases, the perpetrator was a family member of the woman. The finding of childhood sexual abuse as being highly associated with illicit and licit drug use (Hans, 1999; Nelson et al., 2006) and with illicit drug use in pregnancy is well supported in the literature (Leeners, Stiller, Block, Gorres, & Rath, 2010; Seng, Sperlich, & Kane Low, 2008). In this sample, the women recalled the abuse as starting as young children, sometimes as young as five years old. Although the sample population for the qualitative study was purposive and not meant to be representative, the age of first sexual abuse reported by the women is comparable to a cohort study from Germany that examined pregnancy complications of 85 women who had experienced childhood sexual abuse compared to 170 matched women who had not experienced abuse (Leeners et al., 2010). According to Leeners et al. (2010), 41 percent of sexual abuse incidents among women in the study occurred before the age of 6 years. This study also found an association between childhood sexual abuse and substance use with 14 percent of the women who experienced sexual abuse as a child also reported the use of substances during pregnancy.

The childhood sexual abuse described in this study may have contributed to the chaotic nature of their lives and had a direct impact on their use of illicit drugs in their adult lives. Unstable living arrangements, coupled with family dysfunction, and parental substance use may have led to an environment where child sexual abuse could easily

emerge. Findings such as these were noted by Dunlap, Golub, and Johnson (2004) who explored experiences of inner-city women in New York and examined the relationship with the co-occurrence of drug use and violence in the home. In this study, childhood sexual abuse was found to be wide spread and considered normal in many impoverished inner-city households and contributed significantly to the chaos in the children's lives (Dunlap et al., 2004). It also had a significant impact on the use of illicit drugs by women into adulthood. Childhood sexual abuse and other violence in childhood were also linked to a loss of trust among the women in this sample population. This relates to findings from another study by Roberts (1999) who found that as a result of abuse during childhood, women had difficulty giving and receiving love, developed a sense of low self-worth and had difficulty with trusting themselves and others.

Traumatic losses in their lives. Women in this study described traumatic losses in their lives that contributed significantly to their use of illicit drugs. In addition to losses resulting from childhood sexual abuse as previously described, traumas included the violent deaths of parents, losses of parental figures when children were apprehended and placed in foster care and the loss of contact with siblings. These events were described as painful by the women and in some cases led to an escalation in drug use following the traumatic loss. Similar experiences have been previously described by Roberts (1999) who also described the devastating losses of significant people, such as the death of a parent, in the lives of children as causing an escalation in substance use following the loss. Roberts identified feelings of guilt that emerge following the traumatic event, even if the relationship between the child and the parent or significant other was not a good

relationship. Traumatic losses as a child may have a significant impact on the future ability to cope with problems of everyday life.

Complicated Life Circumstances

For many women in this study, chaotic lives filled with stress and emotional distress characterized their daily life experiences. Illicit drug use was identified as a way to cope with these situations.

Chaotic lives. Women in this study described complex, chaotic and stressful lives that led to an escalation of illicit drug use. The use of illicit drugs by the women was used as a coping mechanism to deal with their chaotic lives but the illicit drug use also contributed to the chaos in their lives. As the women's drug use escalated, so did the problems in their lives, which led to the women experiencing a loss of control. The women eventually succumbed to their addiction and a repetitive cyclical pattern of illicit drug use, treatment and relapse was evident throughout the course of their lives. This cyclical pattern could be attributed to the cyclical nature of abuse, substance use and mental health problems that comprise the lives of women who use illicit drugs during pregnancy. This cycle of abuse was described by Nehls and Sallman (2005) in a qualitative study of 30 women in the United States that examined the needs of women with a history of trauma, substance use and mental disorders. The results of this study support the inter-relationship of these three common characteristics of women who use illicit drugs during pregnancy. Overcoming a history of illicit drug use may be impacted by the complex cyclical nature of these relationships and explains why preventing relapse is a great challenge.

Stressful lives. Stressful events in women's lives had an impact on their illicit drug use during pregnancy. Psychosocial stressors such as unplanned pregnancies, difficult relationships with partners and the use of illicit drugs while pregnant were identified as stressful by the women and contributed to their use of illicit drug use during pregnancy. The relationship between high levels of psychosocial stress and the use of illicit drugs during pregnancy was supported by a study by Woods, Melville, Guo, Fan and Gavin (2010). This cross sectional analysis of data from 1522 women receiving prenatal care at an obstetrical clinic in Seattle, Washington from 2004 to 2008 found that maternal drug use increased the odds of high psychosocial stress in pregnancy by 3 to 4 times (Woods et al., 2010). Thus women who have high levels of perceived psychosocial stress are more likely to use illicit drugs to cope with their stress as noted in this study.

Many of the women in this study identified their pregnancies as unplanned. The fact that the pregnancies were unplanned may have led to the exposure of the fetus to substances such as illicit drugs and alcohol, as the women were unaware of the pregnancy. Additionally women who use illicit drugs may have fewer inhibitions when using illicit drugs and may not use adequate birth control. It is not surprising to think that women who use illicit drugs may be at a higher risk of becoming unintentionally pregnant. This finding was supported by a study by Than et al. (2005) that examined a women's intention of becoming pregnant and exposures to substances. They found that women who had unintended pregnancies were more than 3 times as likely to have used illicit drugs during pregnancy than women whose pregnancies were planned. The unintended pregnancy may lead to higher levels of stress and thus increase their use of illicit drugs while pregnant.

The use of illicit drugs during pregnancy and the concern of harm to the developing baby caused by exposure to illicit drugs while in utero were identified as stressful for the mothers in this study. Women were acutely aware of the detrimental impact of illicit drugs and other substances on the developing fetus which led to feelings of guilt by the women. Strong feelings of guilt by women using illicit drugs during pregnancy were also noted in a qualitative study by Shieh and Kravitz (2002). They found that women had a strong affection towards their unborn babies that was heightened by the fear of losing their baby due to their illicit drug use. They also noted that women had feelings of guilt related to the damage caused by their illicit drug use (Shieh & Kravitz, 2002) which supports the findings of this study. Interestingly, although women identified their use of illicit drug use as being detrimental to the health of themselves and their babies and suffered feelings of guilt for continuing to use illicit drugs, women often continued to use illicit drugs. The continued use of illicit drugs may have been due to the women's addiction to the drug or perhaps more likely due to the use of illicit drugs being one of the main coping mechanisms utilized by the women in the study.

Difficult and unstable relationships with partners were also identified as having an impact on a woman's use of illicit drugs. Some women described emotional and physical abuse by partners which impacted their use of illicit drugs during pregnancy. These findings are consistent with other studies that examined illicit drug use during pregnancy and physical abuse by partners (Clark et al., 2001; Kunins et al., 2007; Sales & Murphy, 2001; Tuten et al., 2004; Wenzel et al., 2004). Other women described their partner's use of illicit drugs as motivation to use illicit drugs during pregnancy.

Women also identified the use of illicit drugs as a way to relax and relieve the pressures of everyday life. Additionally, some women used marijuana as a way to reduce pregnancy symptoms such as nausea. Women in the study had a relatively casual attitude toward the use of marijuana and appeared to believe that marijuana was not harmful to a developing baby. This finding points to the need for increased education about the potentially harmful effects of all illicit drugs during pregnancy and the need for harm reduction strategies.

Emotional distress. It was evident throughout this study that illicit drug use was used by the women as a coping mechanism to deal with past and present emotional distress as well as symptoms of depression. Problems with anxiety and depression pre-pregnancy were often compounded during pregnancy and many women reporting symptoms of post-partum depression following the birth of their babies. Depression and other co-occurring mental illnesses have been commonly linked to illicit drug use and other substances by women during pregnancy (Bolnick & Rayburn, 2003; Kennare et al., 2005; Kerker et al., 2004; Sales & Murphy, 2000); however the relationship between substance use and depression is complex and dependent on many aspects including biological, psychological and social factors (Koehn & Hardy, 2007). As a woman's use of illicit drugs or other substances increase to cope with the feelings of depression, instead of reducing the symptoms the use of illicit drugs and other substances may actually cause the depression to become more severe. Although it may be difficult to determine causal association between substance use and depression, this relationship was noted in one longitudinal study by Wang and Patton (2002) which examined the effect of persistent alcohol consumption on the risks of depression. This study found that women

who drank more than five drinks on one occasion at least one time per month had a higher risk of depression and thus a causal relationship between alcohol use and depression may exist (Wang & Patten, 2001).

Women also identified as being lonely which also contributed to their use of illicit drug use. Dowdell et al. (2009) who examined the postpartum experiences of women who used illicit drugs during pregnancy reported similar findings. In this qualitative retrospective study, the medical records of 20 illicit drug using mothers were examined to describe the postnatal experiences of the women. They found that in all 20 cases that were examined the women experienced anxiety and depression as well as loneliness in their lives. Women who described feelings of loneliness may have felt disconnected to their social community as they struggled to parent their children while dealing with their own addiction. It is likely that depression, anxiety and loneliness contributed to the reportedly high rates of relapse among the women in this study.

The loss of children through apprehensions and the inability of women to parent their children exacerbated their use of illicit drugs as well. The emotional distress experienced by the women following these events often led to an increase in their illicit drug use as well. Shieh and Kravitz (2002) who examined maternal-fetal attachment in women who used illicit drugs during pregnancy found that women who had previously lost children due to apprehension were motivated to love their unborn baby even more due to fear of the current baby being apprehended. The increased feelings of attachment to the unborn baby could make the apprehension of the baby even more painful for the woman and cause an increase in use of illicit drugs following the apprehension of the baby as reported by the women in this study.

Social Support System

Women in this study described social support systems that were contingent on their use of illicit drugs. Women who were using illicit drugs often found social support from friends and family who were also using illicit drugs or other substances; however, these relationships supported the women's use of illicit drugs and other substances. This finding was supported by Galaif, Nyamathi, and Stein (1999) who examined risk and protective factors associated with illicit drug use among a sample of homeless women. Using structural equation modelling, current drug use was predicted by negative social support, or social support from family and friends who were using illicit drugs, depression and less positive coping strategies. Women who received social support from family or friends who also used illicit drugs were more likely to have an increased use of illicit drugs and thus encouraged this maladaptive coping behaviour (Galaif et al., 1999). Distancing oneself completely from one's only source of social support would be a difficult task requiring great strength and determination. Characteristics associated with women who use illicit drugs, including low self-esteem and depression, would make this an even more difficult task. This could contribute to the problem of relapse and may have a direct impact on a woman's success at reducing or quitting the use of illicit drugs.

