

OPIOID MAINTENANCE TREATMENT RETENTION AND PERCEPTIONS
OF CARE AMONG LONG-TERM OPIOID DEPENDENT MEN AND WOMEN

by

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Abstract

Background: Opioid dependence is a chronic relapsing disease with a number of related harms. Despite the proven effectiveness of opioid maintenance many men and women are not engaged or retained in this treatment. Accounting for patient perceptions of their interactions with health care providers may offer important evidence as to meeting gender specific health and treatment needs of this population.

Objective: This thesis investigates access to health care and addiction treatment services among long-term opioid dependent men and women. Factors associated with retention to opioid maintenance treatment are explored among participants and stratified by gender. Perceptions of encounters with health care providers as potentially offensive, degrading, or abusive are considered. Finally, the feasibility of sharing study findings with long-term opioid users are explored.

Methods: The Gender Matters in the Health of Long-term Opioid Users study is a descriptive cross-sectional study of long-term opioid users in the Downtown Eastside of Vancouver. Descriptive variables were explored and logistic regression models were built to determine associations between independent variables and the opioid maintenance treatment retention and perceived abuse in health care outcomes. Two formats of sharing study findings with participants were piloted and participant perceptions of study findings and the meeting formats were gathered.

Results: Rates of opioid maintenance treatment retention were similar among men and women while factors associated with retention differed by gender. Half of participants reported perceived abuse in health care, which was associated with childhood maltreatment and

psychological health problems. The majority of participants felt it was important for participants to be involved in knowledge translation, while few had previously had the opportunity to do so.

Conclusions: Gender, along with other structural factors have strong implications for the appropriateness and success of the treatment and models of care provided to opioid-dependent men and women. Patient histories and perspectives must be accounted for to determine suitable treatments and to ensure health care encounters are not perceived as offensive, degrading, or abusive. The involvement of participants in knowledge translation can serve as a means of empowering participants and accounting for patient voice in recommendations for service provision and policy.

Preface

This statement is to certify that the work presented in this thesis was conceived, analyzed, written, and disseminated by Heather Nadine Palis (HNP). Data for this thesis comes from the Gender matters in the health of long-term opioid users study (GeMa). The GeMa study research team collected all quantitative data between June 2011 and June 2013. Members of the research team, including HNP, collected all qualitative focus group data in July and November of 2014.

A version of the perceived abuse in the health care system analysis will be published. (Palis, H., Marchand, K., Peng, D., Fikowski, J., Harrison, S., Spittal, P., Schechter, M., & Oviedo-Joekes, E. (2015). Factors associated with perceived abuse in health care among a population of long-term opioid users. *Journal of Substance Use and Misuse*). HNP was the principal author and conceptualized and wrote the first draft of the paper, DP reran the analysis to ensure quality for peer review publication. All authors critically revised and approved the manuscript.

Versions of this work have been presented by HNP at the International Conference on Violence in the Health Sector (2014), the Canadian Conference on Medical Education (2015), the Canadian Public Health Association Conference (2015), and will be presented at the American Public Health Association Conference (2015).

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List of abbreviations

AHC- Abuse in Health Care

AIC- Akaike Information Criterion

ASI- Addiction Severity Index

BC- British Columbia

CBPAR- Community Based Participatory Action Research

CI- Confidence Interval

CIDI- Composite International Diagnostic Interview

CPBC- College of Pharmacists of British Columbia

CPSBC- College of Physicians and Surgeons of British Columbia

CSQ- Client Satisfaction Questionnaire

CTQ- Childhood Trauma Questionnaire

DTES- Downtown Eastside

EQ-5D- Euroqol Dimensions of Quality of Life Questionnaire

GeMa- Gender Matters in the Health of Long-term Opioid Users Study

GP- General Practitioner

HCV- Hepatitis C Virus

HIV- Human Immunodeficiency Virus

IPV- Intimate Partner Violence

KD- Knowledge Dissemination

KT- Knowledge Translation

MMT- Methadone Maintenance Treatment

NAOMI- North American Opiate Medication Initiative

NorAQ- Norvold Abuse Questionnaire

OMT- Opioid Maintenance Treatment

OR- Odds Ratio

OTI- Opioid Treatment Index

PAHC- Perceived Abuse in Health Care

PTSD- Post Traumatic Stress Disorder

PTE- Potentially Traumatic Events

SALOME- Study to Assess Long-term Opioid Maintenance Effectiveness

SCL-90- Symptom Checklist-90

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Dedication

For the Gender Matters study participants

Chapter 1: Background and literature review

1.1 Thesis overview

Opioid dependence is a chronic relapsing disease with a number of related harms [1-3]. Despite the proven effectiveness of opioid maintenance treatment (OMT)¹[4-6], a considerable proportion of men and women are not engaged or retained [7, 8]. Accounting for patient perspectives of health care and addiction treatment services, as well as interactions with health care providers in the delivery of these services, may offer important clues as to improving engagement in care.

This thesis recognizes that the provision of addiction treatment and health care services to long term opioid-dependent² men and women must extend beyond a focus on medication, and instead, from the perspective of intersectionality reflect a deep understanding and awareness of the range of historical, social, and political factors shaping patient experiences and outcomes [9]. Gender provides a logical starting place for an intersectional analysis among long-term opioid-dependent individuals and thus, this thesis will account for the specific experiences of men and women.

Gender will not be considered as a standalone variable, but instead in relation to various systems that create and perpetuate layers of inequality such as racism, and classism, along with a range of social factors influencing health status and quality of life. This intersectional lens is increasingly used in health research to make sense of the diversity of patient histories, and how these shape patient health needs and outcomes [10-12].

¹ OMT accounts for both methadone and Suboxone®, while 97% of GeMa study participants' most recent OMT attempt was methadone

² To be considered “long-term” users participants in this study had to have had at least 5 years of regular opioid injection, while the average years of regular heroin injection in the sample was 16.2. While all participants used heroin as per the inclusion criteria, participants also used other injectable opiates such as morphine, hydromorphone, oxycodone, and methadone. For the purpose of this study, opioid dependence refers to dependence on injectable opioids.

Men and women in this study had been regularly using opioids for on average over 15 years. Such prolonged regular use may be associated with social exclusion and marginalization, as it often co-exists with a range of problems such as poor housing, unemployment, and low income. This prolonged exposure has strong implications for health outcomes. The need for treatment adapted to patient circumstances must be acknowledged, primarily among those long-term users whom may often be excluded from more mainstream services, and for whom access to health care and addiction treatment services may be particularly pressing to ensuring health and well-being.

This thesis addresses objectives covering three interconnected topics. First, gender patterns of victimization and predictors of retention to opioid maintenance treatment (OMT) are explored. Second, the factors associated with perceptions of abuse in the health care system are investigated, and lastly, the feasibility of two knowledge translation formats are tested. In Chapter 1, these topics are introduced accounting for important contributing factors to patients' health and treatment experiences, such as histories of victimization. In Chapter 2, the methods of the studies are described including study procedures, data collection, variables, and analysis. In the third chapter, the quantitative and qualitative results of this study are shared, beginning with predictors of OMT retention, followed by predictors of perceived abuse in health care, and concluding with the feasibility of knowledge translation formats with long-term opioid users. Finally, in the fourth chapter, the findings and limitations are discussed and recommendations are shared.

1.2 Histories of victimization among long-term opioid users

Studies have shown that opioid-dependent men and women often report histories of victimization, manifested as physical, sexual, and emotional abuse, adverse, violent or traumatic experiences [13-

16] and that victimization increases the risk for substance use and dependence [17-19]. These are known to have detrimental and long lasting implications for psychological, emotional, and physical health, and it is therefore imperative that investigations of health and substance use among long-term opioid users account for these histories. In conducting research with this population, it is important to recognize that the medical and professional discourse surrounding victimization may not align with that of the “victim” of abuse and that the relative importance of abusive experiences from the perspective of the patient must be of focus.

The medical and professional discourse (e.g. from psychologists and researchers) surrounding victimization has previously been viewed as oppressive, in that it fails to acknowledge the social location of “victims” [20]. This thesis therefore investigates the various participant experiences of “victimization” remaining sensitive to the diversity of means by which ethnicity, class, sexuality, and other features of history and identity may differentially affect the experiences of men and women with histories of victimization [10]. In this study, the term victimization refers to a continuum of experiences, including childhood maltreatment in the form of physical, emotional, or sexual abuse, physical and emotional neglect; adulthood sexual, physical, or emotional abuse; perceptions of verbal or non-verbal abuse in the health care system, and suicidal behaviours. The dynamic nature of these events are accounted for, in considering details surrounding the frequency and severity of events, as well as the relationship to the perpetrator of these events. In the Canadian context, studies depict prevalent abuse histories among long- term opioid-dependent men and women, accompanied by poor health and treatment outcomes. For instance, a study of young Aboriginal people who use illicit drugs in British Columbia found a 48% prevalence of at least one incident of sexual abuse, and these participants were more likely to report daily use of

heroin [21]. In the North American Opiate Medication Initiative (NAOMI), a study of long-term opioid injectors in Vancouver, it was found that 44.6% of participants reported a history of physical or sexual abuse and that they were more likely to present chronic health problems [16].

Retrospective and longitudinal data suggest that childhood abuse and neglect have direct negative impacts on psychological and physical health in all stages of life (childhood, adolescence, and adulthood) [22]. Associations have been observed between childhood abuse and diseases in adulthood, such as heart attack, stroke, and various health risk factors such as smoking and obesity [19]. These health impacts are known to be long-lasting, for example, with exposure to abuse and traumatic events shown to be associated with an increased risk of depressive disorders up to decades after their occurrence [17]. The prevalence of mental health problems such as anxiety, depression, post-traumatic stress disorder (PTSD) and suicide are also much higher among those reporting histories of victimization [23-25] and have shown gender and victimization specific relationships [26-28]. PTSD for example, is shown to be higher among victims of sexual victimization as opposed to other forms, and sexual victimization is shown to be more prevalent among women compared to men [29]. Mental and physical health conditions, when combined with the many health complications associated with opioid-dependence (e.g. human immunodeficiency virus (HIV), Hepatitis B, Hepatitis C (HCV), tuberculosis) leave individuals with combined histories of victimization and opioid-dependence extremely vulnerable to poor health and quality of life [30].

While some associations have been made between victimization and health among men and women, the normative and gendered constructions of violence and victimhood have left the focus

of the literature on the experiences of women, leaving men's experiences under-researched and under-analyzed [31]. Further, gender-based perspectives have identified that dominant norms discourage men from showing emotions, and demonstrating weakness, meaning that men's accounts of violence often remain unheard [32]. This is tied to cultural constructions of masculinity and femininity which, on the one hand, accept the existence of violence against women, yet often fail to recognize men as victims in similar situations [33]. Such constructions are also linked to debates that position men solely as perpetrators of violence, ignoring important associations between masculinity, violence and vulnerability [34, 35]. It is important then to expand the literature to account for the experiences of both men and women, free from pre-conceived gender constructions of the victimization and perpetration of abuse.

Studies focused on experiences of abuse among men and women have identified some distinct gender patterns, with women often identified as more likely to report histories of sexual abuse and men more likely to report histories of physical abuse [13, 29, 36-38]. The impact of abuse histories on addiction treatment access and outcomes however (e.g., health, retention in treatment, drug use) remain unclear [39-44] and gender differences are found in some cases [28] [45-47] but not in others [48]. Further uncertainty exists surrounding potentially important gender differences in details relating to the abusive events, such as the role of age of first abuse [49-51] and the relationship of the victim to the perpetrator [52-55].

Existing disparities in the literature on victimization may be partially due to the way in which abuse history is measured. Some studies have measured lifetime abuse without differentiating between developmental periods (e.g., childhood, adolescence, adulthood) [16, 48, 56] whereas

others only include childhood [57] or adulthood abuse [58] and most do not indicate the profile of the perpetrator (i.e., gender, relationship). In addition, a number of studies have measured victimization with dichotomous (yes vs. no) single item questionnaires [38, 44, 56, 59, 60]. Measuring victimization in this manner might underestimate its occurrence, [61] as well as neglect details regarding the nature of the event. Lack of such information makes it difficult to draw conclusions regarding the context of events, as well as gender specific implications. The limited evidence surrounding gender patterns of victimization, along with the existing conflicting findings demonstrate the need for further exploration of abuse histories and their relation to the health and treatment experiences of long-term opioid-dependent men and women.

1.3 Opioid dependence and opioid maintenance treatment

Dependence on opioids, in particular heroin and prescription opioids obtained illicitly is a significant public health challenge, represented in the International Classification of Disease of the World Health Organization as a long-term relapsing disorder [62]. This chronic illness [63], characterized by patterns of continued drug use and intervening periods of treatment, abstinence and relapse, poses great harms to the individual, her/his family and the community[1-3] [64-67]. Drug related harms include infections such as endocarditis, blood borne viruses such as human immunodeficiency virus (HIV) and hepatitis C (HCV), fatal overdose, and a number of other medical conditions that become more common with long-term use [68-70]. The mortality rate among opioid-dependent men and women (overdose being the most common cause) has been estimated to be between 6 to 20 times greater than that of the general population [1]. Opioid dependence is also associated with mental and physical health conditions, social exclusions and

disintegration, and violence [71, 72] [64] and poses further burdens on communities including crime, sex work, public disorder and health and criminal justice costs [64, 73].

Opioid maintenance treatment (OMT) provides patients with a pharmaceutical grade opioid as a replacement for an illicit opioid, with the aim of reducing the risk of death and disease associated with street drug use and improving social functioning [4]. Internationally, since the 1960s the most used and studied form of OMT has been orally administered methadone, [74] well-known as methadone maintenance treatment (MMT). MMT was first experimentally practiced in the 1950s in Vancouver [75], however was popularized by the widely published studies of Dole and Nyswander [76], where methadone was viewed within the medical model, contrasting the then more common views of opioid-dependent men and women as immoral or criminal [77].

Methadone is a long-acting opioid analgesic with well-understood pharmacological characteristics that may make it a suitable option for reducing illicit drug use among patients dependent on opioids [74]. It has a half-life of approximately 24 hours, requiring a single daily dose rather than more frequent administration [78]. At adequate doses, methadone “blocks” the euphoric effects of heroin [79] [80]. The reduction or discontinuation of use however is largely dependent on the role methadone plays in suppressing withdrawal symptoms [4]. The dose must be increased to a rate of tolerance, at which the individual’s response to the injection of street opioids will be weakened, tending to extinguish the injecting habit. It is recommended that the dose is increased until abstinence from street opioids is achieved [81].

In British Columbia, Suboxone®, a sublingual buprenorphine/naloxone (ratio 4:1) [82] combination is provided as an alternative to methadone. The buprenorphine/naloxone combination, when administered intravenously to an individual dependent on heroin or methadone, triggers withdrawal [83], eliminating the desire to inject the drug. Suboxone® became available in British Columbia in 2007, and while methadone remains the most widely prescribed treatment for OMT in this province, there are some patients for whom Suboxone® may offer an effective alternative to MMT [84].

Other options for opioid maintenance are available, however not in Canada. These include dihydrocodeine, [85] sustained released morphine sulphate, [86], and the full agonist levo-alpha-acetylmethadol, (LAAM) [87] which is no longer used in clinical practice due to its side effects [4]. Diacetylmorphine (the active ingredient on heroin) is offered in some European clinics for patients not benefiting from conventional treatments such as methadone [8, 88-91]. A Canadian study suggested that hydromorphone may provide an effective alternative to diacetylmorphine [92]. The effectiveness and safety profile of this medication are currently being tested among patients in the Study to Assess Long-term Opioid Medication Effectiveness (SALOME) in Vancouver [93]. Given the range of treatments available, it has been suggested that a diversified opioid portfolio is required to best meet the individual needs of all those affected by opioid dependence [94, 95].

1.3.1 Treatment retention in opioid maintenance

While the provision of a pharmaceutical grade opioid in place of an illicit one is consistent for OMT across contexts, the structural barriers to engaging patients in care vary. As such, retention

has been operationalized in many different ways, often depending on the research question, study population, and study design, (e.g. period of follow up) [96]. For example, a population level study of MMT episodes initiated in British Columbia between 1996 and 2006 defined retention as having no interruptions in prescribed doses greater than 30 continuous days over a 36-month period. Such a definition allows the flexibility for patients to have some minor gaps in treatment, and still be considered retained, while it identifies those with gaps of over 30 days as no longer retained [7]. While this definition offers some flexibility, other studies of long-term users have used even more flexible definitions. These are more suitable among populations in low threshold programs, where patients may not be prepared to stop the use of illicit opioids and thus contact with treatment may not be as regular. The diversity of definitions then leaves the potential for conflicting findings, with a participant considered retained by one definition and not retained by another. This is an important consideration when operationalizing retention, particularly in considering the capacity of the variable to account for periods of relapse, which may be challenging in studies which define retention based solely on access at a specific time point, for example, at the end of the study period[97].

An alternative means of operationalizing retention is to consider each day a participant is engaged in treatment. Hser et al. operationalize retention as the days in treatment from randomization, allowing for a detailed picture of the patient's treatment trajectory, with the potential to identify patterns of relapse to illicit drug use, and initiation back to treatment [98]. Despite the variance in operationalizing retention, it remains a consistent measure of OMT effectiveness in the literature on opioid dependence [99].

For patients whom are not seen to achieve the optimal benefits of methadone (i.e. reduced or eliminated illicit opioid use), definitions aligned with the principles of low-threshold treatment may be more suitable. In the North American Opioid Medication Initiative (NAOMI) study for example, retention was defined as having received treatment in any 10 of the 14 days prior to the 12-month assessment or 20 of the 30 days prior to the 24-month assessment [100]. This means of operationalizing retention acknowledges the engagement of patients in treatment as an opportunity to remain in contact with the health care system. Despite using a less stringent definition of retention, and offering optimized treatment, the NAOMI study found the rate of patients in oral MMT at 12 months to be 54.1% [100]. Other studies similarly depict the challenge of retaining patients in treatment, demonstrating that nearly half of patients who begin MMT are no longer enrolled by the end of their first year [5, 6, 101, 102]. Despite variation in definitions, the numerous findings of poor retention rates suggest that the treatment needs of many patients are not being addressed with the currently available OMT programming. In order to work to best engage long-term opioid users in OMT, an understanding of patient context is extremely important, and could be strengthened with an examination of the various factors influencing retention in this population. Identifying these factors can allow treatment providers to better support patients in overcoming barriers to recovery [28].

1.3.1.1 Barriers and supports to treatment retention in opioid maintenance

Because the benefits of remaining adherent to OMT long-term have been well established [101, 103-106] studies of OMT commonly use retention as the primary measure of treatment effectiveness ([99, 100, 107]. While long-term retention is ideal, retention is important in any magnitude, as it means increased exposure to the health care system. The benefits of retention are

known not just for methadone, but for other treatment for opioid dependence such as hydromorphone and diacetylmorphine [108].

Large-scale observational studies in the United States such as the Drug Abuse Reporting Program (DARP, based on admissions from 1969 to 1972), the Treatment Outcome Prospective Study (TOPS, 1979–81) and the Drug Abuse Treatment Outcomes Study (DATOS, 1991–93) have suggested that drug treatment outcomes are related to treatment duration. A longitudinal cohort study of 62 treatment units with 4005 clients in the US revealed that treatment duration presents a positive linear relationship with illicit drug use improvement score [99]. Longer tenure in methadone treatment has been associated with decreases in drug use [99, 109], criminal activity [110, 111]; [112], HIV seroconversion [113, 114], and overdose death [115]. Based on the established importance of retaining patients in treatment, a number of studies of OMT have assessed variables from a wide variety of topics (patient socio-demographics, physical and mental health, history of and current drug use, treatment history, operations of clinics where patients retrieve medication) and tested their relationship with treatment retention [28, 116-121]. While these variables cover a broad spectrum of topics, they have been recently discussed and organized in terms of three domains 1) patient-related factors 2) program-related factors and 3) social factors [116].

A number of patient-related factors that are associated with longer tenure in treatment have been established, including older age [122-126], Aboriginal ethnicity [127] fewer years of drug use ([128]; [129], lack of concurrent non-opioid drug use [6, 107, 130] less cocaine use ([122, 124, 126, 131]; less alcohol use [126, 131], and lack of comorbid psychiatric diagnoses [132, 133]. In

addition, higher levels of motivation for treatment (both pre-treatment and during treatment) have been found to be associated with treatment retention [104, 105, 134].

Program-related variables have also been examined. Among these, higher doses have been found to be the most consistent predictor of retention in treatment and reduced illicit drug use [122, 123, 129, 135, 136]. However, more recently studies have investigated the role of dose adequacy [137], and it has been suggested that clinical dose adjustment decisions should be made depending on the needs of the individual [138, 139] (Oviedo-Joekes, 2015, in press). Greater counselor–patient rapport [102, 105, 131, 140] and higher levels of patient satisfaction with the treatment program and support services [102, 136, 141, 142] have also shown associations with treatment retention.

Social factors have been less frequently studied than patient and program-level factors, but have been of increasing interest [143]. A recent study has noted that, as of yet the variables investigated in relation to OMT retention are mostly socioeconomic or nominal in nature, (age, gender, race, marital status, housing status, income, physical health problems, substance abuse, judicial problems, child care responsibility, education, duration of opiate abuse, status of hepatitis B or C, HIV, dose of methadone, previous treatments) [144]. Perreault notes that few studies have investigated psychological or social variables which may be more promising predictors for retention in MMT than socio-demographic variables [144]. For example, Perreault et al. found that among men and women engaged in MMT, social factors including low self-esteem and criminal charges decreased the odds of retention [144]. More recent studies have similarly determined such associations, for example, demonstrating that social support (e.g. living with family) is associated with higher retention rates [120]. There is space therefore for social factors to be further explored

in relation to treatment retention, expanding on the benefits gained by engaging in regular contact with health care providers. Studies for example, have shown that injection risk taking behaviours are lower among those engaged in MMT compared to those not [145, 146] and similarly that psychological health problems can be improved and managed through the supports provided through methadone treatment programs[147, 148]. An exploration of a range of individual, program, and social variables could provide important gender specific clues as to how men and women are engaged and retained in OMT.

1.3.2 The need for a gendered approach

Opioid dependence presents a chronic relapsing disease with a relatively low rate of long-term recovery, especially among marginalized groups, [149, 150] yet few studies have investigated gender-specific treatment needs in OMT [151, 152]. Studies that have investigated predictors of MMT retention typically include only or mostly males, or mixed samples that did not consider gender differences [153]. A recent overview of MMT retention studies has recommended that future studies examine men and women separately, considering unique pathways by which women and men may engage in, and benefit from MMT [28]. This study has made the assertion that given the complexity of findings on gender differences in treatment retention, merely including gender as a predictor variable is inadequate to understanding the determinants of retention among patients. Instead, the examination of interactions between gender and other social factors have been suggested to provide a more complete view of how these factors influence treatment outcomes [28]. Understanding the mechanisms associated with retention to treatment for opioid-dependence among men and women is a first step to improving the health conditions of this population. Additional research is urgently required to critically assess the feasibility and appropriateness of

available OMT for men and women, as a number of gender-related issues may be moderating the access and perceived quality of these treatments [152].

In considering the factors associated with retention to treatment, patients' perceptions may provide important starting points. Examples include perceived treatment effectiveness, which could be measured by patients as improved health, reduced illicit drug use, and the absence or reduction of withdrawal symptoms [154]. The patients' perception of the health care provider may also be important, and include the provider's perceived knowledge, skills, and importantly the provision of care founded on caring qualities such as empathy, compassion, and respect [155].

1.4 Perceived abuse in the health care system

1.4.1 Interactions with health care providers

Interactions with health care providers are essential to ensuring the health and well-being of long-term opioid users who often face a number of health problems and require regular medical care. These interactions however may sometimes be perceived in ways that are detrimental to patient well-being and lead to the underutilization of care [156]. Among long-term opioid users, for whom engagement in OMT on a daily basis is essential to gain the optimal benefits of treatment, such negative perceptions of care are of great concern. There is evidence that long-term opioid users face stigma and discrimination in health care encounters, the literature on these concepts however is largely framed from the perspective of the health care provider (Lovi & Barr, 2009; Simmonds & Coomber, 2009; Skinner, Feather, Freeman, & Roche, 2007; van Boekel, Brouwers, van Weeghel, & Garretsen, 2014). *Abuse in the health care system*, a newer concept has been developed by a group of Nordic researchers [157, 158] to determine patients' subjective

perceptions of their health care encounters as offensive, degrading, or in more rare and extreme cases as abusive (Brüggemann, Wijma, & Swahnberg, 2012a). This concept has not been investigated among a population of long-term opioid users and has the potential to complement the existing mentioned research focused on the concepts of stigma and discrimination from the perspective of the health care provider.

1.4.1.1 Health care provider attitudes: stigma toward substance dependent patients

In the context of opioid dependence, stigma often acknowledges drug use as a deviant behavior that is contrary to societal beliefs about what is “acceptable” or “normal” [159]. The societal response to that deemed as “not normal” serve to isolate, correct, treat, or punish those that are engaged in such behavior [160]. Stigma has been said to be created through five interrelated concepts including: labeling; linking difference to fears such as drug use as “dangerous”; the “othering” process through the creation of “us vs. them” categories; blame and discrimination; and power experienced as access or lack thereof to resources such as social networks and money [12, 161].

The stigma associated with drug use is known to result in an internalization of shame and guilt, preventing patients from accessing or fully utilizing often seriously needed health care services[162] [163, 164]. Substance dependent men and women have in some cases attempted to hide their drug use in health care settings, despite this being the issue for which they may have the greatest need of care [165]. Thus as a barrier to care, stigma and discrimination may affect patient physical and psychological health in acting as an impediment to health care access, lowering the quality of care received, and reducing the reporting of health problems[156].

Among substance dependent populations, investigations of stigma have been focused primarily on the experiences and perspectives of health care providers working with this population [166-168]. Studies have suggested that health care providers may have negative attitudes towards patients with substance use disorders and perceive them as manipulative, aggressive, rude, and poorly motivated [169]. Treatment of these patients may be viewed as challenging, stressful, difficult [168, 170] and as emotionally challenging or potentially unsafe[168]. A study of health care providers of eight different European countries found considerably lower regard for working with patients with substance use disorders compared to working with patients suffering from other conditions such as diabetes or depression [171]. Studies that have considered the perspective of the patient have shown that this low regard toward patients poses a barrier to health care access [164] and results in poorer physical and mental health[156]. Perceived abuse in the health care system, a newer concept, focuses on understanding patients' perceptions of abuse, covering a continuum of experiences manifested in forms such as neglect, verbal, physical, or sexual abuse, and ranging from perceptions of disrespect, to perceived intentional harm [172]. The language of "abuse" termed in abuse in the health care system places the emphasis of wrong doing on the health care provider rather than the patient, and compared to terms such as stigma, have much more direct connotations. This language further validates the patient's subjective experience, and highlights the seriousness with which perceptions of abuse, ranging from mild disrespect to more severe violations must be accounted.

1.4.1.2 Perceived abuse in the health care system

The concept of perceived abuse in the health care system aims to capture and understand patient experiences in the health care system that are perceived as degrading, offensive, or in more rare and extreme cases as abusive. Studies based on Norvold Abuse Questionnaire have reported a

lifetime prevalence of perceived abuse in the health care system ranging between 13– 28% in Nordic women (general population and gynecology patients) and 8% in Swedish men from a general population sample [173-175]. Patients who have reported perceived abuse in the health care system describe themselves as disempowered, dehumanized and devalued as human beings by the experience [176]. This thesis will examine factors highly prevalent in this population, some of which have known associations with perceived abuse in the health care system, such as history of childhood abuse, and psychological health status. Such an investigation among long-term opioid users could provide important information as to improving the delivery of care and addiction treatment services, potentially supporting stronger retention in OMT and access to health care services of considerable need to this population.

1.4.2 Childhood abuse and perceived abuse in the health care system

Childhood abuse has consistently shown to be associated with reporting perceived abuse in the health care system, where adult victims of perceived abuse in the health care system report experiences of emotional, physical, or sexual abuse in childhood more often than non-victims. Among both men and women, a dose-response relationship has been demonstrated [175, 177]. Various theories have been formulated about the mechanisms behind this association [178-181], postulating that those with histories of childhood maltreatment often have an altered cognitive schema about relationships with others, thinking, e.g., “I am worthless and I deserve this. Nobody can be trusted.” This phenomenon has been referred to as a “self-fulfilling prophecy” where patients enter care with poor expectations, which negatively influence their perceptions of treatment [178-181].

More recent studies have shifted away from such stigmatizing views, which place blame on patients, and instead have considered the neurobiological associations to abuse [182-185]. Histories of childhood abuse for example, have been shown to alter the structure and functioning of the brain, in ways that may be associated with behavioural problems and emotional stress responses. These alterations may have implications for perceptions of social encounters, including those in the health care system. For example, a recent study of physical abuse and neglect found these stressors shaped the development of brain areas involved in emotional processing and regulation. Smaller amygdala and hippocampal volumes were found among those children exposed to these stressors, and were associated with more behavioural problems [182]. Furthermore, in childhood the serotonin system matures and works to regulate mood balance. Various early life stressors including family dysfunction, neglect, or emotional and/or physical abuse have been shown to disrupt this system, leading to structural and functional changes in brain circuits that are responsible for controlling emotional stress responses[183]. These potential alterations may, in some cases, provide important clues as to understanding the way in which patients with histories of abuse perceive their encounters with health care providers.