Treatment Experiences

All women who were currently in a methadone maintenance therapy (MMT) program described a positive experience which supported their reduction of illicit drug use during their pregnancy. For most of the women, the feeling of being normal and not needing the drugs was the most positive and unexpected experience of methadone maintenance therapy. Women seemed to be generally surprised that the therapy was

working and that they were not feeling uncomfortable from withdrawal from the drugs once their dose was stabilized. MMT for opiate dependence during pregnancy has been shown to have positive maternal and neonatal outcomes including earlier access of prenatal services, higher birth weight, and lower incidence of preterm birth (Burns et al., 2006; McCarthy, Leamon, Stenson, & Biles, 2008). In addition to the known positive maternal and neonatal outcomes associated with MMT, women may have found the rigidity of the program somewhat helpful in their compliance with the program. For example, women in MMT are often required to travel to the clinic on a daily basis to receive their dose and are subjected to random urine testing to determine their compliance to the treatment. Women have contact with clinic staff on a regular basis that provide a positive support and encouragement for the women on MMT, thus this type of program may be viewed in a more positive light.

For women who had participated in other forms of treatment such as behaviour modification therapy, detoxification or abstinence, women reported more negative experiences than positive experiences. This may have been due to the physically difficult work required as part of the treatment program including cooking, cleaning and laundry duties. Women described these programs as difficult both emotionally and physically. Many of the women may also have struggled with the emotional work of the treatment programs that required women to directly address traumatic issues from their past while sober and unable to cope with their emotional pain. In addition, the reasons for women entering treatment may have had an impact on her perception of the program. If the women entered the treatment program due to her own motivation, her experience may

have been more positive compared to a woman entering treatment as mandated through the courts or social services.

Motivation to reduce the use of drugs or alcohol. Pregnancy is a time when women may be motivated to reduce or stop their use of illicit drugs (Tait, 2000). In most cases, women are acutely aware of the impact of illicit drug use on a developing fetus and thus they may be more receptive to harm reduction strategies or to entering treatment. The motivation to retain custody of their baby or regain custody of other children may increase during this time thus health care providers should be cognizant of the opportunity to recognize the problem of illicit drug use and provide options for mothers.

Although the focus of this study was not about access to prenatal care, it was interesting to note that all of the women in this study did access prenatal care at some point during their pregnancy, although three women had minimal visits to a health care provider. Accessing prenatal care may be difficult for women who use illicit drugs during pregnancy. The potential apprehension of their children and the punitive consequences of illicit drug use may force women to avoid accessing prenatal care for themselves and in some instances women may not report their illicit drug use to their health care providers as was noted in this study. Frequent medical appointments during pregnancy could provide an opportunity for women to disclose illicit drug use and receive assistance; however, as noted by Rutman, Callahan and Rift (2007), accessing medical care makes the women more vulnerable to being reported to agencies that may apprehend her baby. The importance of early detection and screening of women at risk of illicit drug use during pregnancy without judgement or punitive consequences by health care providers cannot be understated.

Barriers to treatment. Multiple barriers to treatment were identified by the women in this study that had an impact on their illicit drug use. Wait times to enter treatment and entering treatment when not ready to accept treatment, were some barriers that were identified. Tait (2000), who examined service needs of pregnant addicted women in Manitoba, found that wait times for treatment was the most common barrier to accessing treatment, with average wait times ranging from one week to several months. Long wait times led to few choices regarding treatment programs as women felt obligated to enter whatever treatment program became available first (Tait, 2000). In addition, women may be more likely to refuse to enter treatment when they have encountered a long wait time as they may not be willing to go when a treatment spot becomes available or may not have plans in place for the care of their children while they enter treatment.

Entering treatment when not ready to accept treatment was identified as a barrier to seeking treatment for illicit drug use by the women in this study. The majority of the women in Tait's study (2000) were forced or coerced into treatment in order to regain custody of their children from social service but often drop out of the program before completion. In addition, women who did not enter the program on their own will, will not view the treatment as helpful and will not likely relate the information that they learned to their own lives (Tait, 2000). These findings mirror the findings from the current study where women adamantly stated that the decision for treatment should be the women's alone and not coerced or forced.

Integration of the Quantitative and Qualitative Results

According to the sequential explanatory design of this mixed methods study, the findings from the qualitative phase of the study were intended to support and enhance the

findings from the quantitative phase of the study (Tashakkori & Teddlie, 2003).

Although not all of the findings were consistent between the two phases of the study, several of the findings from the quantitative phase of the study were supported by the results of the qualitative study. In the qualitative phase, mental illnesses such as anxiety and depression were identified as having an impact on illicit drug use during pregnancy which supports the finding of depression being significantly correlated with illicit drug use in the quantitative phase of the study. Thus, women who suffer from mental illnesses such as depression are more likely to use illicit drugs compared to women who do not suffer from depression.

The quantitative phase of the study found that women of First Nations ethnicity were more likely to use illicit drugs during pregnancy than women of non-First Nations ethnicity. This may explain why First Nations women comprised the majority of the participants in the qualitative component of this study. It is also important to note that the inner-city population from which the sample for this study was drawn has the highest concentration of Aboriginal people in the City of Winnipeg.

Women in the quantitative phase of the study who had low self-esteem were more likely to use illicit drugs during pregnancy compared to women with higher self-esteem. Although the women in the qualitative phase of the study did not necessarily describe themselves as having low self-esteem, their actions and characteristics were consistent with having low self-esteem. Some of these characteristics included low social support, use of illicit drugs as a coping mechanism, unstable relationships with partners, physical and sexual abuse and prostitution as a way of securing money. These characteristics may

be indicative of low self-esteem and may have influenced their use of illicit drugs during pregnancy.

In addition, the link between alcohol use during pregnancy, smoking during pregnancy and illicit drug use during pregnancy was identified by the women in the qualitative study. Many women reported the concurrent use of these substances during their interview which lends support to the findings of the quantitative component of this study.

The qualitative findings in this study were quite fascinating on their own and provided a greater understanding of illicit drug use by women during pregnancy. Although the results of the qualitative phase supported only some of the findings from the quantitative phase of the study and added understanding of some correlates, the findings from the qualitative phase provide richness and depth to the study by providing a window into the lives of women who struggle with illicit drug use during pregnancy.

Conceptual Framework

As few models exist that accurately describe the phenomenon of substance use within the female population, the social support-stress-coping paradigm was developed by Tucker (1982) to explain female substance use. Key concepts of this conceptual framework include social support, stress, and coping which are characteristics of illicit drug use during pregnancy. The model identifies the importance of the interactions between concepts, and the bidirectional interactions most notably between individual strain and social support, and social support and psychological and physical outcomes.

The results of this study provide support for this conceptual framework in the study of illicit drug use by women during pregnancy. In this study, women identified

multiple sources of stress and emotional distress that led to individual strain such as low self-esteem, high levels of perceived stress, depression and anxiety. Women identified illicit drug use as a coping mechanism to reduce the stress, emotional distress and strain in their lives. As the woman's escalation of drug use continued while using illicit drugs as a way of coping with stressors of daily life, the women suffered extensive psychological and physical outcomes related to their maladaptive coping mechanism, illicit drug use. Some of the psychological and physical outcomes that were reported included the loss of their children, the loss of family and friends, the loss of their homes, and the loss of money. Social support was identified by the women as support from friends and family who use illicit drugs or friends and family who do not use illicit drugs. Social support from family or friends that were actively using illicit drugs contributed to the continued use of illicit drugs by the women and contributed to psychological and physical outcomes that were detrimental to the women. Social support from friends and family who were not using illicit drugs helped buffer the effects of the stressful events or conditions and individual strain at times but not always.

The framework developed by Tucker (1982) provided a solid conceptual framework for understanding the use of illicit drugs by women during pregnancy. The key concepts central to the framework are significantly associated with the use of illicit drugs by the women in this study. The framework provided a useful approach for studying the use of illicit drugs by women during pregnancy that was sensible and relatively simple to understand.

Strengths and Limitations of the Study

There are several factors that strengthen the quality of this study. This research was guided by a conceptual framework that was developed to be used with a population of substance using women. The framework enabled the exploration of the relationship between pregnant women who use illicit drugs and a multitude of variables that may be contributing factors in relation to this issue. The framework was useful in providing insight into the unique problems that may impact a woman's life and assisted in explaining the associations between these variables in the lives of this vulnerable population of women.

The chosen methodology, a mixed-methods design, was also a strength of this study. The results of the qualitative study supported the findings of the quantitative study while adding depth to the understanding of the significant correlates identified in the first phase of the study. By interviewing women who are living the experience, and discussing the challenges in their lives, a more personal side of the issue of illicit drug use during pregnancy became apparent.

Another strength of the study was the fact that women who were interviewed for both components of the study were from the same eight inner-city areas in Winnipeg. By enrolling women from the same neighbourhood areas, a clearer picture of the inner-city population of women who use illicit drugs during pregnancy was obtained.

Due to the sensitive topic of this study and prior to the start of the interview during the data collection phase of the qualitative study, the researcher spent time speaking with the women about their lives, their babies and families, in an attempt to establish a trusting relationship with the women. This interaction served several purposes.

The first purpose was to ensure that the women felt comfortable speaking with the researcher before the interview began. The second purpose was to ensure that the women were clear on the intentions of the researcher and provided additional opportunity for the women to ask questions. The third purpose of the interaction was to facilitate a discussion for the interview that was open and honest. The building of a trusting relationship prior to the interview of each woman improved the rigor and overall quality of the study.

Another strength of the qualitative component of the study was the use of member checking to validate the findings of the study. Once the analysis of the interview transcripts was complete and tentative findings had been obtained, the results were shared with three participants by phone. Participants were given the opportunity to add information, retract information and agree or disagree with the results. All of the participants agreed with the findings of the study and stated that the results were true to their experiences.

This study also has several limitations. An important limitation of the qualitative component of the study was that women must have self-reported their use of illicit drugs during pregnancy in order to participate in the study. As the use of illicit drugs while pregnant has negative social and legal connotations, some women may not have disclosed their illicit drug use. The women who did not disclose their illicit drug use may have been missed or screened as ineligible to participate. Unfortunately, this study did not capture the experiences of those women and may not be representative of all women who use illicit drugs in pregnancy.