1.4.3 Psychological health and perceived abuse in the health care system

Studies in general populations have highlighted the importance of considering history of psychological problems such as post-traumatic stress disorder (PTSD) in relation to perceived abuse in the health care system [174]. A patient with a history of a traumatic event, that has caused posttraumatic stress symptoms, may present with a higher risk than others to experience flashbacks during, for example, an examination [174]. If the examination triggers flashbacks, the patient may relive the abusive experience (e.g. being forced to do something against his/her will) in present

time and maybe even in a sensory way, i.e. the patient might suddenly see, hear, feel, smell or sense the abuse taking place again. Often the patient may be overwhelmed by emotions from the traumatic event, sometimes without understanding where the feelings have stemmed from [181]. These reactions may also seem inexplicable to the health care staff if they are unaware of the patient's history of abuse, [181] highlighting the potential importance of discussing history of abuse with patients.

Among patients suffering from PTSD, adaptiveness resolution has been explored and draws on the notion that the human brain is equipped to deal with adversity. The adaptive information processing (AIP) model [186, 187] assumes that the human neurobiological system processes information in a manner that promotes adaptive resolution, and therefore a person who experiences a crisis or life-threatening event will generally work through the experience naturally. Some critical experiences (e.g. childhood sexual abuse) may be seen to be more powerful than the AIP system, overwhelming the individual. In this sense, the traumatic events remain as unprocessed and unresolved and traumatic memories, troubling thoughts, emotions and behaviours may persist. Even the slightest event or stimuli may trigger a memory of the traumatic event, causing an emotional response that may seem misplaced [186]. It is plausible then, that a specific experience in the health care system could present triggering stimuli, reengaging the individual in unprocessed harmful memories.

Understanding the risk factors and explanations for incidents of perceived abuse in the health care system are important among populations such as long-term opioid users whom are known to experience stigma and discrimination in health care settings, who present prevalent risk factors

(i.e. childhood abuse and psychological health problems) and for whom this investigation has not been undertaken. Abuse histories and health problems leave opioid-dependent men and women with an increased need for health care services and contact [188] [189], increasing the potential for exposure to perceived abuse in the health care system. Furthermore, the plethora of research on stigma and discrimination on the part of health care providers toward substance dependent patients [163, 166-168] highlights the vulnerability of this population to perceived abuse in the health care system, and leaves behind a gap in the literature in terms of accounting for patient perspectives.

1.4.4 Communication and the patient-health care provider relationship

In order to improve addiction treatment and health care services for patients, it is essential to investigate how interactions between patients and health care providers may be related to patients' treatment experiences and outcomes. In other fields, such as mental health, it is known that strong patient-health care provider communication is associated with more favourable patient retention [190, 191]. The role of communications in improving a number of health related outcomes has been examined and includes increased access to care, greater patient knowledge and shared understanding, higher quality medical decisions, increased social support, augmented therapeutic alliance, patient agency and empowerment, and better management of emotions [192]. The potential for these communication pathways to benefit health outcomes and perceptions of care has been examined in detail among patients with other chronic conditions (e.g. diabetes) [193, 194]; however, has not been explored among long-term opioid users.

Communication may be a particularly important component of care among long term opioid users for whom more sensitive topics may be relevant to their health and addiction treatment needs. It is important to create an open and trusting environment in which patients feel comfortable sharing their perspectives with health care providers and actively engaging in their care. In patient encounters with the health care system however, the balance of power is often shifted toward the health care provider and the expertise that patients bring with them to their health care encounters are not recognized [195, 196]. Trust has been defined as particularly central to fostering a more open and balanced patient- health care provider relationship [197] and may be particularly important to men and women entering the health care system with prior traumatic experiences such as childhood abuse [155]. The relevance of trust in the patient-health care provider relationship to patient outcomes has been demonstrated and includes better continuity of care, patient satisfaction, and commitment to treatment plans [198, 199]. Therefore, a patient-centered approach, which seeks to actively engage patients in decision-making, may be one means of improving the delivery of health and addiction treatment services to opioid-dependent patients.

Only few studies have identified perceived abuse in the health care system and its consequences, and more studies are needed to describe the character and the meaning of the events perceived as abuse in the health care system. Such studies could work to capture patients' perspectives surrounding how such health care interactions should be approached by providers to best address patient needs, and ensure a patient centered approach to the delivery of health care and addiction treatment services [200].

1.5 Knowledge translation

Bridging the knowledge to action gap is one of the most important public health challenges of the century [201], and poses great opportunity for strengthening health systems and achieving equity in health. While knowledge translation is a relatively new term, the notion of moving research findings into practice can be traced back to the beginning of the 20th century when French Sociologists attempted to explain why some innovations were adopted and spread throughout a society, while others were ignored [202, 203]. Knowledge translation, as it is currently conceptualized, evolved out of diverse disciplinary perspectives such as knowledge utilization, evidence-based medicine, quality improvement, and diffusion of innovations [204].

Over the past decade, the interest in and focus on knowledge translation as an integral part of the research process has developed greatly [205]. This can largely be attributed to the recognition that traditional approaches meant to move research into practice, which were predominantly based on education (e.g., continuing professional development), did not necessarily lead to optimal care. This is well supported by a range of arguments about the social and economic damage caused by failures to put research evidence to good use [201, 206] and is known as the evidence-practice gap where unnecessary risks and harms are caused to patients and unnecessary expenditures to the health care system [205]. This evidence-practice gap means that patients fail to benefit optimally from advances in health care services, and suffer poorer quality of life and loss of productivity both personally and at the societal level [205]. In a review published in the *New England Journal of Medicine*, quality of health care was assessed among 12 metropolitan areas in the United States of America. It was observed that patients received only 55% of the recommended care (as per quality of care indicators), and that quality ranged from 79% of recommended care for senile

cataract to 11% of recommended care for alcohol dependence[207]. Similar findings have been reported across disciplines, in both primary and specialty care [208]. Among all health conditions measured, quality of care was lowest for those receiving treatment for substance dependence, whom historically have been known to receive sub-optimal care, potentially explained in part by the stigma and discrimination facing this population in health care encounters.

1.5.1 Sharing study findings with participants

With the recognition of the existing shortcomings in providing patients with optimal care, there has been a growing interest in knowledge translation (KT), and conceptualizations of the KT process have diversified. It is becoming increasingly unacceptable to view knowledge translation merely as a linear, researcher-driven activity [209]. Instead, the inclusion of patient perspectives have been highlighted as essential to achieving clinically important changes in practice by healthcare professionals and to improving patient decision making with current knowledge translation activities [205]. With this in mind, studies are increasingly recognizing the need to communicate overall results to participants after a research study has ended [210] [211] [212] [213], and also recognize participant desires to hear study findings [210, 211, 214].

The appropriateness of strategies for sharing study findings with participants will vary according to the type of study, participants, and outcomes [214]. Much of the research on different methods of sharing study findings with participants has been focused on sharing of findings from clinical trials, and tested methods include online resources, one-on-one consultation, meetings attended by participants, mail, and telephone [213, 215, 216]. It has been shown that often participants prefer face to face interactions with someone trusted who could provide responses to their questions and

concerns and further, that face to face interaction is favorable in cases where there are poor outcomes or complex findings which may require additional social supports[210, 217]. Despite this interest and arguments made about the ethical imperative to share results with participants [213, 218], researchers often view the sharing of study findings as resource intensive [211]. Findings are not routinely shared unless they are anticipated to directly affect patients' future care, [210] limiting their commitment to such a process. Participants often contribute their experiences and stories to research studies, and having research findings shared with them has been highlighted as empowering. Further research is required to determine how findings can be shared in a way that is both efficient and feasible for researchers, and is respectful of the interests and needs of participants.

1.5.2 The feasibility of sharing study findings

To our knowledge, there is little research on the feasibility of and best practices for sharing study findings with marginalized populations in general and long-term opioid users in particular. In order to anticipate the types of activities and interest among long-term opioid users, the underlying philosophies of community based participatory action research (CBPAR), are relevant. CBPAR is known to be suited for work with marginalized populations [219] and is focused on democratic forms of interaction and decision making to empower and benefit the “powerless”[220]. CBPAR recognizes that the views of marginalized groups are seldom sought and their voices seldom heard and that involving them in the process of knowledge can work to foster empowerment[221].

These include first and foremost, an approach to research that accounts for its potential added value, as well as its potential harms and costs (to the participants and research). Such

considerations must be considered and understood by all parties involved [222] and are particularly important in working with marginalized groups that may be hesitant of the research [223]. A focus on building trust is essential to successful participant engagement [200]. For example, a study in Manitoba explored the characteristics of effective KT initiatives from the perspective of participants and community partners and found that KT efforts have the best chance of success when implemented in an environment of interest, and openness to the research, one in which there is confidence in the research, the researchers, and the potential benefits of the research [200]. These findings suggest that KT can be a social process that depends on relationships and interactions involving a range of stakeholders including participants, researchers, health care providers, knowledge users, and policy makers [224, 225].

Despite these known social connections, there remains a gap in the literature in terms of the methods of sharing study findings, especially with marginalized groups such as long-term opioid users, and there is much to gain in testing various methods. Such methods should be informed by what is known from prior studies in different populations, as well as community based participatory action research with marginalized groups. Integrating the exchange of knowledge and mutual learning into the research process through an interactive process that involves participants is a complex undertaking, and researchers should strive to do so in a manner that is mutually beneficial, prioritizing the safety of and benefits to participants.

My proposed studies will expand on the outlined literature on addiction treatment and health care for opioid-dependent men and women, and explore the feasibility of better integrating patient perspectives through knowledge translation.

1.6 Study objectives

This thesis investigates the experiences of long-term opioid-dependent men and women in accessing health care and addiction treatment services. The various individual, program, and social factors associated with retention to opioid maintenance treatment are explored, accounting for gender patterns. Men's and women's perceptions of their encounters with health care providers as potentially offensive, degrading, or abusive are considered, accounting for specific patient histories. Finally, the feasibility of sharing study findings with long-term opioid users is explored.

The specific objectives are:

1.6.1 Treatment retention in opioid maintenance

Objective 1: To determine patterns of reported childhood and adulthood victimization.

Hypothesis 1: Women will report higher rates of childhood sexual abuse and men will report higher rates of adulthood physical violence.

Objective 2: To determine patterns of opioid maintenance treatment retention in the prior month.

Hypothesis 2: A higher opioid maintenance dose will be independently associated with retention.

Objective 3: To determine gender-specific predictors of opioid maintenance treatment retention in the prior month.

Hypothesis 3: Sex work will be positively associated with retention to opioid maintenance treatment among women, and illegal activity will be negatively associated with opioid maintenance treatment retention among men.

1.6.2 Perceived abuse in the health care system

Objective 4: To determine factors associated with perceived abuse in the health care system.

Hypothesis 4a: Childhood maltreatment (neglect or abuse) will be independently associated with perceived abuse in the health care system.

Hypothesis 4b: Psychological health problems will be independently associated with perceived abuse in the health care system.

1.6.3 Knowledge translation

Objective 5: To determine the feasibility of two piloted formats for sharing study findings with participants.

Hypothesis 5a: The rapport of the research team will play an important part in engaging participant interest in knowledge translation.

Hypothesis 5b: Plans aimed at catering to participant needs while fostering a comfortable environment with the flexibility to adapt to unforeseen situations will be key to the success of the meeting.

Objective 6: To determine participant perceptions of the piloted knowledge translation formats.

Hypothesis 6: Participants will report positive feelings (i.e. empowerment) about being involved in knowledge translation.

Chapter 2: Methods

2.1 The GeMa study

The data analyzed for this study was drawn from the Gender Matters in the Health of Long-term Opioid Users (GeMa) study. GeMa is a descriptive cross-sectional study with mixed quantitative and qualitative methods conducted in the Downtown Eastside of Vancouver, Canada. The GeMa study is aimed to test gender-specific patterns of drug use, victimization, access to care and physical and mental health among long-term opioid-dependent men and women, and to identify opportunities to improve treatment access. The GeMa study was developed with consultation from members of the participant community, in piloting questionnaires and formats used for qualitative data collection.

2.2 Design, setting, and participants

Participants of the GeMa study were long-term opioid users, recruited through partnerships with community agencies, and through word of mouth (snowballing) contact, between June 2011 and June 2013. Similar to other studies exploring illicit drug use, our eligibility criteria included being 19 years of age or older (adult age in British Columbia), residing in the greater Vancouver metropolitan area, having had at least 5 years of opioid use, having used opioids regularly in the prior six months, and having had one or more episode of methadone maintenance treatment (MMT) in lifetime. The GeMa study research office is located in the Downtown Eastside (DTES) of Vancouver. This neighbourhood is characterized by extreme poverty, high rates of crime and homelessness, and drug use [226]. The majority of participants in the GeMa study reside in the

DTES and the study team had a strong rapport with participants, having held two prior research studies at the same research office, with the same staff.

2.3 Ethical considerations

This study follows the guidelines provided in the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans. The study was approved by the University of British Columbia and Providence Health Care Research Ethics Boards- ID# H11-00606 and amendments # A010, 011, 0112 were made for the completion of this thesis

2.4 GeMa study procedures

Individuals interested in participating in the GeMa study were advised to call the toll-free research office phone line and were asked a set of pre-screening questions to identify potential candidates based on the fulfillment of the inclusion criteria. For those clients who fulfilled all criteria in the Pre-Screening Checklist, a face-to-face appointment at the research office was set up where participants were introduced to the GeMa study. The aims and conditions of the study were explained and they were offered the choice to participate. If they agreed to participate, the informed consent form was reviewed and signed before any data were gathered. Participants were asked to dedicate between two to three hours for the interview. Prior to administration of research procedures and collection of participant data, all participants reviewed the study procedures with research staff and provided informed consent. Questionnaire data was used to address objectives for the retention to opioid maintenance treatment analysis and perceived abuse in the health care system analysis.

2.4.1 Knowledge translation meeting procedures

Meetings were held in two separate formats to test the effectiveness and appropriateness of these formats for sharing study findings and collecting data from participants. Qualitative data collected at these meetings were used to complement the quantitative analyses for retention to opioid maintenance treatment and perceived abuse in the health care system. This data also provided details relating to the feasibility of meeting formats and participant perceptions of these formats, complementing the KT questionnaire data. The first meeting format was open to all participants, and the second meeting format was by invitation only and intentionally kept small in scale. One invitation only meeting was hosted for men, and one for women.

2.4.1.1 Open meeting

In the initial GeMa interview participants consented to have their contact information used for sharing any new information regarding the study and for knowledge translation purposes.

Participants were contacted approximately two weeks prior to the meeting by their preferred method of contact (mail, telephone, e-mail). The invitation informed participants to contact the research office should they be interested in participating in the meeting. As this was an open meeting, attempts were made to contact all participants, while some were not reached due to changes in contact information. Consent forms were mailed to participants providing a mailing address to provide supplementary time to review the form prior to the meeting. Participants were offered the option of receiving a reminder the day prior to the event. At the meeting, a member of the research team explained the aims and procedures of the meeting. The research staff was available to discuss any outstanding questions or concerns that would impact on each participant's decision to take part. Fifteen minutes provided sufficient time to complete the consent process.