In addition, a limitation of the quantitative component of the study was the potential for a misclassification bias for women who used illicit drugs during pregnancy

but did not disclose this information when answering the question about drug use. In these instances, women may have been misclassified as controls, or women who did not use illicit drugs during pregnancy, when in fact they should have been classified as cases, or women who had used illicit drugs. Bias produced by a non-differential classification, as seen in this situation, may have been toward the null hypothesis, and may have had an impact on the resulting odds ratios (Rothman & Greenland, 1998).

Another limitation of this study was the possibility of recall bias as all of the data was self-reported by the participants. Some responses may not have been accurate or reflective of the participants' true feelings, especially in regards to stress, self-esteem and family support during the pregnancy. As well, in the quantitative component of the study, Cohen's (1983) perceived stress scale dealt with stressors in the last month of their pregnancy and did not capture stress during the entire pregnancy. Due to the retrospective nature of the study, women's perceptions of stress may have been influenced by the events of pregnancy and birth as well as pregnancy outcomes. Additionally, the quantitative component of this analysis used data from a hospital-based study that was limited to women delivering a live infant in hospital and did not include women who used illicit drugs during pregnancy and who had a stillbirth or early neonatal death.

One additional limitation of the qualitative component of the study was the mix of perspectives of the women with half of the participants being pregnant at the time of the interview and half of the women being post-partum. The experiences of the women who had already delivered their babies may have influenced their perception of their illicit drug use during pregnancy especially in relation to the outcome of the infant. As well, it was noted that the majority of the women interviewed for this study had their babies

apprehended or had a plan in place for apprehension following the birth of the baby. The apprehension of the baby and the mother's experience of the apprehension may also have influenced the perspectives of the women in this study.

A further limitation of the study was that the women who participated in the quantitative component of the study were not the same the women who participated in the qualitative component of the study. Although the women were from the same inner-city areas for both components of the study, it is possible that the life experiences or circumstances of the women in the qualitative component may have been different than women who participated in the quantitative component.

One other limitation of the study was that the sample for both the quantitative and qualitative components were taken from a known lower socioeconomic inner-city population and thus the results of the study may not be generalized to other populations of women. Women from a higher socioeconomic status who use illicit drugs during pregnancy may have different risk factors or correlates than women from a lower socioeconomic population. In addition, the majority of the women who participated in the qualitative component of the study were of Aboriginal ethnicity (90%) and thus the findings cannot be generalized to women of other ethnic backgrounds.

In addition, one other limitation of this study was the single item question that measured depression among subjects in the quantitative component of the study. This single item question lacked established validity and reliability.

One final limitation of this study is that the overall goal of the study was to identify factors associated with illicit drug use during pregnancy, not to imply or attempt to link

cause and effect between these factors and drug use. Further research pertaining to the cause and effects of illicit drug use during pregnancy would be of great benefit.

Nursing Practice and Policy Implications

The following section will discuss nursing practice implications as well as program and policy implications in the management of women who use illicit drugs during pregnancy.

Nursing Practice Implications

This is the first study known to date that has utilized a mixed-methods approach to examine demographic and psychosocial correlates of illicit drug use during pregnancy and circumstances that contribute to a women's use of illicit drugs during pregnancy. Some of these correlates include: First Nations ethnicity; smoking or alcohol use during pregnancy; depression or anxiety; and low self-esteem. Women with a history of physical or sexual abuse have difficult or unstable relationships with partners, or have partners with substance use problems may also be at risk of using illicit drugs during pregnancy. By being aware of the relationship between these risk factors and illicit drug use during pregnancy, the findings of this study may be useful in assisting nurses to identify pregnant women at risk of illicit drug use in the clinical setting.

Pregnancy has often been described as a time of motivation for women to seek assistance for problems with illicit drug use and other substances. Nurses along with other health care professionals have a unique opportunity to identify women potentially at risk of illicit drug use as they have direct contact with women who seek prenatal care services. Early identification of women at risk of using illicit drugs can be helpful in providing education to women, developing therapeutic trusting relationships and to open

the lines of communication. Repeated contact with women in a clinical setting with interactions that are non-judgemental and non-punitive is the key to successful partnerships with this population of women. Nurses in all clinical settings including inpatient, outpatient and community settings should be aware of the risk factors for illicit drug use by women during pregnancy and be sensitive to the needs of this population.

Women who use illicit drugs during pregnancy are fearful of the consequences of their use, especially the loss of their baby through apprehension at birth, and are reluctant to disclose the use of illicit drugs. It would be helpful for nurses and other health care providers to collaborate with social workers and social services to ensure that the disclosure of illicit drug use by women does not result in immediate punitive consequences to the mother. Instead, working together to address the underlying issues associated with illicit drug use and to provide options that empower the mother to choose a course of action that is suitable to meet her needs would be optimal. By building trusting relationships with women, nurses may find that women are more likely to admit to using illicit drugs and be open to harm reduction strategies or more receptive to treatment options. Pregnancy is also an opportune time to intervene as in some instances, the ability to regain or retain custody of their infants may provide incentive for women to enter treatment, and learn to parent their children (Bolnick & Rayburn, 2003).

It was noted during the interviews that there is a lack of inquiry by nurses and other health care providers during the prenatal period about a woman's use of illicit drugs during pregnancy. Many of the women reported that they had not been asked at all, or in other instances, the women denied the use of illicit drugs on an initial visit and then were never asked again, despite their heavy use of illicit drugs. Many women reported that

they were likely to be untruthful with their physician had he or she asked about their illicit drug use on an initial visit, while other women disclosed on their own as they were fearful of the negative impact of their drug use on their unborn baby. The lack of inquiry by health care professionals is concerning and raises the question as to why nurses and healthcare providers are not asking these questions to all women at every visit during the prenatal period. It is interesting to note that although the Society of Gynaecologists and Surgeons of Canada (SOGC) recommends universal screening for alcohol use by all pregnant women and alerts all health care providers to risk factors associated with alcohol use by mothers (Carson et al., 2010), there are no specific guidelines to address the issue of universal screening for illicit drug use. Perhaps, this is due to a lack of awareness of the issue by health care providers or due to discomfort with asking the questions. Regardless, as a therapeutic and trusting relationship builds between a nurse or other health care provider and a woman over the course of a woman's pregnancy, the more likely the woman may be to eventually disclose the use of illicit drugs during pregnancy. Nurses must ensure that they are inquiring about the use of illicit drugs at each visit at a minimum and to be astute to risk factors or behaviours that may indicate a woman is using illicit drugs. This provides an opportunity for women to disclose their use as they become more comfortable in their relationship with their health care professional.

Program and Policy Implications

Several strategies that aim to reduce the prevalence of FASD and the consumption of alcohol by mothers during pregnancy, such as the National FASD initiative, have been implemented at both the national and provincial levels of government. However, fewer strategies directly addressing the problems of illicit drug use among women of

childbearing age and pregnant women have been implemented on a national level. Several excellent programs have been developed in many provinces across Canada in order to meet the needs of this vulnerable population of women. British Columbia and Ontario have been the leaders in the field in establishing programs and services that are women-centered and integrated. The Sheway Project (Poole, 2000) is an outreach program in the Downtown Eastside of Vancouver that provides integrated holistic care and support for pregnant women with substance use issues and their families. Women are enrolled in the program up until their children are 18 months of age. The Toronto Center for Substance Use in Pregnancy (T-Cup) in Toronto is a comprehensive, women-centered program that offers a multidisciplinary one-stop shop approach to caring for pregnant women with addiction (Selby & Ordean, 2007). In Hamilton, the New Choices program offers a model of integrated care for women with substance use problems and their families that have shown positive results related to perceived benefits to program participants (Sword, et al., 2004). In Manitoba, the InSight Mentoring Program, an intensive three year outreach mentoring program for women with substance use problems has replaced the Stop FASD initiative in order to provide services for all women with substance use issues (<http://www.gov.mb.ca/healthychild/fasd/insight.html>). The InSight Program utilizes women-centered, trauma informed care as well as comprehensive case management to provide long-term support for women and their families and assists in their pursuit of recovery. All of the programs discussed are valuable in supporting women with substance use problems as well as their families. It is imperative that government agencies consider funding and resources to support the expansion of these integrated

programs and services to other communities while continuing to support and sustain programs currently in place.

Although significant improvements in the development of programs for women with substance use issues have been noted, there remains a considerable amount of work to be done. For example, a study by Tait (2000) examined the service needs of pregnant addicted women in Manitoba and provided 49 recommendations to improve services for this vulnerable population of women. It is evident that some effort to improve services for pregnant women has been made since Tait's study; however it is unclear how many of these recommendations have been accepted or implemented over the last decade in Manitoba as several of the issues that were identified in the study remain an issue today. Wait times were listed at the most common barrier to treatment for women in Tait's study ten years ago and although pregnant women currently receive priority for admission to addiction treatment programs, long wait times remain a significant barrier for women. It is imperative that public policy catch up to the needs of pregnant women who use illicit drugs during pregnancy and examine alternate ways of providing services and reducing barriers for these women in order to prevent long term impacts to women, families and society itself.

It is evident that women who use illicit drugs during pregnancy have complex lives and require special programming to target underlying issues that motivate them to use illicit drugs while pregnant. Several strategies to improve services for women have been suggested in the literature and have been utilized in some centers. Women-centered approaches to care that empower women, are flexible in treatment planning and program structure, and provide a comprehensive one-stop shop model of care are an example of

program characteristics that may be beneficial to this population of women (Carter, 2002; Creamer & McMurtie, 1998). Integrated program care models that are designed to provide both obstetrical and addiction care as well as additional services such as counselling services, nutrition specialists, social workers, lactation consultants, and education including parenting classes have also been shown to be beneficial to women (Lefebvre et al., 2010; Sword, Niccols, & Fan, 2004). These program models support women, children and their families in the recovery process. In addition, findings from a meta-analysis that examined the impact of integrated treatment programs on maternal mental health found small advantages in improving maternal health of women with substance use issues compared to non-integrated service programs (Niccols et al., 2010). It is imperative that policy makers examine the integrated model of care as a way of improving care and outcomes of women, children and families whose lives are impacted by illicit drug use.