The meeting did not begin until all participants had signed the informed consent form.

This meeting was hosted at a local community venue that was known and easily accessible to the participants. The meeting consisted of a presentation of study findings to the whole group, followed by break-out discussions. A brief questionnaire was administered at the end of the meeting to allow for the determination of agreement or disagreement with specific statements that may not have been established by group discussions. In order to ensure the questionnaire data remained anonymous, a dummy identification number was created for each participant.

Participants were compensated 25\$ for attending the meeting.

2.4.1.2 Closed meeting

Participants were contacted approximately two weeks prior to the meeting by telephone. Based on the team's previous experience, contact was made until 8 men and 8 women (the maximum number the team was comfortable having at a single meeting) had confirmed their interest in attending. Participants were offered the option of receiving a reminder the day prior to the event.

Consent procedures were the same as in the open meeting, however the forms were not mailed in advance as the closed format allowed a more intimate setting for participants to review the form.

This meeting was hosted at the same research office as the initial GeMa interview, and was known and easily accessible to the participants. Both participant and research team feedback on the open meeting was incorporated into the plans for the closed invite only meetings and changes were made as follows: groups sizes were controlled (n=4 or 5); groups were held separately for men and for women; groups were held one at a time; findings and discussion on basic patterns of drug use and addiction treatment were removed. The knowledge translation questionnaire was distributed

using the same format as in the open meeting. Participants were compensated 25\$ for attending the meeting.

2.5 Data collection

The objectives for the OMT retention and perceived abuse in health care analyses were addressed using quantitative data collected from study questionnaires as described in Section 2.5.1.1 and qualitative data collected at the knowledge translation (KT) meetings as described in Section 2.5.2. The objective for the KT analysis was addressed using data collected from group discussions as described in Section 2.5.2. Quantitative data were collected using a questionnaire administered at the end of the KT meeting.

2.5.1 Quantitative data

All participants (n=178, men=96, women= 81, transgender=1) completed an extensive questionnaire package where data was collected on lifetime and prior month experiences on topics such as drug use, victimization, and health. The research team had experience working with the population and was well trained in administering interviews on sensitive topics. Given the sensitive nature of the topics discussed the research staff provided participants with referral resources if required. Participants were compensated with a \$25 honorarium for their time and contributions. All study questionnaires administered are described in Section 2.5.1.1 Standardized questionnaires.

2.5.1.1 Standardized questionnaires

a) European version of the Addiction Severity Index (EuropASI)[227, 228], widely used in addiction research[8, 122, 229] captures lifetime and prior 30 day socio-demographic, medical, employment/support, drug and alcohol use, family and social relationships, legal status, and psychiatric status.

b) Opioid Treatment Index (OTI)[230] is a specific tool for research on opioid users, and has been used in several studies [89, 231]. The OTI provides a measure of HIV risk-taking (drug and sexual-related risks) and physical health symptoms with a separate score produced for each.

c) The Symptom Checklist-90-R (SCL-90-R)[232] has a long history of use in settings with substance-dependent, including heroin dependent participants[233] . Using a five-point Likert scale, it measures somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism, yielding a global severity index.

d) EQ-5D (EuroQoL)[234, 235]is used for a wide range of health conditions and treatments, and has been used in studies of heroin dependence [236]. Measuring five domains (mobility, self-care, usual activities, pain/discomfort and anxiety/depression), the EQ-5D provides a simple descriptive profile and a single index value for health status.

e) Client Satisfaction Questionnaire (CSQ-8)[237] uses eight items to evaluate patients' satisfaction with the treatment received; it has been used in studies with psychiatric and substance abusing people [238-240]. Scores range from 8-32 and higher scores indicate a higher level of satisfaction.

- f) Childhood Trauma Questionnaire (CTQ) was developed and tested among patients of drug/alcohol treatment and demonstrated excellent psychometric properties [241]. The CTQ is a 28-item screening tool for the occurrence of three types of abuse (physical, sexual, emotional) and two types of neglect (physical and emotional), generating a score for each.
- g) NorVold Abuse Questionnaire (NorAQ)[157] is a simple questionnaire used in primary care settings for screening histories of mild, moderate, and severe emotional, physical and sexual abuse and perpetration in adulthood. It also assesses the concept of abuse in health care, capturing perceptions of health care experiences as offensive, degrading, or abusive.
- h) Potentially Traumatic Events were assessed with a checklist of events described in the Diagnostic and Statistical Manual of Mental Disorders Criterion A1 (diagnosis of Post-Traumatic Stress Disorder) and A2 (elicited fear, helplessness, or horror), as previously used in similar samples [242].
- i) Composite International Diagnostic Interview (CIDI) was developed by the World health Organization, and has been used in large epidemiologic studies [243] [244]. Suicidal scale measures lifetime and recent (prior 6 months) history of suicidal thoughts (4 items), plans (4 items) and attempts (11 items).
- j) The knowledge translation closing questionnaire was developed for the GeMa study knowledge translation meeting to allow for the determination of agreement or disagreement with specific statements that may not have been established by group discussions.

2.5.2 Qualitative data

Open meeting

The findings of the study were shared on four topics: drug use and treatment access; satisfaction with treatment; experiences in the health care system; knowledge translation. The findings were then discussed following a semi-structured topic guide. Moderators followed the semi-structured topic guide and worked with the note-taker to ensure all topics were covered in the time allotted. As the aim of this meeting was to determine general participant perceptions of the study findings and meeting format, discussions were not audio recorded and instead a note-taker recorded participant discussions as close to verbatim as possible, attaching a pseudonym to each participant to preserve anonymity.

Closed meetings

Findings were refined from the open meeting and were presented on three topics: experiences with OMT; experiences with health care providers; knowledge translation. Sessions were audio recorded and followed a semi-structured topic guide. Discussions were moderated by two research staff, alternating the leading of discussions, while the other collected information on non-verbal communication as well as dissonant views and perspectives (group dynamics) [245]. Sessions were audio recorded to capture participant statements verbatim.

2.6 Variables

2.6.1 Dependent variables

Retention to opioid maintenance treatment

The dependent variable was retention to opioid maintenance treatment in the prior month.

Participants were asked to respond with the number of days in the prior 30 that they had engaged

in OMT. While the majority (n=170; 96.6%) responded in reference to methadone, 6 participants (3.4%) responded in reference to Suboxone®. Based on its distribution, this variable could not be explored in its original form as a continuous variable (18.9 days, SD=13.5 days). The costs and cautions of dichotomizing data were carefully considered prior to making the decision to dichotomize this outcome [246, 247]. Based on both the distribution of the variable, and clinical relevance derived from the literature on retention to low threshold OMT, the dependent variable was defined as accessing OMT at least 20 of the prior 30 days. This definition had been used before with this population [248] and provides a frame of time in which participants are engaged in treatment twice as many days in a month as they are not, and may still gain the various benefits of being in contact with the health care system[249].

Perceived abuse in the health care system

The NorVold Abuse Questionnaire provides the first validated tool for measuring perceived abuse in health care (PAHC) and operationalizes it using three questions, representing mild, moderate, or severe abuse. The design and validation of the tool are published elsewhere[157] [158]. The NorVold has shown excellent test-retest reliability, and measures of specificity and sensitivity ranging from good to excellent in both men and women [157, 158]. The GeMa study used the NorVold questionnaire to collect data on perceived abuse in the health care system in lifetime. The questions offer concrete examples of behaviours for each severity, allowing a rough classification of the severity of abusive acts.

Questions are:

Mild: “Have you ever felt offended or grossly degraded while visiting health services, felt that someone exercised blackmail against you or did not show respect for your opinion—in such a way that you were later disturbed by or suffered from the experience?”

Moderate: “Have you ever experienced that a “normal” event, while visiting health services suddenly became a really terrible and insulting experience, without you fully knowing how this could happen?”

Severe: “Have you experienced anybody in health service purposely—as you understood—hurting you physically or mentally, grossly violating you or using your body and your subordinated position to your disadvantage for his/her own purpose?”.

As suggested by the creators of the NorVold Questionnaire [157], all participants responding yes to at least one of the three questions on abuse in health care are considered to have experienced perceived abuse in the health care system, and thus the outcome was defined as binary (yes or no).

2.6.2 Independent variables

For the analysis of both outcomes (retention and perceived abuse in the health care system) an extensive list of independent variables was carefully selected based on hypothesized relationships and known predictors in the literature. These variables were organized in blocks (socio-demographics, drug use, addiction treatment and health care utilization, physical and mental health, and victimization). In the analysis predicting retention, an additional block of social

variables were explored based on existing gaps in the literature on OMT retention. Key independent variables and their definitions are listed below:

Socio-demographic characteristics

Gender: Participants were asked “do you consider yourself:” man, woman, transgender, or none of the above. Among the transgender response option, participants could identify as man, woman, neither, or both.

Ethnicity: Response options included Metis, First Nations, Inuit, or Non-Aboriginal Ethnicity (Caucasian or other non-Aboriginal). Participants could identify with more than one group (i.e. Metis and Caucasian). The variable was classified as participants reporting any Aboriginal ancestry compared to those reporting no Aboriginal ancestry.

Housing: For both the prior 30 days and the prior three year periods, participants were asked to identify up to three housing options from a list of 5 housing categories: Stable, non-stable, street places, institutions, shelter.

Drug use

Illicit drug use: Participants were asked to report the number of days in the prior 30 days they had used any of the following drugs: speedball, heroin, methadone, morphine, hydromorphone, fentanyl, oxycodone, cocaine powder, crack cocaine, speed, marijuana, prescribed marijuana, barbiturates, benzodiazepines, hallucinogens, inhalants, or any other drugs.

Lifetime drug use: In reference to each of the illicit drugs listed above participants were asked to report the first ever route used, whether they had ever administered the drug via injection/non-injection, the age of first use, age they started regular use, lifetime years of regular use.

Addiction treatment and health care utilization

Treatment satisfaction: The Client Satisfaction Questionnaire was used to measure satisfaction with 8 questions about various aspects of the treatment received in their most recent OMT attempt. Participants had the option to respond (4) Excellent, (3) Good, (2) Fair, or (1) Poor in terms of their satisfaction. Scores ranged from 8-32, a higher score indicating a higher level of satisfaction.

Most recent and highest ever dose: Participants were asked to report their most recent dose and highest ever dose of methadone or Suboxone®. Responses were reported in milligrams (mg). Because of the range of responses (2-350mg for most recent dose and 8-360mg for highest dose ever), and the distribution of these variables, they were categorized accounting for CPSBC standards, whereby a dose of 60mg-120mg is recommended to maintain stability. Categories can be seen in the footnotes of tables 5 and 7. Responses in reference to Suboxone® were converted to methadone equivalent doses prior to being categorized. The cautions of dichotomizing data were carefully considered [246, 247].

Number of times in life accessing OMT: Participants were asked to report the number of times they had attempted OMT treatment. Because of the range of responses (1-20 times) and distribution of the data, the variable was categorized. In order to account for the diversity of treatment experiences and histories reported, the cut point was determined according to the mean

number of treatment attempts (3.82). (1-4 times vs. 5 or more times). The cautions of dichotomizing data were carefully considered [246, 247].

Number of months in life on OMT:

Participants were asked to report the number of months (and years) they had been on OMT treatment in their lifetime. In order to account for the range of treatment experiences and months in life on methadone (1-324 months) the variable was categorized at the mean, 60 months or more and less than 60 months, and the cut point was determined as per the distribution of the data. The cautions of dichotomizing data were carefully considered [246, 247].

Physical and mental health

Symptom Checklist 90 (SCL-90): Participants were asked 90 items in reference to 9 different mental health domains (somatization, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism). Response options ranged 0 through 4 (not at all, a little bit, moderately, quite a bit, extremely). The global severity index was calculated accounting for both the number of questions endorsed in each domain, and the response given.

Euroquol (EQ-5D): Participants were asked to rate their state of health on the date of the interview in terms of 5 domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each of the 5 domains had 3 response levels indicating no problems, some problems, or extreme problems. An algorithm was applied following the Canadian weights[250] to

produce a score between 0 and 1 indicating overall quality of life, 1 indicating the best possible health.

Opioid treatment index- total health: Participants responded to a 51-symptom check-list and were asked to indicate how frequently they experienced each symptom in the prior month. Response options were: never, rarely, sometimes, often, and always. Any response other than never was considered an endorsement of the symptom, and a total score was developed based on the number of symptoms reported.

Opioid treatment index- HIV Sexual subscale: This subscale represents a combined score indicating level of risk due to drug practices and unsafe sex. Participants are asked questions regarding drug-taking practices such as frequency of injection drug use and needle sharing. Sexual related risk questions address number of sexual partners, condom use, paid sex, anal sex.

Victimization

Childhood abuse and neglect: The childhood trauma questionnaire captured the severity and frequency of five subtypes of abuse (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect). Response options were: never true, rarely true, sometimes true, often true, very often true. A sub-group score was determined for each type of abuse for each participant, higher scores indicating more severe abuse histories.

Lifetime victimization: For each of emotional, physical, sexual, and abuse in the health care system participants were asked between 3-4 questions. Participants endorsing at least one of the

questions (responding anything other than none, unsure, and prefer not to answer) were considered to have reported that type of abuse, as per the creators of the NorVold abuse questionnaire[157].

Current victimization: The same questions used to measure lifetime emotional, physical, and sexual abuse, and abuse in health care were asked in reference to the prior 30 days. As the number of participants reporting current victimization sub-types was low, these variables were combined to create the current abuse variable, indicating any emotional, physical, sexual abuse or abuse in health care.

Potentially Traumatic Events (PTE): The PTE presented participants with a list of 34 potentially traumatic events (e.g. death of loved one, accidents, injuries, warfare, etc.) and participants responded as to the frequency of experienced events. The PTE was scored as the number of events endorsed.

Social variables

Living arrangements: Participants were asked, “in the prior 30 days have you lived with someone who: has a current alcohol problem, uses psychoactive drugs, has psychological problems, live alone, live in a controlled environment.” Response options were yes or no. Psychoactive drugs are those that changes the brain function, altering perception, consciousness or mood. The term psychoactive is derived from the questionnaire used to collect this data, the addiction severity index [251].

Major source of support: Participants were asked, “Which is the major source of your support?”

Options listed were: employment, alternative employment, unemployment workman’s compensation, income assistance/welfare, pension, partner/family, drug dealing, property theft, sex work, any other legal or non-legal. The variable was categorized as legal vs. non-legal work.

Addiction Severity Index (ASI) scores: These are composite scores based on participants’ responses to a series of questions relating to problems in each domain, responses in relation to how bothered they have been by these problems, and their rating of importance of treatment for these problems. Scores are calculated in the following domains: alcohol, drug use, medical, psychological, legal, economic, family, employment and support, other family and social. Higher scores indicate a greater severity of problems.

2.6.3 Knowledge translation topics covered

Topics covered in the open meeting were: drug use and treatment access; satisfaction with treatment; experiences in the health care system; knowledge translation. Topics covered in the closed meetings were refined from the open meeting and were: experiences with OMT; experiences with health care providers; knowledge translation.