Recommendations for Future Research

Findings from this study support demographic and psychosocial characteristics of women who use illicit drugs during pregnancy as reported in other literature. This study was able to expand the scope and depth of those findings by providing additional information about the lives and experiences of inner-city women who struggle with illicit drug use while pregnant. Due to the specific inner-city population examined in this study, findings are not able to be generalized to other populations of women. Future research is required to examine other populations of women who use illicit drugs during pregnancy. Replication of this study in other populations with more ethnic diversity, different income levels and in rural settings is needed.

Due to the lack of qualitative studies that explore life experiences that have impacted the use of illicit drugs by women while pregnant, additional qualitative research is needed to have an improved understanding of the complex lives of these women. As new information emerges, the findings may assist in developing programs more suitable to the needs of this population of women.

As previously discussed, integrated models of care for women with addiction have been perceived by women as beneficial (Lefebvre et al, 2010; Sword et al., 2004) and have shown small advantages over non-integrated programs in improving maternal mental health (Niccols et al, 2010). A meta-synthesis that examined the psychosocial processes and outcomes of women in integrated treatment programs that impacted their recovery and had a favourable outcome found that the development of a sense of self, development of a personal agency, social support, engagement with staff and the presence of children had a positive impact on the women's recovery (Sword et al, 2009). In addition, self-disclosure of personal challenges, feelings and past experiences, as well as goal setting and identifying self-destructive behaviour all had an impact on their recovery (Sword et al., 2009). This evidence supports the need for future research regarding the outcomes of integrated models of care on addiction recovery and long term outcomes for women and families. In addition, future research that examines the sustainability of integrated models of care is necessary prior to the widespread establishment of these programs in the community.

Conclusion

As the problem of illicit drug use during pregnancy continues to grow, the long-term social and medical effects will become more apparent. As the cost to the health care

system continues to rise with the increased use of illicit drugs during pregnancy, identifying the scope of the problem becomes immensely important. The information gathered through this mixed methods study identified demographic and psychosocial correlates of women who used illicit drugs during pregnancy while it enhanced our understanding of the experiences of these women. The influence that the life experiences of the women had on the use of illicit drugs during pregnancy is important, as the information will provide new understanding about the complex world of women who use illicit drugs while pregnant. The knowledge and understanding gained during this process may assist in the practical development of future programs and services for this vulnerable population of women. Hopefully, the information gathered during this study will inform researchers and may guide future research in this area.

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Appendix B

FACTORS ASSOCIATED WITH INADEQUATE PRENATAL CARE AMONG
INNER-CITY WOMEN
Structured Interview Guide

Subject Identification No.: _____

Group:

- Case (Inadequate Prenatal Care)..... 1
- Control (Adequate Prenatal Care)..... 0

Date of interview: ____/____/____
Day Month Year

Place of interview:

- St.Boniface General Hospital..... 1
- Women’s Hospital, HSC..... 2
- Home..... 3
- Other (specify _____) 4

Place of delivery:

- St.Boniface General Hospital..... 1
- Health Sciences Centre..... 2
- Other (specify _____) 3

Postal code (first 3 digits): _____

Neighborhood:

- River East A..... 1
- Seven Oaks A..... 2
- Inkster B..... 3
- Point Douglas A..... 4
- Point Douglas B..... 5
- Downtown A..... 6
- Downtown B..... 7
- River Heights B..... 8

Start time of interview:

____ hours (24 hour clock)

Your Pregnancy and Prenatal Care

I'd like to begin the interview by asking you some questions about your pregnancy, prenatal care and delivery.

1. What was the date of your delivery?

___ ___ / ___ ___ / ___ ___
Day Month Year

2. What was your expected date of delivery, or your due date?

___ ___ / ___ ___ / ___ ___
Day Month Year

3. How many weeks or months pregnant were you when you were *sure* you were pregnant? (For example, you had a pregnancy test or a doctor or nurse said you were pregnant.) (PRAMS)

___ weeks OR ___ months

Don't Know (DK)..... 88
No Response (NR)..... 99

4. *A prenatal care visit is defined as a visit to a health professional, such as a physician, midwife or nurse practitioner, to receive medical care for your pregnancy (including physical assessments, screening tests and health teaching).*

Did you receive any prenatal care during your pregnancy?

Yes..... 1
No..... 0 IF NO SKIP TO QUESTION 13
DK..... 8
NR..... 9

5. (If yes) How many weeks or months pregnant were you when you had your first visit for prenatal care? (Do not count a visit that was only for a pregnant test.) (PRAMS)

___ weeks OR ___ months
DK..... 88
NR..... 99

6. Did you have any difficulty arranging for your first prenatal care visit?

Yes..... 1
No..... 0
DK..... 8
NR..... 9

7. How many days or weeks was it from the time you made your first prenatal appointment until the actual day of your visit? *(adapted from NIH-DC Initiative)*

___ weeks OR ___ months
 DK..... 88
 NR..... 99

8. About how many visits for prenatal care did you have during your pregnancy? If you don't know how many, please give me your best guess.

___ visits
 DK..... 88
 NR..... 99

9. (Ask term mothers only.) How many visits for prenatal care did you have between 36 weeks and your delivery date?

___ visits
 DK..... 88
 NR..... 99

10. From which of the following types of providers did you receive prenatal care? (Circle all that apply)

Obstetrician:
 Yes..... 1 (if yes, number of visits___)
 No..... 0
 DK..... 8
 NR..... 9

Family doctor:
 Yes..... 1 (if yes, number of visits___)
 No..... 0
 DK..... 8
 NR..... 9

Midwife:
 Yes..... 1 (if yes, number of visits___)
 No..... 0
 DK..... 8
 NR..... 9

Nurse Practitioner:
 Yes..... 1 (if yes, number of visits___)
 No..... 0
 DK..... 8
 NR..... 9

Other (specify _____)
 Yes..... 1 (if yes, number of visits___)
 No..... 0
 DK..... 8
 NR..... 9

11. Where did you receive most of your prenatal care?

Private physician's office.....	1
Mount Carmel Clinic.....	2
Hope Clinic.....	3
601 Aikens.....	4
385 River.....	5
NorWest Coop.....	6
Klinik.....	7
Outpatient department of hospital...	8
Midwifery service.....	9
Other (specify _____)...	10
DK.....	88
NR.....	99

12. How Satisfied were you with the prenatal care you received?

Very Satisfied.....	1
Somewhat Satisfied.....	2
Somewhat dissatisfied.....	3
Very dissatisfied.....	4
DK.....	8
NR.....	9

13. (a) Did you visit an emergency room or obstetrical triage department during your pregnancy for a problem related to your pregnancy? (*adapted from NIH-DC Initiative*)

Yes.....	1
No.....	0

(b) How many times did you go to an emergency room or obstetrical triage department for a problem related to your pregnancy?

__ __Times

14. (a) Were you admitted into the hospital during this pregnancy for a problem related to your pregnancy (not counting your delivery)? (*adapted from NIH-DC Initiative*)

Yes.....	1
No.....	0

(b) How many times were you admitted to the hospital during this pregnancy (not counting your delivery)?

__ __Times

15. Women also receive other types of prenatal services and education when they are pregnant. Did you participate in any of the following programs during your pregnancy?

Healthy Baby/Healthy Start Program

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

Families First program (home visitor)

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

Antenatal Home Care Program

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

Childbirth Education/Prenatal Classes

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

Villa Rosa Program

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

Other (specify _____)

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

16. Did you have a regular health care provider before you got pregnant?

Yes..... 1
 No..... 0
 DK..... 8
 NR..... 9

IF NO SKIP TO QUESTION 18

If so, what type of provider?

Family doctor..... 1
 Nurse Practitioner..... 2
 Other (specify _____)..... 3

17. How many times did you see this provider in the year before you got pregnant?
 ___ ___ Times

Now I'd like to ask you some questions about how you felt about your pregnancy.

18. Thinking back to *just before* you got pregnant, how did you feel about becoming pregnant? (*PRAMS*)

- I wanted to be pregnant sooner..... 1
- I wanted to be pregnant later..... 2
- I wanted to be pregnant then..... 3
- I didn't want to be pregnant then or at any time in the future..... 4

19. When you became pregnant with your new baby, were you trying to get pregnant? (*PRAMS*)

- Yes..... 1
- No..... 0

If yes, how many months did it take before you managed to get pregnant?

___ ___ Months

20. How did you feel when you found out you were pregnant with this baby? Were you... (*PRAMS*)

- Very unhappy to be pregnant..... 1
- Unhappy to be pregnant..... 2
- Not sure..... 3
- Happy to be pregnant..... 4
- Very happy to be pregnant..... 5

Reasons for getting prenatal care

21. I will now read some reasons why some women get prenatal care. Please tell me whether or not that reason made you go for prenatal care. (*adapted from NIH-DC Initiative*)

<i>Did you get prenatal care...</i>	Yes	No	N/A (No PNC)
a) to learn how to protect your health	1	0	7
b) because you were afraid that you would have problems during the pregnancy without prenatal care	1	0	7
c) to talk to someone about your pregnancy	1	0	7
d) to learn better health habits	1	0	7
e) to learn about labor and delivery	1	0	7
f) to have a healthy baby	1	0	7
g) because your family wanted you to get prenatal care	1	0	7
h) because your husband or boyfriend wanted you to get prenatal care	1	0	7
i) because your friends wanted you to get prenatal care	1	0	7
j) because your health care provider or social worker wanted you to get prenatal care	1	0	7

22. I am going to read a list of things that women have told us make it easier for them to get prenatal care. Please tell me whether or not each one made it easier for you to get prenatal care. (*adapted from NIH-DC Initiative*)

<i>Was it easier for you to get prenatal care because...</i>	Yes	No	N/A
a) you got a ride to your appointment	1	0	7
b) you got free transportation	1	0	7
c) you got help paying for transportation	1	0	7
d) it was easy to get to the appointment using public transportation	1	0	7
e) a family member or friend provided child care	1	0	7
f) you got free child care	1	0	7
g) you got help paying for child care	1	0	7
h) child care was available <u>near</u> where you had your appointment	1	0	7
i) child care was available <u>at</u> the facility where you had your appointment	1	0	7
j) the clinic <u>hours</u> were convenient for you	1	0	7
k) flexible work schedule to attend appointments (or work allowed time off to attend appointments)	1	0	7

23. **If Participant Started PNC After 1st Trimester Ask:** The following is a list of things that affect women's decisions to get prenatal care. Please tell me if these reasons may have delayed or caused you difficulties in getting prenatal care. (*adapted from NIH-DC Initiative*)

Did you delay starting prenatal care or have difficulties in getting prenatal care because...

If Participant Started PNC During 1st Trimester Ask: The following is a list of things that affect women's decisions to get prenatal care. Please tell me if these reasons caused you difficulties in getting prenatal care (*adapted from NIC-DC Initiative*)

Did you have difficulties in getting prenatal care because...

	Yes	No	N/A
a) you did not know where you could get prenatal care	1	0	7
b) you could not get an appointment	1	0	7
c) you had to wait too long to get an appointment	1	0	7
d) your appointment was cancelled by clinic	1	0	7
e) you didn't like the attitudes of the staff	1	0	7
f) the hours at the clinic were not convenient for you	1	0	7
g) you didn't think you could communicate with the staff	1	0	7
h) you had transportation problems	1	0	7
i) you had child care problems	1	0	7
j) you could not get time off from work	1	0	7
k) you had to wait too long in the waiting room to see your health care provider	1	0	7

24. **If Participant Started PNC After 1st Trimester Ask:** For many women their beliefs regarding prenatal care keep them from getting prenatal care. Please tell me if these reasons caused you to delay starting prenatal care or not go for prenatal care. (*adapted from NIH-DC Initiative*)
Did you delay starting prenatal care or not go for prenatal care because...

If Participant Started PNC During 1st Trimester Ask: For many women their beliefs regarding prenatal care keep them from getting prenatal care. Please tell me if these reasons caused you to avoid going for some of your prenatal care visits. (*adapted from NIC-DC Initiative*)

Did you avoid going for some of your prenatal care visits or not go for some of your prenatal care visits because...

	Yes	No
a) you were afraid of or did not like medical tests and examinations	1	0
b) you do not like needles or taking medicine	1	0
c) generally you do not like health care workers	1	0
d) you have been dissatisfied with the care you received	1	0
e) you go the emergency room or obstetrical triage unit when there is a problem with your pregnancy	1	0
f) you did not know you were pregnant	1	0
g) you did not think you needed prenatal care	1	0
h) you can take care of yourself during pregnancy	1	0
i) you get advice about pregnancy from family and friends	1	0
j) you did not want to be examined by a man	1	0
k) you did not want people to know you were pregnant	1	0
l) the pregnancy was unplanned	1	0
m) you were unhappy about being pregnant	1	0
n) you were thinking of having an abortion	1	0
o) you were worried about the risk of your baby being apprehended by CFS	1	0

25. **If Participant Started PNC After 1st Trimester Ask:** For many women stress and personal issues in their lives keep them from getting prenatal care. Please tell me if any of these reasons delayed you or caused you difficulties in getting prenatal care. (*adapted from NIH-DC Initiative*)
Did you delay starting prenatal care or not go for prenatal care because ...

If Participant Started PNC During 1st Trimester Ask: For many women stress and personal issues in their lives keep them from getting prenatal care. Please tell me if any if these reasons caused you difficulties in getting prenatal care (*adapted from NIC-DC Initiative*)
Did you have difficulties in going for prenatal care because...

	Yes	No
a) you did not feel well	1	0
b) of family problems	1	0
c) of problems with your husband or boyfriend	1	0
d) you got beat up by your husband or boyfriend	1	0
e) you had been under stress	1	0
f) you were depressed	1	0
g) you did not feel good about yourself	1	0
h) of personal problems	1	0
i) you were not thinking straight	1	0
j) you forgot the appointment	1	0
k) you were moving a lot	1	0
l) you were/are homeless	1	0
m) you were afraid of crime near your home or the clinic	1	0

26. Please tell me to what extent the following things would help you get more prenatal care than you did? (*adapted from NIH-DC Initiative*) (**SHOW RESPONSE CARD**)

How much of a difference would it make if...

	A LOT	SOME	A LITTLE	NONE	N/A
a) you got help with completing forms. Would you say...	1	2	3	4	7
b) you got incentives such as gift or money.	1	2	3	4	7
c) you got rides to the clinic	1	2	3	4	7
d) you got child care assistance	1	2	3	4	7
e) you had a home visitor	1	2	3	4	7
f) the clinic had hours convenient for you	1	2	3	4	7
g) you got a call to follow-up on missed appointments	1	2	3	4	7
h) the staff were easy to understand	1	2	3	4	7
i) the staff were from the same country as you	1	2	3	4	7
j) you had financial support	1	2	3	4	7
k) you had emotional support	1	2	3	4	7

27. Could you travel easily to your prenatal care appointments?

- Yes..... 1
- No..... 0

28. How did you get to your prenatal appointments?
(CIRCLE ALL THAT APPLY)

- Walk..... 1
- Bus..... 2
- My own car..... 3
- Friend or family member’s car..... 4
- Taxi..... 5
- Other (specify _____).... 6

29. How long did it take you to travel to your prenatal appointment?

___ ___ Minutes **OR** ___ ___ Hours

30. In general, were you encouraged or discouraged to get prenatal care?
(adapted from NIH-DC Initiative)

- Encouraged..... 1
- Discouraged..... 2
- Neither..... 3

31. Referring to Show card, who (encouraged/discouraged) you the most?
(CIRCLE ONE ONLY, SHOW RESPONSE CARD AND READ)

- Mother or Father..... 1
- Grandmother or Grandfather..... 2
- Sister or Brother..... 3
- Husband or Boyfriend..... 4
- Friend..... 5
- Doctor..... 6
- Midwife..... 7
- Nurse..... 8
- Social Worker..... 9
- Nutritionist..... 10
- Home Visitor from Families First
Program..... 11
- Other Person..... 12
- Not Applicable..... 13

(SPECIFY)

32. Do you have a preference for the race or ethnic group of your prenatal care provider? (*adapted from NIH-DC Initiative*)

- Yes..... 1
- No..... 0 **SKIP TO QUESTION 34**

33. What race or ethnic group would you prefer your prenatal care provider to be?

- Black/African American..... 1
- Hispanic/Latino..... 2
- Asian/Pacific Islander..... 3
- White..... 4
- Aboriginal (First Nations/Metis/Inuit)..... 5
- Other..... 6

(SPECIFY)

34. Do you have a preference for the sex of your prenatal care provider? (*adapted from NIH-DC Initiative*)

- Yes..... 1
- No..... 0 **SKIP TO QUESTION 36**

35. Which sex would you prefer your prenatal care provider to be?

- Male..... 1
- Female..... 2

Health Behaviors and Lifestyle

I would like to ask you some questions about your use of cigarettes, alcohol and drugs during your pregnancy.

36. Did you smoke cigarettes during the month before you became pregnant?

- Yes..... 1
- No..... 0 **SKIP TO QUESTION 38**
- NR..... 9

(adapted from Ottawa Carleton Health Department and Regional Perinatal Program Questionnaire)

37. How many cigarettes did you smoke each day in the month before you became pregnant (on average)?

Number of cigarettes per day..... _____
 NA..... 7
 DK..... 8
 NR..... 9

(adapted from Ottawa Carleton Health Department and Regional Perinatal Program Questionnaire)

38. Did you smoke cigarettes after you knew you were pregnant?

Yes..... 1
 No..... 0 **SKIP TO QUESTION 41**
 NR..... 9

(adapted from Ottawa Carleton Health Department and Regional Perinatal Program Questionnaire)

39. How many cigarettes did you smoke each day, on average,...

During the first three months of your pregnancy? _____
 During the second three months of your pregnancy? _____
 During the third three months of your pregnancy? _____

40. Did you start prenatal care later because you didn't want others to know you were smoking during your pregnancy?

Yes..... 1
 No..... 0

41. How often did you drink alcohol during your pregnancy (e.g. beer, wine, hard liquor, liqueurs)? (Do not read list, mark one only)

Never..... 0 **SKIP TO QUESTION 44**
 Less than once a month..... 1
 1-3 times a month..... 2
 Once a week..... 3
 2-3 times a week..... 4
 4-6 times a week..... 5
 Everyday..... 6
 NA..... 7
 DK..... 8
 NR..... 9

(adapted from National Population Health Survey, Statistics Canada 1994)

42. When we use the word drink it means: one beer, one small glass of wine, or 1 1/2 ounces of liquor. On the days that you drank, how many drinks did you usually have?

Before realizing you were pregnant? _____
 During the first three months of your pregnancy? _____
 During the second three months of your pregnancy? _____
 During the third three months of your pregnancy? _____

(adapted from National Population Health Survey, Statistics Canada 1994)

43. Did you start prenatal care later because you didn't want others to know you were drinking during your pregnancy?

Yes..... 1
 No..... 0

The next questions are about drug use during pregnancy. Please answer these questions honestly; we will not tell anyone about your answers. We are interested in recreational or street drugs, those for which you don't have a prescription.

44. Did you take any recreational drugs such as marijuana, LSD or cocaine during your pregnancy?

Yes..... 1
 No..... 0 **SKIP TO QUESTION 48**
 NR..... 9

(adapted from National Population Health Survey, Statistics Canada 1994)

45. Which of the following drugs did you take?

Marijuana/Hashish
 Yes..... 1
 No..... 0
 NR..... 9

LSD
 Yes..... 1
 No..... 0
 NR..... 9

Cocaine
 Yes..... 1
 No..... 0
 NR..... 9

Crack Cocaine
 Yes..... 1
 No..... 0
 NR..... 9

Heroin
 Yes..... 1
 No..... 0
 NR..... 9

Crystal Meth
 Yes..... 1
 No..... 0
 NR..... 9

Other (Specify) _____
 Yes..... 1
 No..... 0
 NR..... 9

(adapted from National Population Health Survey, Statistics Canada 1994)

46. At what stage in your pregnancy did you take these drugs?
(READ LIST MARK ALL THAT APPLY)

Before realizing you were pregnant?
 Yes..... 1
 No..... 0
 NR..... 9

During the first three months?
 Yes..... 1
 No..... 0
 NR..... 9

During the second three months?
 Yes..... 1
 No..... 0
 NR..... 9

During the third three months?
 Yes..... 1
 No..... 0
 NR..... 9

Throughout your pregnancy?
 Yes..... 1
 No..... 0
 NR..... 9

(adapted from National Population Health Survey, Statistics Canada 1994)

47. Did you start prenatal care later because you didn't want other to know you were using drugs during your pregnancy?

- Yes..... 1
- No..... 0

Stress, Social Support, Self Esteem, and Resilience (Family Hardiness)

I'd now like to ask you some questions about the amount of stress you experienced during your pregnancy. It is important to think back to how you felt during your pregnancy and not let how you are feeling now influence your answer.