2.7 Statistical analyses

2.7.1 Quantitative analysis

Continuous outcome variables for both retention and perceived abuse in the health care system analyses were compared with Student’s t-test or the Wilcoxon rank-sum test to analyze the bivariate relationship between the outcome variables (retention and perceived abuse in health care)

and independent variables as appropriate. Categorical variables were described by frequencies and percentages and compared with the use of the Chi-square test or Fisher's exact test.

The same model selection process was employed for the logistic regression models predicting both perceived abuse in the health care system and retention to opioid maintenance treatment. Variables to be explored were selected based on hypothesized relationships and known predictors in the literature and organized in blocks (See Section 2.6 Measures).

Variables with a $p \leq 0.2$ in bivariate tests with the outcome (Student's t-tests or the Wilcoxon rank-sum test; Fisher's exact test or the Chi-square test) were selected and were entered into univariate logistic models with force-in variables, age, gender, and ethnicity. In the perceived abuse in health care model an interaction between age and gender was also added. After these adjustments, variables with significance level no longer meeting $p \leq 0.2$ were removed. Unique combinations of each of the variables were tested by block, and the single variable or combination of variables with the lowest AIC value was carried forward to the next stage. From this list of variables, Spearman's and Pearson's correlations were conducted to test the correlation between predictors.

Backward selection was conducted, dropping variables with the highest p values first, and checking for the reduction in AIC of the model after each dropped variable. The likelihood ratio test was used to confirm the dropping of variables, comparing the full model to the model with the dropped variable. This process continued until the AIC of the model no longer decreased with the removal of variables. Gender specific models were analyzed using the same process, however first

modeling was conducted to reduce the bias often found in logistic modeling with small sample size[252].

2.7.1.1 Handling of missing data

Data was carefully explored to determine the extent of missing. In the stages of data cleaning various missing data were filled in based on errors at the stages of data entry. Some variables designated as missing were reclassified into their correct categories (e.g. prefer not to answer or unsure). The percent of missing data in the study was very low. For all variables used in the analysis missing data remained below 5%, while for most variables it was much lower than this. Missing data were omitted from analysis, resulting in slightly different sample sizes for statistical tests. 2 participants were neither accessing OMT, nor using illicit opioids and thus were excluded from the retention analysis, and 3 participants did not complete the NorVold Abuse Questionnaire on perceived abuse in the health care system, and thus could not be included in the perceived abuse in the health care system analysis.

2.7.2 Qualitative analyses

Qualitative data collected from open and closed meetings focus groups was analyzed using an inductive thematic approach[253]. This method of analysis allowed for the themes to naturally emerge from the transcripts. Extensive notes were taken after each focus group, to record information that may not have been picked up on in the recordings such as participant body language and expressions, and group dynamics. The audio recordings for each focus group were transcribed verbatim and thoroughly read upon transcription, and once again prior to coding the data. The strategy of “constant comparison”[254] was used to develop central themes and

relationships across all participants' comments (separately for each gender). Each participant was given a pseudonym in the analysis to protect his/her confidentiality. Names presented in the findings section are pseudonyms All analysis was conducted in NVivo 10, a qualitative software package [255].

In the first stage, open coding was used to classify words, phrases, and quotes into units based on its semantic content, referring to the explicit surface meanings of the data, without looking for anything beyond what the participant has said[256]. In NVivo each of these open codes were created as “free nodes”. The content in each of the free nodes were re-read to ensure the content belonged. Nodes were deleted if they were not relevant, merged with a pre-existing node, or recoded at a new node. In the second stage, “free nodes” that were illustrating similar concepts, patterns, or themes were clustered together in sets and then in “tree nodes”. The content of the clusters were reviewed to refine coding and ensure the codes and their content accurately reflected the concept of the cluster. The clusters were then transitioned to major themes, with the free nodes presenting the minor themes. The content of the nodes were further refined, and in some cases reclassified. Extensive notes and memos were taken to document all decisions at each stage and to establish an audit trail.

Chapter 3: Results

Presented statistics were determined using Student's t-tests or the Wilcoxon rank-sum test (when data was not normally distributed) and the Chi-square tests or Fisher's exact test (when cell counts were 5 or less). Variables presented as median values are not normally distributed, and statistics come from the Wilcoxon rank sum test.

3.1 Characteristics of GeMa study participants by gender

A total of 178 individuals took part in this study. Among these participants, 81 (45.5%) were women, 96 (53.9%) were men, and 1 (0.6%) was identified as neither a man nor a woman. Fifty participants (28.3%) reported any Aboriginal ancestry, including Metis, Inuit, or First Nations. While the majority of participants (83.2%) identified as heterosexual, 14.6% identified as lesbian, gay, bisexual, or asexual, and 2.2% were either unsure or preferred not to answer. Participants ranged between 21 and 65 years old, with a mean age of 45.0 years. Forty six percent of participants reported currently having an intimate partner. Only 38.4% of participants reported living in stable housing in the prior month.

Table 1 provides a comparison of socio-demographic characteristics, illicit drug use and addiction treatment, physical and mental health, and social factors by gender among GeMa study participants. Significant differences were observed between men and women in each of these groups of variables. Compared to men, women were significantly more likely to identify as gay, lesbian, bisexual, or asexual (22.2% vs. 8.3%, $p=0.009$). Women were also significantly more

likely to report Aboriginal ancestry (42.0% vs. 16.7%, $p=0.001$) and were significantly younger (42.6 years vs. 47.0 years, $p=0.002$). Sex work in both lifetime (79.8% vs. 28.1%, $p<0.001$) and the prior month (29.6% vs. 2.1%, $p=<0.001$) were significantly more likely to be reported by women compared to men. Women were significantly more likely than men to report stable housing in the prior month (46.9% vs. 31.3%, $p= 0.033$).

In terms of illicit drug use, women reported significantly more days using crack cocaine compared to men (12.9 vs. 8.1, $p= 0.017$). Men reported significantly more days using illicit hydromorphone compared to women (2.9 vs. 0.9, $p= 0.012$) and more days using morphine (3.4 vs. 2.1, $p=0.183$), as well as any illicit opioid (i.e. heroin, hydromorphone, methadone, morphine, oxycodone, fentanyl, and any other illicit opioid used) (24.4 vs. 22.3, $p=0.171$). The age of first heroin injection was significantly younger among men compared to women (23.9 vs. 26.9, $p=0.039$), while the age of regular heroin injection did not differ significantly, and women progressed from first injection to regular use on average in a quarter of the time men did (nearly 6 months compared to nearly 2 years). The reported lifetime years of regular heroin injection was significantly higher among men (18.9 vs. 13.1, $p=<0.001$), however men in the sample are significantly older than women.

Significant differences were found in some of the opioid maintenance treatment variables measured. Women were significantly more likely than men to have reported a most recent dose greater than or equal to the standard dose required for stability (60mg) (62.0% vs. 43.2%, $p=0.01$), while men reported significantly more days accessing Insite, the safe injection site (9.7 days vs. 6.0 days, $p=0.028$). This access to Insite may be partly explained in considering men reported

using more days of most of the injectable drugs measured compared to women, including illicit heroin, morphine, hydromorphone, cocaine powder (see Table 1) while women reported significantly more days smoking crack cocaine.

Women scored significantly worse than men in terms of the major psychological and physical health measures, reporting significantly more health symptoms on the opioid treatment index (OTI) (26.4 vs. 20.3, $p < 0.001$), poorer median psychological health scores on the SCL-90 global severity index (0.79 vs. 0.63, $p = 0.05$) and poorer mean health related quality of life scores (0.72 vs. 0.79, $p = 0.02$) on the EQ-5D. Beyond scoring significantly worse on the summary scores, the subscale scores for the OTI showed women to have significantly poorer health in terms of the following subscales: sexual HIV risk, injection related problems, cardio-respiratory problems, genito-urinary problems, neurological problems, and gastrointestinal problems.

In terms of the social variables measured, men reported more legal problems, for example, compared to women, men were more likely to be awaiting criminal charges at the time of their interview (15.6% vs. 6.3%, $p = 0.088$) and reported significantly more months in life of incarceration (18.00[3.00,60.00] vs. 1.00[0.00,9.00], $p < 0.001$). Men were also significantly more likely to live alone compared to women (62.5% vs. 47.5%), while women were significantly more likely to live with someone using psychoactive drugs (42.5% vs. 25.0%) or with psychological problems (23.8% vs. 9.4%).

Table 1 Characteristics of study participants by gender

	Total (n=177)	Men (n=96)	Women (n=81)
Socio-demographic characteristics			
Age †	45.0 ± 9.5	47.0 ± 9.4	42.6 ± 9.1
Any Aboriginal ancestry ^a †	50 (28.3)	16 (16.7)	34 (42.0)
Currently has an intimate partner †	81 (46.0)	29 (30.2)	52 (65.0)
Ever had biological children [*]	109 (61.9)	52 (54.2)	57 (71.3)
Ever sex work †	90 (51.4)	27 (28.1)	63 (79.8)
Prior 30 days sex work ^{b(f)} †	26 (14.7)	2 (2.1)	24 (29.6)
Stable housing prior month [*]	68 (38.4)	30 (31.3)	38 (46.9)
Gay, lesbian, bisexual, or asexual †	26 (14.6)	8 (8.3)	18 (22.2)
Illicit drug use			
Days using any opioid ^c	23.4 ± 10.0	24.4 ± 10.0	22.3 ± 11.0
Days using heroin ^c	20.9 ± 11.2	21.5 ± 10.9	20.3 ± 11.7
Days using hydromorphone ^{c *}	2.0 ± 5.4	2.9 ± 6.9	0.9 ± 2.5
Days using morphine ^c	2.8 ± 6.7	3.4 ± 7.2	2.1 ± 6.1
Days using cocaine powder ^c	4.6 ± 8.9	5.3 ± 9.4	3.9 ± 8.2
Days using crack cocaine ^{c *}	10.3 ± 12.5	8.1 ± 11.3	12.9 ± 13.4
Age first heroin injection ^{c *}	25.3 ± 9.4	23.9 ± 9.1	26.9 ± 9.6
Age regular heroin injection	26.6 ± 9.5	26.0 ± 9.1	27.3 ± 10.0
Lifetime years regular injection †	16.2 ± 10.1	18.9 ± 10.6	13.1 ± 8.6
Addiction treatment			
Age at first OMT access	33.2 ± 13.8	34.4 ± 13.8	31.7 ± 17.4
5 or more OMT attempts in life ^d	50 (28.3)	28 (29.2)	22 (27.2)
Most recent dose OMT ≥ 60mg [*]	90 (52.0)	41 (43.6)	49 (62.0)
Safe injection site- days in prior 30	8.0 ± 10.9	9.7 ± 11.7	6.0 ± 9.64
Physical and mental health			
Depression in life [*]	113 (64.6)	55 (57.3)	58 (73.4)
SCL 90 Global Severity Index ^{e (w)*}	0.72 [0.27,1.49]	0.63 [0.26,1.30]	0.79 [0.36,1.56]
Health related quality of life ^{f *}	0.76 ± 0.21	0.79 ± 0.20	0.72 ± 0.21
OTI-Total health problems ^{g †}	23.0 ± 12.2	20.3 ± 11.5	26.4 ± 12.3
Social factors			
ASI family problems score ^{h (w)*}	0.00 [0.00,0.05]	0.00 [0.00,0.04]	0.00 [0.00,0.10]
Live with psychoactive drug user ^{* i}	58 (33.0)	24 (25.0)	34 (42.5)
Live with someone with psych. problems ^{i †}	28 (15.9)	9 (9.4)	19 (23.8)
Live alone ^{i*}	98 (55.7)	60 (62.5)	38 (47.5)
Lifetime months incarcerated ^{(w) †}	6.00 [0.00,24.00]	18.00 [3.00,60.00]	1.00 [0.00,9.00]
Currently awaiting criminal charges ^(f)	20 (11.3)	15 (15.6)	5 (6.3)

Statistics are p values for Students t-tests or Wilcoxon rank sum and Chi-square or Fisher's exact test * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 1 identified as neither man nor woman and thus is not included in this table.

- a Any Aboriginal ancestry refers to a participant self-identifying as First Nations, Inuit or Metis ancestry.
- b Paid in exchange for sex in the prior 30 days was only asked of those who were ever paid in exchange for sex (n=90). The denominator remains the full sample size (n=177), reflected in the percent alongside the frequency.
- c Days are in the month prior to the interview.
- d Reference group had 1-4 times in life.
- e Symptom Checklist - 90 Global Severity Index Score- based on participant responses to questions on the severity of 90 symptoms. Higher score indicates poorer health.
- f Euroqol with Canadian weights scores range from 0 to 1; higher scores are indicative of better health status.
- g Opioid Treatment Index total health scores range from 0 to 51, higher score is indicative of a higher number of symptoms (i.e. worse health).
- h European Addiction Severity Index- high score indicates a higher score for family problems.
- i Living situation are all indicative of the prior month. Psych. refers to psychological health problems.

3.2 Histories of victimization among long-term opioid users by gender

Histories of victimization were prevalent among GeMa participants. In terms of childhood maltreatment, women reported higher scores than men on all scales measured (physical, sexual, emotional, emotional neglect, physical neglect). Scores were significantly higher for both sexual abuse (12.6 vs. 7.9, $p < 0.001$) and emotional abuse (15.0 vs. 12.0, $p = 0.002$). A significantly higher proportion of women reported physical (55.3% vs. 37.5%, $p = 0.02$) and sexual (25.0% vs. 5.2%, $p < 0.001$) abuse perpetrated by a parent than men. Further, a significantly higher proportion of women reported abuse by more than one type of perpetrator (parent, other relative, or stranger). This was true for both physical (61.8% vs. 44.8%, $p = 0.026$) and sexual (56.6% vs. 22.9%, $p < 0.001$) abuse. Men reported a significantly higher proportion of adulthood (>18 years of age) physical abuse compared to women (90.6% vs. 76.5%, $p = 0.011$) while women reported a significantly higher proportion of emotional (65.4% vs. 44.8%, $p = 0.006$) and sexual abuse (43.2% vs. 11.5%, $p < 0.001$). A significantly higher proportion of men reported perpetrating physical abuse (68.1% vs. 35.9%, $p < 0.001$) compared to women, while the proportion of perpetration of emotional abuse did not differ significantly by gender. No participants reported perpetrating sexual abuse.

Women reported more prevalent histories of suicidal behaviour compared to men. Among women, 35.9% reported ever making a plan to commit suicide, compared to 21.5% of men ($p=0.037$).

While not significant, there was a higher proportion of women ever attempting suicide (41.0% vs. 28.0%, $p=0.07$) and ever having suicidal thoughts (48.1% vs. 41.9%, $p=0.4180$).

The number of potentially traumatic events endorsed did not differ significantly by gender.

Women however were significantly more likely to report intimate partner violence in lifetime (77.2% vs. 43.6%, $p<0.001$). Significant differences were not found by gender for ever having experienced a life threatening illness, having a family member experience a life threatening illness, death of a loved one, separation from child, or placing a child up for adoption.

Table 2 Victimization profile of study participants by gender

	Total (n=177)	Men (n=96)	Women (n=81)
Childhood Maltreatment ^a			
Emotional abuse [†]	13.4 ± 6.2	12.0 ± 5.8	15.0 ± 6.4
Physical abuse	10.9 ± 5.7	10.6 ± 5.3	11.2 ± 6.2
Sexual abuse [†]	10.0 ± 6.2	7.9 ± 5.2	12.6 ± 6.4
Physical neglect	9.7 ± 4.6	9.1 ± 4.0	10.5 ± 5.3
Emotional neglect	13.8 ± 5.6	13.3 ± 5.6	14.4 ± 5.9
Multiple perpetrators of physical abuse ^{b*}	90 (52.3)	43 (44.8)	47 (61.8)
Parent perpetrator of physical abuse [*]	78 (45.4)	36 (37.5)	42 (55.3)
Multiple perpetrators of sexual abuse ^{b †}	65 (37.8)	22 (22.9)	43 (56.6)
Parent perpetrator of sexual abuse ^{(f)†}	24 (14.0)	5 (5.2)	19 (25.0)
Youngest age of sexual abuse [†]	7.5 ± 3.8	9.2 ± 3.5	6.0 ± 3.5
Youngest age of physical abuse [†]	6.2 ± 3.5	6.9 ± 3.4	5.1 ± 3.5
Lifetime Abuse			
Intimate partner violence [†]	102 (59.0)	41 (43.6)	61 (77.2)
Adulthood Emotional abuse [†]	96 (54.2)	43 (44.8)	53 (65.4)
Adulthood Physical abuse [*]	149 (84.2)	87 (90.6)	62 (76.5)
Adulthood Sexual abuse [†]	46 (26.0)	11 (11.5)	35 (43.2)
Abuse in the health care system	96 (54.2)	43 (44.8)	53 (65.4)
Prior month abuse ^c	50 (28.8)	24 (25.3)	26 (32.9)
Suicidality			
Serious thoughts of suicide	77 (44.8)	39 (41.9)	38 (48.1)
Ever made a plan to commit suicide [*]	48 (28.1)	20 (21.5)	28 (35.9)
Ever attempted suicide	58 (33.9)	26 (28.0)	32 (41.0)
Potentially Traumatic Events ^d			
Potentially traumatic events	14.3 ± 5.1	13.1 ± 4.7	14.8 ± 5.6
Life threatening illness of a loved one	95 (54.1)	45 (48.4)	50 (62.5)
Life threatening personal illness	68 (39.1)	37 (39.4)	31 (38.8)
Perpetration			
Perpetration of any physical abuse in lifetime [†]	90 (53.3)	62 (68.1)	28 (35.9)
Perpetration of any emotional abuse in lifetime	30 (17.8)	12 (15.4)	18 (19.8)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or Fisher's exact test * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 1 identified as neither man nor woman and thus is not included in this table.

a Maltreatment data comes from the childhood trauma questionnaire. Scores range from 5-25, higher scores indicating more severe maltreatment.

b Perpetrator types include parent, other family, acquaintance, stranger, other (e.g. police).

c Victimization in the prior 30 days refers to participants reporting at least one of emotional, physical, sexual abuse or perceived abuse in the health care system at any point in the prior 30 days.

d Potentially traumatic events present the number of endorsed events including accidents and injuries, illnesses, abuse, loss of a loved one, etc.

3.3 Factors associated with retention to opioid maintenance treatment among long-term opioid-dependent men and women

3.3.1 Individual-related factors

Socio-demographic and victimization profiles of GeMa study participants by OMT retention are presented in Table 3. Among those retained, 45.5% were women. Gender differences were not found in terms of the rate of retention, with 50 (61.7%) of the women, and 59 (62.8%) of the men retained. Among those retained a significantly lower proportion self-identified as having Aboriginal ancestry compared to those that were not retained (20.9% vs. 39.4%, $p=0.01$). Among those retained in treatment, a significantly lower proportion had lived in a shelter in the prior month (4.6% vs. 15.2%, $p=0.015$), while other housing types in the prior month and in the prior three years did not differ significantly between groups. The prevalence of reported sex work did not differ significantly between both groups over lifetime and prior 30-day periods.

Examining histories of victimization, participants that were retained reported significantly higher childhood emotional neglect (14.5 vs. 12.7, $p=0.04$) and physical neglect scores (10.3 vs. 8.7, $p=0.026$). Similar scores and prevalence were found for both groups for all other victimization variables measured.

Table 3 Socio-demographic and victimization profile by opioid maintenance treatment retention

	Total (n=176)	Not retained (n=66)	Retained (n=110)
Socio-demographic characteristics			
Woman ^a	81 (46.3)	31 (47.0)	50 (45.5)
Age	44.9 ± 9.4)	44.3 (9.5)	45.2 (9.4)
Any Aboriginal ancestry ^{b †}	49 (27.8)	26 (39.4)	23 (20.9)
Currently has an intimate partner [*]	81 (46.3)	32 (49.2)	49 (44.6)
Education (high school or greater) ^c	99 (56.3)	34 (51.6)	65 (59.1)
Any unstable housing in prior month	79 (44.9)	29 (43.9)	50 (45.5)
Any days in a shelter in prior month ^{(f)*}	15 (8.5)	10 (15.2)	5 (4.6)
Has biological children	107 (61.1)	36 (54.6)	71 (65.1)
Ever done sex work	91 (52.3)	35 (53.9)	56 (51.4)
Victimization			
Childhood maltreatment^d			
Emotional abuse	13.4 ± 6.2	12.7 ± 6.3	13.8 ± 6.2
Physical abuse	10.8 ± 5.7	10.6 ± 5.7	11.0 ± 5.7
Sexual abuse	10.0 ± 6.2	10.6 ± 6.6	9.7 ± 5.9
Emotional neglect [*]	13.8 ± 5.8	12.7 ± 5.1	14.5 ± 6.0
Physical neglect [*]	9.7 ± 4.6	8.7 ± 4.1	10.3 ± 4.8
Prior month and lifetime abuse			
Abuse in prior 30 days ^e	51(29.5)	23 (35.4)	28 (25.9)
Potentially Traumatic events ^f	14.3 ± 5.1	14.0 ± 5.5	14.55 ± 4.9
Adulthood emotional abuse	96 (54.6)	32 (48.5)	64 (58.2)
Adulthood physical abuse	148 (84.1)	57 (86.4)	91 (82.7)
Adulthood sexual abuse	46 (26.1)	17 (25.8)	29 (26.3)
Ever attempted suicide	57 (33.5)	20 (31.8)	37 (34.6)
Intimate partner violence	102 (58.6)	37 (56.1)	65 (60.2)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or Fisher's exact test * p<0.05 †p<0.01

Table Notes: There were 178 participants in the study. 2 were both abstinent from opioids and not accessing treatment and thus were excluded from the analysis. (f) = Fisher's exact test; (w) = Wilcoxon rank sum test. Participants were considered retained if they had reported accessing OMT at least 20 days in the prior 30 days.

Table Notes: There were 178 participants in the study. 1 identified as neither man nor woman and thus is not included in this table.

a Percentages for proportion of women in each of the categories are based on n=175, comparing women to men, and dropping the 1 participants that identified with neither man nor woman.

b Aboriginal ancestry includes any participant reporting Metis, Inuit, or First Nations ancestry.

c Education is categorized as high school or greater and less than high school.

d Maltreatment data comes from the childhood trauma questionnaire. Scores range from 5-25, higher scores indicating more severe maltreatment.

e Abuse in the prior 30 days refers to participants reporting at least one of emotional, physical, sexual abuse or perceived abuse in the health care system at any point in the prior 30 days.

f Potentially traumatic events present the number of endorsed events including accidents and injuries, illnesses, abuse, loss of a loved one, etc.

Prior month and lifetime drug use patterns were collected. In terms of illicit drug use in the prior month, participants that were retained in OMT reported significantly less days using any opioid (i.e. heroin, hydromorphone, methadone, morphine, oxycodone, fentanyl, and any other illicit opioid used) (20.7 vs. 27.6, $p<0.001$), heroin (18.2 vs. 25.2, $p<0.001$), hydromorphone (1.2 vs. 3.3, $p=0.01$), and morphine (1.5 vs. 5.0, $p<0.001$). Those that were retained reported significantly lower scores on the addiction severity index drug portion (0.35 vs. 0.46, $p=<0.0001$), indicative of less drug problems.

Participants that were retained in OMT were significantly more likely to report anxiety in lifetime (75.9 % vs. 59.1%, $p=0.019$), and while not significantly, participants were also more likely to report depression in lifetime (69.4% vs. 59.1%, $p=0.163$). As measured with the SCL-90 global severity index, accounting for the total number of items responded to by participants, and their reported responses to each of these questions, differences in retained compared to not retained groups were not significant (0.76[0.38,1.50] vs. 0.63[0.22,1.32], $p=0.129$). Retained and non-retained participants reported similar scores for health related quality of life (EQ-5D), similar medical scores on the Addiction Severity Index (ASI), a similar proportion reported chronic medical problems, and there were a similar number of physical health symptoms reported on the Opioid Treatment Index (OTI). Retained participants scored significantly lower on the OTI drug use and sexual risk taking behavior sub scale (8.6 vs. 12.8, $p<0.001$).

Table 4 Illicit drug use and health profile by opioid maintenance treatment retention

	Total (n=176)	Not retained (n=66)	Retained (n=110)
Illicit Drug Use			
Prior Month			
Days using any opioid ^{a †}	23.3 ± 10.0	27.6 ± 5.9	20.7 ± 11.1
Days using heroin [†]	20.8 ± 11.3	25.2 ± 9.2	18.2 ± 11.6
Days using hydromorphone [*]	2.0 ± 5.4	3.3 ± 6.6	1.2 ± 4.4
Days using morphine [†]	2.8 ± 6.7	5.0 ± 8.8	1.5 ± 4.6
Days using cocaine powder	4.6 ± 8.9	4.1 ± 8.5	4.9 ± 9.1
Days using crack cocaine	10.3 ± 12.5	11.1 ± 13.2	9.7 ± 12.1
Days using cannabis	6.0 ± 10.4	6.4 ± 10.5	5.7 ± 10.4
Drug problem score ^{b †}	0.39 ± 0.17	0.46 ± 0.15	0.35 ± 0.17
Lifetime			
Age of first heroin injection	24.9 ± 9.5	25.6 ± 10.4	24.6 ± 8.9
Age of regular heroin injection	26.4 ± 9.5	27.4 ± 9.7	25.8 ± 9.3
Lifetime years regular heroin injection	16.2 ± 10.1	15.3 ± 10.1	16.8 ± 10.1
Health			
Prior Month			
Health related quality of life score ^c	0.76 ± 0.21	0.78 ± 0.24	0.75 ± 0.20
OTI – Total health score ^d	23.2 ± 12.2	23.4 ± 12.9	23.6 ± 11.8
OTI – Risky drug use and sexual behaviour ^{e †}	10.2 ± 7.6	12.8 ± 8.9	8.6 ± 6.3
SCL-90 Global Severity Index ^{f(w)}	0.72 [0.27,1.49]	0.63 [0.22,1.32]	0.76 [0.38,1.50]
Any anxiety ^g	82 (47.1)	30 (45.5)	52 (48.2)
Any depression ^g	66 (37.9)	23 (34.9)	43 (39.8)
Lifetime			
Any anxiety ^{g*}	121 (69.5)	39 (59.1)	82 (75.9)
Any depression ^g	114 (65.5)	39 (59.1)	75 (69.4)
Prescribed psychiatric medication ^g	91 (52.3)	33 (50.0)	58 (53.7)
Chronic medical problem ^g	107 (61.1)	39 (59.1)	68 (62.4)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or Fisher's exact test * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 2 were both abstinent from opioids and not accessing treatment and thus were excluded from the analysis.

a Illicit opioids includes all illicit opioids measured: heroin, hydromorphone, methadone, morphine, oxycodone, fentanyl, and any other illicit opioid listed by the participant.

b Drug problem score from the European Addiction Severity Index- higher score indicates a higher score for drug problems.

c Euroqol with Canadian weights scores range from 0 to 1; higher scores are indicative of better health status.

d Opioid Treatment Index total health scores range from 0 to 51, higher score is indicative of higher physical conditions.

e OTI risky sexual and drug use behavior- higher score indicates more risky behavior.

f Symptom Checklist - 90 Global Severity Index Score- based on participant responses to questions on the severity of 90 symptoms. Higher score indicates poorer health.

g Each of these ratings come from the European Addiction Severity Index where participants were asked if they had experienced any of these in the prior month and in lifetime.

3.3.2 Program-related factors

Participants that were not retained in OMT reported significantly more days of use of harm reduction services including mobile access vans (3.3 days vs. 1.2 days, $p=0.005$), needle exchanges (12.0 days vs. 7.4 days, $p=0.009$), and Insite safe injection site (12.6 days vs. 5.5 days, $p<0.001$). Those retained had a significantly higher odds of reporting a most recent opioid maintenance dose of 60 mg or higher (59.4% vs. 40.9%, $p=0.018$). These participants were also more likely to report their highest dose ever prescribed to be greater than 120mg (54.6% vs. 36.4%, $p=0.019$). Significantly higher treatment satisfaction scores were found among those retained compared to those that were not retained (22.7 vs. 18.0, $p<0.001$). Participants that were considered retained spent more months in life on OMT, and were significantly more likely to have been on OMT for 60 months or more in lifetime (38.9% vs. 16.7%, $p<0.001$). The reported prevalence of lifetime access to any detox or counselling services was similarly reported, as were visits with general practitioners, nurses, and mental health workers. Retained participants were significantly more likely to have visited an addiction physician in the prior month (69.7% vs. 19.7%, $p<0.001$), which is expected considering their more regular access to opioid maintenance treatment.