For each of the next four questions, you will be asked how often you felt or thought a certain way, choosing from the following answers: never, almost never, sometimes, fairly often, or very often. *(from Cohen's perceived stress scale)*

(SHOW RESPONSE CARD)

48. During your pregnancy, how often did you feel that you were unable to control the important things in your life?

- Never..... 0
- Almost never..... 1
- Sometimes..... 2
- Fairly often..... 3
- Very often 4
- DK..... 8
- NR..... 9

49. During your pregnancy, how often did you feel confident about your ability to handle your personal problems?

- Never..... 0
- Almost never..... 1
- Sometimes..... 2
- Fairly often..... 3
- Very often 4
- DK..... 8
- NR..... 9

50. During your pregnancy, how often did you feel that things were going your way?

- Never..... 0
- Almost never..... 1
- Sometimes..... 2
- Fairly often..... 3
- Very often 4
- DK..... 8
- NR..... 9

51. During your pregnancy, how often did you feel difficulties were piling up so high that you could not overcome them?

Never.....	0
Almost never.....	1
Sometimes.....	2
Fairly often.....	3
Very often	4
DK.....	8
NR.....	9

Assessment of Self Esteem (Rosenberg)

52. We all have some kind of picture of ourselves we carry with us. I'm going to read you a list of statements that people have used to describe themselves. I would like you to tell me how much you agree or disagree that this statement described yourself during your pregnancy

(SHOW FACES RESPONSE CARD)

	Strongly Agree	Agree	Disagree	Strongly Disagree
53. Felt that you were a person of worth at least on an equal plane with others.	1	2	3	4
54. Felt that you had a number of good qualities.	1	2	3	4
55. All in all, you were inclined to feel that you were a failure.	1	2	3	4
56. Felt that you were able to do things as well as most other people.	1	2	3	4
57. Felt that you did not have much to be proud of.	1	2	3	4
58. Took a positive attitude toward yourself.	1	2	3	4
59. On the whole, felt satisfied with yourself.	1	2	3	4
60. Wished you could have had more respect for yourself.	1	2	3	4
61. Certainly felt useless at times.	1	2	3	4
62. At times thought you were no good at all.	1	2	3	4

Interpersonal Support Evaluation List

Instructions: *This scale is made up of a list of statements, each of which may or may not be true about you. Please tell me how true or false the statement is about you during your pregnancy. Thinking back to when you were pregnant...*

(SHOW RESPONSE CARD)

	Completel y False	Somewh at False	Somewh at True	Completel y True
63. If you had to go out of town for a few weeks, someone you know would look after your home, such as watering the plants or taking care of the pets.	1	2	3	4
64. If you were sick and needed someone to drive you to the doctor, you would have trouble finding someone.	1	2	3	4
65. If you were sick, you would have trouble finding someone to help you with your daily chores.	1	2	3	4
66. If you needed help moving, you would be able to find someone to help you.	1	2	3	4
67. If you needed a place to stay for a week because of an emergency, such as the water or electricity being out in your home, you could easily find someone who would put you up.	1	2	3	4
68. There is at least one person you know whose advice you really trust.	1	2	3	4
69. There is no one you know who will tell you honestly how you are handling your problems.	1	2	3	4
70. When you need suggestions about how to deal with a personal problem, you know there is someone you can turn to.	1	2	3	4

71. There isn't anyone you feel comfortable talking to about intimate personal problems.	1	2	3	4
72. There is no one you trust to give you good advice about money matters.	1	2	3	4
73. You are usually invited to do things with others.	1	2	3	4
74. When you feel lonely, there are several people you could talk to.	1	2	3	4
75. You regularly meet or talk with your friends or members of your family.	1	2	3	4
76. You often feel left out by your circle of friends.	1	2	3	4
77. There are several different people you enjoy spending time with.	1	2	3	4

Family Stress, Coping and Health Project
School of Human Ecology, 1300 Linden Drive
University of Wisconsin-Madison

FAMILY HARDINESS INDEX

Marilyn A. McCubbin Hamilton I. McCubbin Anne I. Thompson

Directions:

Please read each statement below and decide what degree each describes your family. Is the statement False (0), Mostly False (1), Mostly True (2), or True (3) about your family? Circle a number 0 to 3 to match your feelings about each statement. Please respond to each and every statement (SHOW RESPONSE CARD)

In our family...	False	Mostly False	Mostly True	True
78. Trouble results from mistakes we make	0	1	2	3
79. It is not wise to plan ahead and hope because things do not turn out anyway	0	1	2	3
80. Our work and efforts are not appreciated no matter how hard we try and work	0	1	2	3
81. In the long run, the bad things that happen to us are balanced by the good things that happen	0	1	2	3
82. We have a sense of being strong even when we face big problems	0	1	2	3
83. Many times I feel I can trust that even in difficult times things will work out	0	1	2	3
84. While we don't always agree, we can count on each other to stand by us in times of need	0	1	2	3
85. We do not feel we can survive if another problem hits us	0	1	2	3
86. We believe that things will work out for the better if we work together as a family	0	1	2	3
87. Life seems dull and meaningless	0	1	2	3
88. We strive together and help each other no matter what	0	1	2	3

89. (a) When our family plans activities we try new & exciting things	0	1	2	3
89. (b) We listen to each others' problems, hurts and fears	0	1	2	3
90. We tend to do the same things over and over...it's boring	0	1	2	3
91. We seem to encourage each other to try new things and experiences	0	1	2	3
92. It is better to stay at home than go out and do things with others	0	1	2	3
93. Being active and learning new things are encouraged	0	1	2	3
94. We work together to solve problems	0	1	2	3
95. Most of the unhappy things that happen are due to bad luck	0	1	2	3
96. We realize our lives are controlled by accidents and luck	0	1	2	3

Discrimination:

Have you ever felt you were discriminated against, or hassled, or made feel inferior because of your race or color:

97. At school?
- Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9
98. When you tried to get a job?
- Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9

- 99. At work?
 - Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9
- 100. When you tried to get medical care for this pregnancy?
 - Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9
- 101. When you tried to get housing?
 - Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9
- 102. In your dealings with the police or in a court?
 - Yes..... 1
 - No..... 0
 - DK..... 8
 - NR..... 9

(This inventory of perception of racial discrimination was developed by N. Krieger for the CARDIA study)

Perceived safety of neighborhood:

- 103. How safe do you feel your neighbourhood is at night?
 - Very Safe..... 1
 - Somewhat Safe..... 2
 - Somewhat Unsafe..... 3
 - Very Unsafe..... 4
 - DK..... 8
 - NR..... 9
- 104. How safe do you feel your neighbourhood is during the day?
 - Very Safe..... 1
 - Somewhat Safe..... 2
 - Somewhat Unsafe..... 3
 - Very Unsafe..... 4
 - DK..... 8
 - NR..... 9

105. How often do break-ins, burglaries, and other property crimes happen in your neighborhood?
(SHOW RESPONSE CARD).

- Never..... 1
- Almost Never..... 2
- Sometimes..... 3
- Fairly Often..... 4
- Very Often..... 5
- DK..... 8
- NR..... 9

106. How often do muggings, beatings, and other personal crimes happen in your neighborhood?

- Never..... 1
- Almost Never..... 2
- Sometimes..... 3
- Fairly Often..... 4
- Very Often..... 5
- DK..... 8
- NR..... 9

107. How often do shootings happen in your neighborhood?

- Never..... 1
- Almost Never..... 2
- Sometimes..... 3
- Fairly Often..... 4
- Very Often..... 5
- DK..... 8
- NR..... 9

108. How often do police make arrests in your neighborhood?

- Never..... 1
- Almost Never..... 2
- Sometimes..... 3
- Fairly Often..... 4
- Very Often..... 5
- DK..... 8
- NR..... 9

109. How often does drug dealing happen in your neighborhood?

- Never..... 1
- Almost Never..... 2
- Sometimes..... 3
- Fairly Often..... 4
- Very Often..... 5
- DK..... 8
- NR..... 9

(from PIN study - source: Stancil et al., 2000; permission to use questions #1-7 obtained from Dr. Irva Hertz-Picciotto)

110. How do you feel about your neighborhood as a place to bring up children?
(NLSCY)

- Excellent..... 1
- Good..... 2
- Average..... 3
- Poor..... 4
- Very Poor..... 5
- DK..... 8
- NR..... 9

111. If there is a problem around here the neighbours get together to deal with it.
(SHOW FACES RESPONSE CARD)

- Strongly Agree..... 1
- Agree..... 2
- Disagree..... 3
- Strongly Disagree..... 4
- DK..... 8
- NR..... 9

112. There are adults in the neighbourhood that children can look up to.

- Strongly Agree..... 1
- Agree..... 2
- Disagree..... 3
- Strongly Disagree..... 4
- DK..... 8
- NR..... 9

113. People around here are willing to help their neighbours.
- | | |
|------------------------|---|
| Strongly Agree..... | 1 |
| Agree..... | 2 |
| Disagree..... | 3 |
| Strongly Disagree..... | 4 |
| DK..... | 8 |
| NR..... | 9 |
114. You can count on adults in this neighborhood to watch out that children are safe and don't get in trouble.
- | | |
|------------------------|---|
| Strongly Agree..... | 1 |
| Agree..... | 2 |
| Disagree..... | 3 |
| Strongly Disagree..... | 4 |
| DK..... | 8 |
| NR..... | 9 |
115. When I'm away from home, I know that my neighbours will keep their eyes open for possible trouble.
- | | |
|------------------------|---|
| Strongly Agree..... | 1 |
| Agree..... | 2 |
| Disagree..... | 3 |
| Strongly Disagree..... | 4 |
| DK..... | 8 |
| NR..... | 9 |

5-item scale of neighborhood cohesiveness: (Perceived Collective Efficacy, Foster et al., 2001) (NLSCY)

116. Are you involved in any local voluntary organizations, such as school groups, church groups, community or ethnic associations?
- | | |
|----------|---|
| Yes..... | 1 |
| No..... | 0 |
| DK..... | 8 |
| NR..... | 9 |
117. Other than on special occasions (weddings, funerals, or baptisms), how often did you attend religious services or meetings in the past 12 weeks?
- | | |
|----------------------------|---|
| None..... | 1 |
| More than once a week..... | 2 |
| Weekly..... | 3 |
| Every 2 to 3 weeks..... | 4 |
| Monthly..... | 5 |
| DK..... | 8 |
| NR..... | 9 |
- Social Capital: (NLSCY)*

About Yourself

We're almost done the interview. I'd like to end off by asking you several questions about yourself.