Table 5 Addiction treatment and health care utilization by opioid maintenance treatment retention

	Total (n=176)	Not retained (n=66)	Retained (n=110)
Drug Treatment			
Prior month			
Client Satisfaction score ^{a †}	20.9 ± 6.3	18 ± 6.6	22.7 ± 5.5
Days accessing mobile access van [†]	2.0 ± 4.8	3.3 ± 6.6	1.2 ± 3.0
Days accessing needle exchange [†]	9.1 ± 11.3	12.0 ± 12.2	7.4 ± 10.4
Days accessing safe injection site [†]	8.2 ± 11.0	12.6 ± 12.49	5.5 ± 9.1
Lifetime			
Age first OMT access	33.0 ± 13.8	34.9 ± 9.2	31.8 ± 15.9
Highest ever OMT dose >120mg ^{b *}	84 (47.7)	24 (36.4)	60 (54.6)
Satisfied with highest OMT dose	77 (44.3)	24 (36.4)	53 (49.1)
OMT Recent Dose ≥ 60mg ^{b *}	90 (52.3)	27 (40.9)	63 (59.4)
Satisfied with OMT recent dose	80 (46.0)	26 (39.4)	54 (50.0)
Months in life on OMT ≥ 60 ^{c †}	68 (38.9)	11 (16.7)	57 (52.3)
Health Care Utilization			
Prior Month			
Any General practitioner visit	80 (45.7)	25 (37.9)	55 (50.5)
Any addiction Physician visit [†]	89 (50.9)	13 (19.7)	76 (69.7)
Any contact with a nurse	54 (30.9)	22 (33.3)	32 (29.4)
Any Mental Health Worker visit	33 (18.9)	9 (13.6)	24 (22.0)
Lifetime			
Detox access ^d	91 (52.3)	35 (53.0)	56 (51.9)
Counselling access	112 (64.7)	41 (62.1)	71 (66.4)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or fisher's exact test * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 2 were both abstinent from opioids and not accessing treatment and thus were excluded from the analysis.

a Client satisfaction score is based on a series of 8 questions in reference to patients' satisfaction with their most recent OMT attempt, higher score indicates higher satisfaction, scores range from 8-32.

b Categories were defined based on the distribution of the data, and College of Physicians and Surgeons of British Columbia (CPSBC) guidelines, reference group ≤ 120mg and <60mg respectively.

c Categories were defined based on the distribution of the data and CPSBC guidelines Reference group <60 months in life on methadone.

d Reference group had accessed detox 0-2 times in lifetime. - 85% of participants accessed at least once so to better understand variation this cut point was determined.

3.3.3 Social factors

Participants that were retained in treatment were significantly more likely to live alone (63.3% vs. 43.9%, $p=0.012$), and less likely to live with someone using psychoactive drugs (28.4% vs. 42.4%, $p=0.058$), or with psychological problems (12.8% vs. 19.70%, $p=0.224$). In terms of serious problems in lifetime with family or friends, both groups reported similar rates. Days reporting illegal activities were significantly higher among those that were not retained (15.7 vs. 8.7, $p<0.001$) and these participants were significantly more likely to derive their major source of support from non-legal activities (i.e. drug dealing, property theft, sex work, other illegal activity) (51.5% vs. 26.6%, $p=0.001$).

Table 6 Social factors by opioid maintenance treatment retention

	Total (n=176)	Not retained (n=66)	Retained (n=110)
Social			
Prior Month			
Serious problem with intimate partner	18 (10.3)	10 (15.2)	8 (7.4)
Days of serious family conflict	0.7 ± 4.2	1.3 ± 5.7	0.4 ± 2.9
ASI Family Score ^{a(w)}	0.00 [0.00,0.05]	0.00 [0.00,0.08]	0.00 [0.00,0.04]
Spend most of free time alone	83 (47.7)	26 (39.4)	57 (52.8)
Live alone ^{b*}	98 (56.0)	29 (43.9)	69 (63.3)
Live with psychoactive drug user ^b	59 (33.7)	28 (42.4)	59 (28.4)
Live with someone with psych. Problems ^b	27 (15.4)	13 (19.7)	14 (12.8)
Lifetime			
Significant periods of time with:			
Serious problem with intimate partner	96 (55.2)	36 (54.5)	60 (55.6)
Serious problem with mother	94 (54.0)	35 (53.0)	56 (54.6)
Serious problem with father	86 (49.4)	33 (50.0)	53 (49.1)
Serious problem with friend	38 (21.8)	15 (22.7)	23 (21.3)
Serious problem with brother or sister	60 (34.5)	20 (30.3)	40 (37.0)
Legal and Employment			
Prior Month			
Days of illegal activity [†]	11.36 ± 12.98	15.71 ± 13.12	8.73 ± 12.29
Illegal activity main source of support ^{c†}	63(36.0)	34(51.5)	29(26.6)
ASI Legal Score ^{a(w)†}	0.24 [0.00,0.40]	0.34 [0.00,0.40]	0.20 [0.00,0.39]
ASI Employment Score ^{a(w)}	0.00 [0.00,0.31]	0.00 [0.00,0.42]	0.00 [0.00,0.00]

Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or fisher's exact test * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 2 were both abstinent from opioids and not accessing treatment and thus were excluded from the analysis.

a European Addiction Severity Index- high score indicates a higher score for family, legal, and employment problems, score ranges from 0-1.

b Participants could select as many living situations as applicable for the prior month. Psych refers to psychological.

c Illegal activity as main source of support refers to reported sex work, property theft, or drug dealing, or other illegal activity as the main source of income.

3.4 Gender specific factors associated with retention to opioid maintenance treatment

Bivariate analyses of predictor variables of retention were also conducted separately among men and women. It was found that among women, those retained were older than those not retained (43.6 vs. 40.8, $p=0.174$) while among men those that were retained were younger than those not retained (46.7 vs. 47.4, $p=0.3397$). Aboriginal participants make up 28.3% of the sample, among which 68% are women and 32% are men. Men and women that were retained were less likely to report Aboriginal ancestry, men significantly, (10.2% vs. 25.7%, $p=0.047$) and women nearly significantly (34.0% vs. 54.8%, $p=0.065$).

Retained participants reported significantly less days of illicit opioids in the prior month, this relationship existed among both men (23.0 vs. 27.0, $p=0.028$) and women (18.6 vs. 28.2, $p<0.001$). Among women, retained participants reported significantly more lifetime years of regular heroin injection (15.2 vs. 9.7, $p=0.005$) and a significantly younger age of regular heroin injection (25.4 vs. 30.4, $p=0.026$), compared to participants that were not retained. These associations were not present among men.

Among women, those that were retained were significantly more likely to report having a most recent opioid maintenance dose of $\geq 60\text{mg}$ (75.0% vs. 41.9%, $p=0.003$), a highest dose ever $>120\text{mg}$ (68.1% vs. 32.4%, $p=0.002$), while these relationships did not exist (significantly) among men. Participants that were retained were significantly more likely to have been on OMT 60 months or more in lifetime, this existed among both men (45.8% vs. 20.0%, $p=0.012$) and women (50.0% vs. 6.5%, $p<0.001$). Women that were retained reported significantly higher CSQ scores compared to women that were not retained (24.2 vs. 16.2, $p<0.001$) while this association did not

exist among men. When compared to men that were not retained in OMT, men that were considered retained reported significantly worse on measures of physical and mental health. Men that were retained reported significantly more symptoms on the OTI (22.6 vs. 16.7, $p=0.016$), poorer median SCL-GSI scores (0.80 vs. 0.41, $p=0.01$) and were more likely to have reported anxiety in lifetime (72.9 vs. 48.6%, $p=0.018$) compared to men that were not retained. These associations between retention and poor health status did not exist among women.

Men that were retained were more likely to report living alone in the prior month (71.2% vs. 51.4%, $p=0.054$) compared to those not retained, while this association did not exist among women. Men that were retained were also significantly less likely to have lived with someone using psychoactive substances compared to those that were not retained (17.0% vs. 40.0%, $p=0.013$). Significantly less days of illegal activity in the prior month were reported among men that were retained compared to those that were not (8.8 vs. 16.9, $p=0.003$).

In terms of victimization, it was found that men that were retained were significantly more likely to report adulthood emotional abuse (54.2% vs. 28.6%, $p=0.016$); and report significantly higher childhood physical neglect scores (9.8 vs. 7.8, $p=0.017$) compared to men that were not retained. These associations did not exist among women. Women that were retained were significantly less likely to report victimization (emotional, sexual, physical, abuse in health care) in the prior month compared to women that were not (22.9% vs. 48.4%, $p=0.019$).

Table 7 Select variables by opioid maintenance treatment retention among women and among men

	Men		Women	
	Not retained (n= 35)	Retained (n=59)	Not retained (n= 31)	Retained (n=50)
Socio-demographic characteristics				
Age	47.4 ± (8.3)	46.7 ± (9.9)	40.8± (9.6)	43.6 ± (8.6)
Any aboriginal ancestry ^{a(f) *}	9 (25.7)	6 (10.2)	17 (54.8)	17 (34.0)
Has biological children [*]	17 (48.6)	27 (45.8)	18 (58.1)	39 (79.6)
Ever done sex work	22 (62.9)	45 (76.3)	22 (73.3)	41 (83.7)
Illicit drug use				
Days using opioids in prior month ^{b*†}	27.0 ± 6.9	22.8 ± 9.7	28.2 ± 4.5	18.6 ± 12.1
Age regular heroin injection [*]	24.8 ± 8.8	26.3 ± 9.0	30.4 ± 10.0	25.4 ± 9.7
Lifetime years regular heroin injection [†]	20.1 ± 10.7	18.2 ± 10.5	9.8 ± 5.7	15.2 ± 9.4
Addiction treatment				
Highest dose OMT >120 ^{c†}	18 (51.4)	38 (65.5)	10 (32.3)	32 (68.1)
Most recent dose OMT ≥ 60mg ^{c†}	14 (40.0)	27 (47.4)	13 (41.9)	36 (75.0)
Months in life on OMT ≥60 ^{d **†}	7 (20.0)	27 (45.8)	2 (6.5)	25 (50.0)
Client Satisfaction Score ^e	19.7 (6.1)	21.5 (6.0)	16.23 (6.7)	24.2 (4.3)
Physical and mental health				
Anxiety in life ^{f*}	17 (48.6)	43 (72.9)	22 (71.0)	38 (79.2)
SCL 90 Global Severity Index ^{g* (w)}	0.41[0.1, 0.9]	0.8 [0.28,1.50]	1.20 [0.23,1.81]	0.8 [0.5, 1.5]
EQ5D- Quality of life score ^h	0.8 (0.2)	0.8 (0.2)	0.7 (0.3)	0.7 (0.2)
OTI – Total health score ^{*i}	16.7 (11.0)	22.6 (11.4)	28.8 (12.0)	24.9 (12.3)
Social factors (prior month)				
ASI Family score ^{(w)j}	0.00[0.00,0.0]	0.00[0.00, 0.00]	0.00[0.00, 0.33]	0.00[0.00, 0.06]
Lived with psychoactive drug user ^{k *}	14 (40.0)	10 (17.0)	14 (45.2)	20 (40.8)
Lived w/ someone w/ psych problems ^{k(f)}	4 (11.4)	4 (6.8)	9 (29.0)	10 (20.4)
Lived alone ^k	18 (51.4)	42 (71.2)	11 (35.5)	27 (55.1)
Main source of support illegal activity ^{l†}	18 (51.4)	14 (23.7)	15 (50.0)	15 (30.6)
Days of illegal activity [†]	16.9 (13.6)	8.8 (12.2)	14.4 (12.6)	8.8 (12.5)
Victimization				
Childhood physical neglect [*]	7.8 (3.1)	9.8 (4.1)	9.7 (4.8)	11 (5.6)
Prior month abuse in health care ^{*(f)}	5 (14.7)	9 (15.3)	7 (22.6)	3 (6.3)
Abuse in the prior month [*]	7 (20.6)	12 (20.3)	12 (38.7)	9 (18.8)
Adulthood emotional abuse	10 (28.6) [*]	32 (54.2)	22 (71.0)	31 (62.0)

Statistics are p values for Students T-tests or Wilcoxon rank sum and Chi-square or Fisher's exact test * p<0.05 †p<0.01

*†= significant among women *†= significant among men

Table definitions: Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

(f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 1 identified as neither man nor woman and thus is not represented in this table. 2 were both abstinent from opioids and not accessing treatment and thus were excluded from the analysis.

a Any Aboriginal ancestry refers to a participant reporting First Nations, Inuit or Metis ancestry.

b Illicit opioids includes all illicit opioids measured: heroin, hydromorphone, methadone, morphine, oxycodone, fentanyl, and any other illicit opioid listed by the participant.

c Categories were defined based on the distribution of the data, and CPSBC guidelines, reference group ≤ 120mg and <60mg respectively.

d Categories were defined based on the distribution of the data and CPSBC guidelines Reference group <60 months in life on methadone.

e Client satisfaction score is based on a series of 8 questions in reference to patients' satisfaction with their most recent OMT attempt, higher score indicates higher satisfaction, ranging from 8-32, a higher score indicating higher satisfaction.

f Anxiety ratings come from the ASI where participants were asked if they had experienced anxiety in lifetime.
g Symptom Checklist - 90 Global Severity Index Score- based on participant responses to questions on the severity of 90 symptoms. Higher score indicates poorer health.
h Euroqol with Canadian weights scores range from 0 to 1; higher scores are indicative of better health status.
i Opioid Treatment Index total health scores range from 0 to 51, higher score is indicative of higher physical conditions
j European Addiction Severity Index- high score indicates a higher score for family problems
k Participants could select as many living situations as applicable for the prior month. Psych refers to psychological
l Illegal activity as main source of support refers to reported sex work, property theft, or drug dealing, or other illegal activity as the main source of income.
m Victimization in the prior 30 days refers to participants reporting at least one of emotional, physical, sexual abuse or perceived abuse in the health care system at any point in the prior 30 days.

Table 8 shows the results of the multivariable model for the individual, program, and social factors independently associated with retention to OMT. Adjusting for all other variables in the model, Aboriginal ancestry was significantly and independently associated with OMT retention, with significantly lower odds of retention among those participants reporting Aboriginal ancestry (OR=0.16; 95% CI=0.06-0.44). The odds of retention were significantly associated with Client Satisfaction Questionnaire scores (OR=1.19, 95% CI=1.10-1.28), childhood physical neglect (OR=1.13, 95% CI=1.03-1.24), and risky sexual and drug use behavior (OR= 0.93; 95% CI=0.80-0.96). Participants reporting having biological children had 2.72 times the odds of retention compared to those who did not (95% CI=1.11-6.69). In addition, participants who reported illegal activities as their main source of financial support had significantly lower odds of being retained (OR=0.35; 95% CI: 0.16, 0.81). The Hosmer-Lemeshow test demonstrated that the model was a good fit for the data (p value=0.88) and the area under the curve was 0.84, quantifying the overall ability of the model to discriminate between those retained and not retained [257].

Gender specific models revealed different predictors for men and women. Among women, treatment satisfaction scores (OR=1.30; 95% CI: 1.14, 1.48) were independently and significantly associated with a higher odds of retention and risky sexual and drug use behavior (OR=0.88; 95% CI= 0.80, 0.96) was independently and significantly associated with a lower odds of retention.

Among men, Aboriginal ancestry (OR=0.21; 95% CI=0.06, 0.78) and illegal activity as the main source of support (OR=0.39; 95% CI= 0.15, 1.02) were significantly and independently associated with a lower odds of retention. Childhood physical neglect was significantly and independently associated with a higher odds of retention (OR=1.16; 95% CI= 1.01, 1.34). In order to assess the model fit for gender specific models, Tjur's R^2 , also known as the coefficient of discrimination was determined [258] as the p value derived from Hosmer-Lemeshow test may be unreliable with small sample sizes (Bewick, 2005). Tjur's R^2 is a measure of predictive power, measuring how well the dependent variable (retention) is predicted by the independent variables. It is the difference in the means of the predicted probabilities between cases with events (i.e. retained) and cases without events (i.e. not retained) and ranges from 0 to 1. Models making good predictions are expected to have higher predicted values among cases with events and lower predicted values among cases without events, which was our finding for both the men's and women's model. Tjur's R^2 was 0.17 among men, and 0.50 among women. A higher Tjur's R^2 is determined among women based on the fit of the variables in the women's model for making predictions.