118. What is your age (in years)? _____

119. What is your current marital status?

- Married & living with spouse..... 1
- Common-law relationship or live-in partner..... 2
- Single – never married..... 3 **SKIP TO QUESTION 121**
- Divorced..... 4 **SKIP TO QUESTION 121**
- Separated..... 5 **SKIP TO QUESTION 121**
- Widowed..... 6 **SKIP TO QUESTION 121**
- NR..... 9

(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

120. In what year did you start living together with your current husband or partner?
 _____ (record year)

121. What kind of housing are you currently living in (type of dwelling)?

- House..... 1
- Apartment..... 2
- Duplex/Four-plex..... 3
- Townhouse..... 4
- Institution..... 5
- Specify:_____
- Villa Rosa..... 6
- Collective (group) dwelling..... 7
- (e.g. hotel, shelter, boarding house, colony)
- Specify:_____
- Other..... 8
- Specify:_____

source: Health Canada, NPHS, 1996

122. What is your current postal code (first 3 digits)? ____ ____ ____

123. Do you rent or own this dwelling (housing you are currently living in)?

- Rent my own dwelling..... 1
- Own my own dwelling..... 2
- Living with family/friend
(no rent paid)..... 3
- Living with family/friend
(sharing rent)..... 4
- Other..... 5
- Specify:_____

Source: Health Canada, NPHS, 1996

124. How many times have you moved (that is, changed residences) in the last year?
Number of times _____

125. How many times have you moved (that is, changed residences) in the last five years, including the last year?
Number of times _____

126. What is your highest level of education? This includes complete and incomplete (Circle highest level).

- No schooling..... 1
- Elementary School**
- Incomplete..... 2
- Complete..... 3
- Junior High School**
- Incomplete..... 4
- Complete..... 5
- High School**
- Incomplete..... 6
- Complete..... 7
- Non-University (Vocational/Technical)**
- Incomplete..... 8
- Complete..... 9
- University**
- Incomplete..... 10
- Diploma/Certificate (e.g. hygienists)..... 11
- Bachelor's Degree..... 12
- Professional Degree (Vet,Dr., Lawyer)..... 13
- Master's Degree..... 14
- Doctorate..... 15
- NR..... 99

(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

127. How many years of formal education have you completed starting with grade one and not counting repeated years at the same level? (Research Nurse Note: This includes total of grade school, high school, vocational, technical, and university).

_____ Years

128. Did you have a paid job of any kind during your pregnancy?

Yes.....	1	SKIP TO QUESTION 130
No.....	0	
NR.....	9	

(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

129. During your pregnancy, were you unemployed, that is, out of work and looking for work?

Yes.....	1	SKIP TO QUESTION 131
No.....	0	SKIP TO QUESTION 131
NA.....	7	
NR.....	9	

(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

130. On average, how many hours did you work for pay each week during your pregnancy? (This total includes all of your jobs: full-time and part-time)

_____ Hours

NA.....	7
DK.....	8
NR.....	9

(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

131. People also do a variety of other types of work even though it may not involve a paid job. For each of the following, please tell me if it applied to you during your pregnancy.

(RESPONDENT ANSWERS ALL QUESTIONS. RECORD "SHARED" ONLY IF VOLUNTEERED).

	Yes	No	Shared	NA	NR
Mainly responsible for housework	1	2	3	4	5
Mainly responsible for raising child(ren)	1	2	3	4	5
Taking care of some other dependent person (elderly, disabled, grandparent)	1	2	3	4	5
Going to school or studying in some program	1	2	3	4	5
Doing some volunteer work	1	2	3	4	5

*(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba
Department of Sociology)*

132. Some evidence suggests that women with lower family incomes may be less likely to get prenatal care. We would like to know the total income of all the members of your household for this past year before tax and deductions. Please remember that your response will be kept confidential.

(SHOW RESPONSE CARD)

No income.....	1
Under \$10,000.....	2
\$10,000 – 19,999.....	3
\$20,000 – 29,999.....	4
\$30,000 – 39,999.....	5
\$40,000 – 49,999.....	6
\$50,000 – 59,999.....	7
\$60,000 – 69,999.....	8
\$70,000 – 79,999.....	9
\$80,000 – 89,999.....	10
\$90,000 – 99,999.....	11
\$100,000 or over.....	12
DK.....	88
NR.....	99

*(adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba
Department of Sociology)*

133. Which of the following best describes your racial background? Would you say...

Aboriginal (Inuit, Metis, North American Indian).....	1
Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan).....	2
Black (e.g., African, Haitian, Jamaican, Somali).....	3
Chinese.....	4
Filipino.....	5
Japanese.....	6
Korean.....	7
Latin American.....	8
South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan).....	9
South East Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese).....	10
White (Caucasian).....	11
Other.....	12

(Statistics Canada concept definitions; NPHS 98-99)

134. The ancestors of Canadians come from many ethnic and cultural groups such as Inuit, French, Scottish, and Chinese. Which of the following best describes the ethnic or cultural group(s) to which you belong? (Accept multiple responses)

English.....	1
French.....	2
German.....	3
Scottish.....	4
Italian.....	5
Irish.....	6
Ukrainian.....	7
Chinese.....	8
Dutch (Netherlands).....	9
Jewish.....	10
Polish.....	11
Black.....	12
First Nations (Registered).....	13
First Nations (Non-registered).....	14
Metis.....	15
Inuit/Eskimo.....	16
Other (specify):.....	17
Canadian (Any other group).....	18
DK.....	88
NR.....	99

(adapted from General Social Survey, Statistics Canada, 1991)

135. Were you born in Canada?

- Yes..... 1 **SKIP TO QUESTION 138**
- No..... 0

If no, what was your country of birth? _____

If no, what is the total number of years you have lived in Canada? _____

136. Are you now, or have you ever been, a landed immigrant in Canada?

- Yes..... 1 **SKIP TO QUESTION 138**
- No..... 0
- DK..... 8
- NR..... 9

137. Do you currently have refugee status in Canada?

- Yes..... 1
- No..... 0
- DK..... 8
- NR..... 9

138. What language do you speak most often at home? (Accept multiple response only if languages are spoken equally)

- English..... 1
- French..... 2
- Italian..... 3
- German..... 4
- Ukrainian..... 5
- Dutch..... 6
- Chinese..... 7
- Hungarian..... 8
- Portuguese..... 9
- Polish..... 10
- Cree..... 11
- Ojibway..... 12
- Saulteaux..... 13
- Island Lake..... 14
- Other (specify _____)..... 15
- DK..... 88
- NR..... 99

(adapted from General Social Survey, Statistics Canada, 1991)

Abuse Assessment Screen (McFarlane, Parker, Soeken, & Bullock, 1992)

Finally, I would like to ask you some questions about emotional and physical abuse. We know that the incidence of abuse often increases during pregnancy, and this is a reason some women don't seek prenatal care. Please answer these questions honestly; we will not tell anyone about your answers.

139. Have you ever been emotionally or physically abused by your partner or someone important to you?

Yes..... 1
 No..... 0

140. *In the year prior to getting pregnant*, were you ever hit, slapped, kicked, or otherwise physically hurt by someone?

Yes..... 1
 No..... 0

If yes by whom? (circle all that apply)

Husband Ex-husband Boyfriend Stranger Other Multiple
 Total number of times _____

141. *During your pregnancy*, were you ever hit, slapped, kicked, or otherwise physically hurt by someone?

Yes..... 1
 No..... 0

If yes by whom? (circle all that apply)

Husband Ex-husband Boyfriend Stranger Other Multiple
 Total number of times _____

142. *During your pregnancy*, did anyone force you to have sexual activities?

Yes..... 1
 No..... 0

If yes by whom? (circle all that apply)

Husband Ex-husband Boyfriend Stranger Other Multiple
 Total number of times _____

143. Are you afraid of your partner or anyone you listed above?

Yes..... 1
 No..... 0

Appendix C



OFFICE OF RESEARCH
SERVICES
Office of the Vice-President (Research)

CTC Building
208 - 194 Dafoe Road
Winnipeg, MB R3T 2N2
Fax (204) 269-7173
www.umanitoba.ca/research

APPROVAL CERTIFICATE

12 November 2009

TO: Lisa Merrill (Advisor M. Heaman)
Principal Investigator

FROM: Lorna Guse, Chair
Education/Nursing Research Ethics Board (ENREB)

Re: Protocol #E2009:094
**"Demographic and Psychosocial Correlates of Illicit Drug Use in
Pregnancy: A Mixed Methods Study"**

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Eveline Saurette in the Office of Research Services, (e-mail eveline_saurette@umanitoba.ca, or fax 261-0325), including the Sponsor name, before your account can be opened.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.

Appendix D



Health Sciences Centre
Winnipeg

Office of the Director of Research

December 2, 2009

Ms L. Merrill
Principal Investigator

Dear Ms Merrill

**RE: DEMOGRAPHIC AND PSYCHOSOCIAL CORRELATES OF ILLICIT DRUG
USE IN PREGNANCY: A MIXED METHODS STUDY.**

ETHICS #: E2009:094 RIC #: RI09:191

The above-named protocol, has been evaluated and approved by the HSC Research Impact Committee.

The Department of Research wishes you much success with your study.

Sincerely

Karen Shaw-Allan
Research Protocol Officer
Health Sciences Centre

cc: Director of Research
Ancillary Services, Finance Division

An operating
division of the



Winnipeg Regional
Health Authority
Office régional de la
santé de Winnipeg

Affiliated
with the



UNIVERSITY
OF MANITOBA

Appendix E

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UNIVERSITY
OF MANITOBA

Faculty of Nursing

**RESEARCH SUBJECT INFORMATION AND CONSENT FORM
(For Qualitative Component of Study)**

Research Project Title: Women's Experience of Illicit Drug Use during Pregnancy

Funding Source: Kathleen and Winnifred Ruane Graduate Student Research Grant for Nurses

Principal Investigator: Lisa Merrill, RN, BN, Master of Nursing Graduate Student, Faculty of Nursing, University of Manitoba

Thesis Supervisor: Dr. Maureen Heaman, University of Manitoba, Faculty of Nursing, University of Manitoba, Winnipeg,

You are being asked to take part in a research study. This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. The information contained in this consent form should give you a basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask the researcher, Lisa Merrill. Please take the time to read this carefully and understand any accompanying information.

Purpose of the Study:

The purpose of this study is to explore the life experiences and circumstances that may contribute to the use of illicit drugs by women during pregnancy in Winnipeg, Manitoba. This study is being conducted as the researcher's thesis project.

Women Who May Participate in the Study:

Women are being asked to take part in this study if they are 20 weeks pregnant or more, aged 18 years or over, are either using illicit drugs during their pregnancy or used drugs earlier in their pregnancy and are currently in a drug treatment program, and live in one of these inner-city Winnipeg neighbourhoods: River East A, Seven Oaks A, Inkster B, Point Douglas A, Point Douglas B, Downtown A, Downtown B or River Heights B, as determined by postal code.

Procedures:

If you agree to take part in this study, the researcher, Lisa Merrill, will interview you about your life experiences and your use of illicit drugs during your pregnancy. You will be asked a number of questions about your life, your family supports, your pregnancy, the prenatal care you received, and

Version_3_Consent_Form_November 6_2009

Initials of Participant _____

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circumstances or life experiences that may have contributed to the use of illicit drugs during your pregnancy. The interview will take approximately one hour, and will take place at a time and location that is convenient for you. The interview will be audio-taped (tape-recorded) and later transcribed (typed out). You will also be asked some background questions by the researcher about your age, marital status, income and ethnic background in order to complete a brief demographic form. Once the data obtained during the study has been analyzed, the researcher may contact you to discuss the results of the study in order to verify the findings of the study.

Confidentiality:

All information gathered for this study will be kept strictly confidential. In certain limited circumstances I may be required by law to disclose information collected, including situations involving child abuse or where a child is in need of protection. The tape recording of your interview will not contain any identifiable information about you and will not identify you by name. Any information that you provide will be identified with a unique code number that has been assigned only to you. The researcher will keep a list of participant names that match these code numbers. This list will be destroyed as soon as the study is completed. This list, the taped interview, the transcript and the demographic questionnaire will be stored separately in a locked filing cabinet at the University of Manitoba. The tape recordings, the transcript and the demographic questionnaire will stay in the locked cabinet and then be destroyed seven years after the study ends. Only the researcher; Lisa Merrill, her thesis advisor, Dr. Maureen Heaman, and a transcriptionist who will be typing out the tape recorded interviews will have access to the tape recordings, notes, and transcripts. The transcriptionist will sign a pledge of confidentiality prior to having any access to confidential information. The pledge of confidentiality requires all information to remain strictly confidential. Your individual identity will not be revealed in reports or articles that describe the results of this study.

Members of the Education/Nursing Research Ethics Board at the University of Manitoba may review your research-related records to make sure this study meets quality guidelines.

Risks:

Due to the potentially sensitive nature of circumstances surrounding the use of illicit drugs during pregnancy, there may be a risk of emotional distress for some participants who take part in the study. Information about resources in the community that may be of assistance will be provided to women experiencing emotional stress at the time of the interview.

Benefits:

There are no direct benefits involved in participating in this study. However, your answers may help to improve future services for women, their children and families.

Compensation:

You will receive a \$20.00 grocery store coupon to thank you for taking the time to participate in this study.

Voluntary Participation and Withdrawal:

Your participation in this study is completely voluntary and your decision about whether or not to take part will not affect the care you receive in any way. You have the right to not answer any of the questions you are asked. You also have the right to stop taking part in the study at any time, without

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prejudice or consequence. You may verbally indicate your desire to withdraw from the study at any point during your participation in the study. All information collected from you when you decide to withdraw will be destroyed and you will still receive the grocery store coupon.

Feedback to Participants:

A summary of the results of the study will be mailed to you if you would like one. Please complete the attached page with your name and address if you would like to receive a summary of the results.

Statement of Consent

Your signature on this form means that you have had the study explained to you in a language that you understand, all questions have been answered to your satisfaction, and that you agree to take part as a subject. By signing this consent form, you agree that you are of lawful age and are legally competent to sign this release. In no way does this waive your legal rights, nor does it release the researchers, funding agency, or involved institutions from their professional responsibilities.

By signing this consent form, you agree that: you, your heirs, executors, administrators and assigns, hereby release and forever discharge the researchers, the funding agency, and any other involved institutions, including the University of Manitoba, its servants, agents and employees, from and against any and all claims, demands or other proceedings arising out of, or in connection with your participation in this research project.

You can stop taking part in the study at any time, and /or refuse to answer any questions you are not comfortable with. You should feel free to ask questions at any time during or after the study from either Lisa Merrill or her thesis supervisor, Dr. Maureen Heaman

This research project has been approved by the Education/Nursing Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at or e-mail
A copy of this consent form has been given to you to keep for your records.

Participant's Signature Date

Printed name of above: _____

Researcher and/or Delegate's Signature Date

Printed name of above: _____

ALL SUBJECTS MUST SIGN AND DATE THEIR OWN SIGNATURE.

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After all of the interviews for the study have been reviewed and analyzed by the researcher, the researcher may want to contact you again to discuss the findings of the study. The purpose of this is to ensure that the results of the study are accurate and true to the views of the participants. This is an important step in the research project.

Please fill in the following contact information:

I agree to be contacted to review the findings of the study _____ Yes _____ No

Name: _____

Address: _____

Phone Number: _____

Alternate contact number: _____

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Once the study has been completed and the results of the study are available, a copy of the results may be mailed to you. Please fill out the following contact information if you would like a copy of the results mailed to you.

Name: _____

Address: _____

Postal Code: _____

Appendix F

Demographic Questionnaire for Qualitative Portion of Study (Researcher will ask the participants these questions)

1. Age in years _____

2. Gestational age at time of interview

_____ weeks pregnant

_____ months pregnant

3. Gravida _____ Para _____

4. Neighborhood:

- River East A1
- Seven Oaks A.....2
- Inkster B3
- Point Douglas A.....4
- Point Douglas B.....5
- Downtown A.....6
- Downtown B.....7
- River Heights B.....8

5. Marital Status _____ Married and living with spouse
 _____ Common Law Relationship or Live-In Partner
 _____ Single- never married
 _____ Divorced
 _____ Separated
 _____ Widowed

6. Income: Please indicate your family income before taxes for the past year:

- No income.....1
- Under \$10,000.....2
- \$10,000-19,999.....3
- \$20,000-29,999.....4
- \$30,000-39,999.....5
- \$40,000-49,999.....6
- \$50,000-59,999.....7
- \$60,000-69,999.....8
- \$70,000-79,999.....9
- \$80,000-89,999.....10
- \$90,000-99,999.....11
- \$100,000 or over.....12

(Adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

7. What is your highest level of education? This includes complete and incomplete (Circle highest level).

- No schooling.....1
- Elementary school
 - Incomplete.....2
 - Complete.....3
- Junior High School
 - Incomplete.....4
 - Complete.....5
- High School
 - Incomplete.....6
 - Complete.....7
- Non-University (Vocational/technical)
 - Incomplete.....8
 - Complete.....9
- University
 - Incomplete.....10
 - Diploma/Certificate (e.g. hygienists).....11
 - Bachelor's Degree.....12
 - Professional Degree (Vet, Dr., Lawyer).....13
 - Master's Degree.....14
 - Doctorate.....15

(Adapted from Winnipeg Area Survey, 1984-1998, University of Manitoba Department of Sociology)

8. Which of the following best describes your racial background? Would you say...

- Aboriginal (Inuit, Métis, North American Indian).....1
- Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan).....2
- Black (e.g., African, Haitian, Jamaican, Somali).....3
- Chinese.....4
- Filipino.....5
- Japanese.....6
- Korean.....7
- Latin American.....8
- South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan).....9
- South East Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese).....10
- White (Caucasian).....11
- Other.....12

(Statistics Canada concept definitions; NPHS 98-99)

9. *A prenatal care visit is defined as a visit to a health professional, such as a physician, midwife or nurse practitioner, to receive medical care for your pregnancy (including physical assessments, screening tests and health teaching).*

Did you receive any prenatal care during this pregnancy?

_____Yes-----if yes then go to 10.

_____No

10. How many weeks or months were you when you had your first prenatal visit?

11. How many prenatal care visits did you receive?

_____visits

Appendix G

Qualitative Interview Guide for Women
Women's Experience of Illicit Drug Use During Pregnancy

We know that many factors may influence the use of substances by women during pregnancy. In order to have a better understanding of the issue of substance use during pregnancy, it is important to hear the stories and appreciate the life circumstances that may have had an influence on substance use during pregnancy. For the purpose of this interview, substance use during pregnancy is defined as the use of illicit drugs of dependency such as marijuana, crack, cocaine, heroin, or other drugs by a woman while pregnant. During this interview I would like you to reflect back on your pregnancy, your life before you were pregnant and your life since you became pregnant. I would like to explore your lived experiences and how your experiences have impacted your use of substances.

I would like to begin by asking you some questions about your life before you became pregnant.

1. Tell me what your life was like prior to becoming pregnant.
(Explore social support system such as parents, family and friends; explore relationships, childhood experiences; violence and abuse)
2. What was your typical pattern of drug use? (Explore amount and frequency of use; drug of choice; any social patterns of use)

Since you became pregnant:

3. Tell me what your life has been like since you found out that you were pregnant.
(Explore relationships; friends and family; work)
4. Have there been any important life events or experiences that have impacted your use of drugs during pregnancy? If so, can you describe some of these experiences?
5. How has your drug use changed, if any, since finding out you were pregnant?
(Explore amount and frequency of drug use; drug of choice; social patterns of use)
6. How do your closest friends and family or support system feel about you using drugs while pregnant?
7. What motivates you to continue to use drugs during pregnancy?
(Explore what makes it easy for you to use; what would make you stop?)
8. How has the use of substances during your pregnancy impacted your use of prenatal care?

9. What are your typical ways of coping with stress in your life? (explore positive and negative coping strategies)

Thank you for taking the time to talk with me. You have shared a lot of information that will help us better understand the issues for women regarding substance use in pregnancy. Is there anything else that you would like to add?