Table 8 Predictive model of opioid maintenance treatment retention among the full sample and by gender

	Women and Men N=165 (102/63)		Women N=79(48/31)		Men N=94(59/35)	
	OR	95% CI	OR	95% CI	OR	95% CI
Age	0.96	0.91, 1.01	1.01	0.95, 1.08	0.97	0.93, 1.02
Gender: Man	1.14	0.48, 2.70	-	-	-	-
Aboriginal ancestry	0.16 [†]	0.06, 0.44	0.27	0.07,1.06	0.21 [*]	0.06, 0.78
CSQ Score ^a	1.19 [†]	1.10, 1.28	1.30 [†]	1.14, 1.48	-	-
Illegal activities main source of support	0.35 [*]	0.16, 0.81	-	-	0.39	0.15, 1.02
Has biological children	2.72 [*]	1.11, 6.69	-	-	-	-
Physical neglect	1.13 [*]	1.03, 1.24	-	-	1.16 [*]	1.01, 1.34
Sexual and drug use behaviours	0.93 [*]	0.88, 0.99	0.88 [†]	0.80, 0.96	-	-

* p<0.05 †p<0.01

Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR)

Notes: The predictive model was built with 165 observations (102 retained, 63 not retained) 1 participant was excluded from the model due to identifying as neither man nor woman, 4 participants did not complete the client satisfaction questionnaire, 1 did not complete the ASI (illegal activities variable), and 5 participants did not complete the childhood trauma questionnaire, 3 participants did not complete the OTI (sexual and drug use behavior variable). This leaves 14 instances of missing data removed from the model, among 11 participants. The model was adjusted for gender, age, and Aboriginal ancestry and gender specific models were adjusted for Aboriginal ancestry and age.

^a The CSQ score ranges from 8 to 32. A one-unit increase in CSQ score is associated with a 19% increase in the odds of retention.

3.5 Qualitative reflection

Excerpts from the closed knowledge translation meeting focus groups are discussed in order to illustrate the broad themes that emerged from the qualitative analysis surrounding experiences with OMT and the concepts and experiences that characterize them. Themes emerged as follows, for women: the desire for collaborative care; lack of choice in dose; and lack of program flexibility. For men: supporting patients off methadone; methadone as a business; treatment accessibility and environments. The themes that emerged from the open meetings are as follows: lack of treatment success; desire for alternative treatments; strict regulations as barriers to care. Findings from the closed meeting are elaborated on as they were smaller in scale, allowing for more rich discussions. The closed meetings further provide a picture of the gender specific experiences of men and women with OMT. The results are presented in order of frequency with which references were made to each theme.

3.5.1 Women

The desire for collaborative care

The desire for a collaborative model of care was referred to throughout the women's discussions. This theme encompasses discussions focused on: the importance of accounting for the patient's perspective in treatment decisions; the role of communication; the desire for more time with the health care provider and the hope for more individualized care. One of the participants described that the individual needs of patients were not being met with OMT programming:

"...unfortunately a lot of people aren't being heard or aren't getting their treatment that they should because the doctors are saying oh you know it's like everyone is the same we will just put them on this. Each methadone treatment for each person is different. Some people are still using (heroin) and some aren't and what not, but even aside from the using aspect of it, everybody's body is different. You know, metabolizes it (methadone) differently, some people metabolize it

faster and it (methadone) just affects everybody differently. People are trying to speak up for themselves and say no like I need it like this, or this is what is happening with me, but because I think doctors just see so many people all the time they just categorize them all as one”.

- Maggie, 26

Lack of choice in dose

Lack of choice surrounding health and treatment permeated women’s experiences. Discussions surrounding choice were predominantly focused on OMT dose decisions, where women expressed that the methadone physicians wanted them to increase their dose, or wanted to “keep” them on methadone. A sense of powerlessness was felt among the women and discussions included patient rights surrounding their medical care and treatment. One of the women described the lack of choice she has in terms of her methadone dose:

“My doctors have straight out said, you’re going to be on methadone for life, that’s one thing to tell a person, you know. Every time I ask to go down it’s like “no, no, no”.

-Claire, 52

One participant described the consequences of an increased dose for her health and well-being which she did not face when she was at a lower dose:

“My doctor, every time I go in he says ‘I’m going to up you 5 mg’ and I am on 85mg. I noticed now that since I have been on 85 mg my withdrawal symptoms are coming more than they did before, like I have to get it sooner, like I get it delivered at 6 in the morning and if I don’t get it within I don’t know, 4 hours I am in big trouble”.

- Karly, 57

It was highlighted that patients have rights and these should apply in terms of voicing their preferences for their own health and addiction treatment care:

“The doctor is the doctor, but I thought that we had the right to say no if a doctor wants to put you up and you don’t want to go up. I thought you had the right to say no. Well not just the right to say no, but that they have to listen to you and can’t force you to increase your medication.”

-Maggie, 26

Lack of flexibility

Lack of flexibility is a known barrier to engaging and retaining patients in OMT services [259].

Women’s discussions were focused on: lack of delivery; daily pharmacy visits; other responsibilities or aspects of their lives making methadone impractical; the need for alternatives.

One of the women described the need to visit the pharmacy daily to pick up her methadone as a barrier to stabilizing on this treatment and to gaining the full benefits of the treatment:

“I have a very hard time to stay on methadone ...like today for example I am going to see my doctor to get a new script because I haven’t had methadone for two days. For the last year it’s kind of been like off and on, off and on. I have a really hard time, I don’t know getting to the pharmacy every day...and that’s what kinda gets....what does it for me. Then you can only miss a certain amount of days before you have to get a whole new script. It’s not like, I can’t access it every day because the pharmacy is like across the street from my house, but I suffer from severe depression and some days I just can’t, and some days it could be something else, that to me is super important other than that, but I know it sounds silly...so I find it very challenging to have to go to the pharmacy every day. Just from talking with the nurse and stuff like that I was basically told that because I don’t have a physical disability that keeps me from physically walking over to the pharmacy why would they want, why would a doctor want to give me a carry...but you know in my mind I find a lot of times that people, I feel misunderstood because my disability isn’t physical.”

- Maggie, 26

3.5.2 Men

Supporting patients transitioning out of methadone treatment

Participants discussed the disconnect existing between their intentions for methadone and their actual treatment results, describing the treatment as long-term, with little support or hope of

coming off of it. The men felt that the physicians favored keeping them on methadone or

increasing their doses, rather than listening to their treatment desires and supporting them off of it:

“It is not something that is pushed at all, quitting, quitting methadone. Harm reduction is basically just stay on methadone, just stay on the methadone, there is nothing done about how to quit what is the best way to quit, you go down 1 mg a week, ya until when? Until what, 3 or 5 milligrams? Nobody seems to know. As far as treatment goes there is no knowledge as to what a treatment is for methadone, right nobody seems to know anything about it.”

– Clay, 40

“There needs to be supervision to slowly get off of it [methadone], the right amount for the right person, you know. There is a high success rate when people are really educated and focused on that, I think. A lot of people don’t try because it is not put out there. They feel kind of helpless....but yah screaming for help. ‘I want off this stuff. I didn’t sign up for this long-term.’ They’re not getting help, unless they go to treatment centres or whatever, but the doctors that are profiting from it they are they are not pushing any of that.”

- Lloyd, 49

Methadone as a business

The men discussed problems they had with methadone that fit more as systemic issues, explained by the notion that methadone is a “business”, with physicians made to follow the regulations of this “business”. Discussions in this theme focused on the lack of alternative treatments; strict policies on carries; and the view that the provision of care to the patient by the physicians is restrained by the strict regulations of the treatment as a “business” operating with liabilities, and the chief aim of achieving a profit. One of the participants described his desire for stronger medication to manage his pain and the challenges to receiving this medication:

“I get 140mg of methadone a day and I get T3’s and I sit there and I eat the T3’s like candy and I am wondering this isn’t helping this arthritis is still killing me, and you know so personally there is nowhere to turn. I have my GP that gives me the T3’s and I actually went in to see him the other day and asked him to up the script so he wants me to give him a urine specimen. I don’t know what he is testing for, he knows I am on methadone, he is already giving me a particular number of T3’s, I don’t know maybe he is testing me for street dope or something I don’t know what it is. It seems that all the doctors out here have a mindset that they are leery of doing things that they know are right or can help. I don’t know why, who are they afraid of or what are they afraid of?”

- Jared, 60

Treatment accessibility and environments

The environments in which methadone is delivered were discussed as counterproductive to the overarching aim of engaging and retaining patients in treatment and reducing illicit drug use. The men emphasized the risk of entering the environment in the Downtown Eastside of Vancouver (DTES) in which most pharmacies are situated, as tempting or triggering to using street drugs. One of the men described the process of trying to get accepted into a pharmacy when he moved to Vancouver, and the potential for the challenging logistics to put him at risk of illicit street use:

“They wanted to do an interview first and then the next week you would start up there (Gibsons). Here (Vancouver) I was having a problem because my address was up there for billing reasons, which I was still unclear on but it turned out I was still registered at Pender (Clinic in Vancouver) so things worked out, but I still went like three weeks without having it so, I could have ended up back down here buying dope on the street.”

- Clay, 40

Jared and Clay described the geographic location of pharmacies in the DTES as environments that could be tempting to using street drugs. Logistics that support patients in accessing treatment outside of the context of illicit drugs in the DTES were advocated for:

“I just think delivery, delivery, so you don’t have to come to places or downtown or whatever and even if you live downtown you don’t have to go outside. It would be easier to stay out of trouble if you didn’t have to go down to the pharmacy every day, or come down here.”

- Clay, 40

“The atmosphere of having to come down here... if you live on the east side... if you live down here, the temptation to use street dope is just way over the top, so you’re kind of like stuck between the proverbial rock and a hard place. When you go to your doctor and your doctor wants a clean specimen and you can’t give it to him for whatever reason, and you’ve got to go to the pharmacy every day.”

- Jared, 60

3.6 Perceived abuse in health care system

3.6.1 Participant characteristics by perceived abuse in the health care system

Fifty percent of the study participants (n=88) reported perceived abuse in the health care system (PAHC) (mild, moderate, or severe)³. Mild PAHC was reported by 43% of participants (n=75), moderate PAHC was reported by 28% (n=49) and severe PAHC was reported by 16% (n=28). Participants could endorse more than one question (e.g. mild and moderate abuse). In terms of frequency, abuse in health care was experienced more than 5 times in the lifetime reference period by 47% of those reporting mild PAHC (n=35), 29% of those reporting moderate PAHC (n=14), and 29% (n=8) of those reporting severe PAHC, with the remainder of participants reporting PAHC between one and four times at each respective severity of abuse. Women were significantly more likely than men to report severe PAHC (22.5% vs. 10.9%, p=0.047).

Participants that reported PAHC were significantly more likely to report having had a family member attend residential school (65.0% vs. 44.0%, p=0.024). A statistically significant association was found between PAHC and non-stable housing both in the prior three years and in the prior month, with those reporting PAHC being less likely to report unstable housing.

As per Table 9, participants reporting PAHC reported significantly higher childhood emotional abuse scores (15.1 vs. 11.6, p=<0.001) and a significantly higher number of potentially traumatic events (15.3 vs. 13.2, p=0.006). The scores for all types of childhood maltreatment were higher among those reporting PAHC. Of all participants completing the CTQ (n=170), 98% reported at

³ A version of the perceived abuse in the health care system analysis will be published. Palis, H., Marchand, K., Peng, D., Fikowski, J., Harrison, S., Spittal, P., Schechter, M., & Oviedo Joeques, E. (2015) Factors associated with perceived abuse in health care among a population of long-term opioid users. *Journal of Substance Use and Misuse* (Revisions submitted).

least one type of childhood maltreatment (physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect) (data not shown). A higher proportion of all measured types of adulthood abuse were also reported among those reporting PAHC: physical (92.0% vs. 79.3%, $p=0.016$); sexual (36.4% vs. 17.2%, $p=0.004$), and emotional (65.9% vs. 48.3%, $p=0.018$).

Table 9 Socio-demographic and victimization profile by perceived abuse in health care

	Total (n=175)	No PAHC (n=87)	PAHC (n=88)
Socio-demographic characteristics			
Woman	79 (45.1)	40 (46.0)	39 (44.3)
Age	45.0 ± 9.5	45.7 ± 9.8	44.2 ± 9.1
Any Aboriginal ancestry ^a	50 (28.6)	26 (29.9)	24 (27.3)
Family member in residential school ^{b*}	24 (53.3)	11 (44.0)	13 (65.0)
Any non-stable housing in the prior 3 years [*]	107 (61.8)	60 (69.8)	47 (54.0)
Any non-stable housing in the prior 30 days [*]	77 (44.0)	46 (52.9)	31 (35.2)
Education (high school or more) ^c	98 (56.0)	47 (53.0)	51 (58.0)
Ever separated from biological parents	92 (52.6)	46 (52.9)	46 (52.3)
Ever paid in exchange for sex	88 (50.6)	41 (47.7)	47 (53.4)
Paid in exchange for sex in prior 30 days ^d	27 (31.4)	11 (27.5)	16 (34.8)
Victimization			
Childhood Maltreatment^e			
Emotional abuse [†]	13.4 ± 6.2	11.6 ± 5.8	15.1 ± 6.2
Physical abuse	10.9 ± 5.7	10.1 ± 5.3	11.7 ± 6.0
Sexual abuse	9.9 ± 6.2	9.4 ± 6.1	10.5 ± 6.3
Emotional neglect	13.8 ± 5.7	13.2 ± 5.8	14.4 ± 5.6
Physical neglect	9.7 ± 4.6	9.1 ± 4.1	10.3 ± 4.9
Lifetime			
Abuse in prior 30 days ^f	40 (22.9)	18 (20.7)	22 (25.0)
Potentially traumatic events ^{g†}	14.2 ± 5.1	13.2 ± 4.8	15.3 ± 5.1
Adulthood emotional abuse [*]	100 (57.1)	42 (48.3)	58 (65.9)
Adulthood physical abuse [*]	150 (85.7)	69 (79.3)	81 (92.0)
Adulthood sexual abuse [†]	47 (26.9)	15 (17.2)	32 (36.4)
Ever attempted suicide	57 (33.5)	23 (27.1)	34 (40.0)
Intimate partner violence	99(57.9)	44(51.8)	55(64.0)

Statistics are p values for Students T-tests Chi-square tests * p<0.05 †p<0.01

Table definitions: Values are N (%); Plus-minus values are means ±SD. (f) = Fisher's exact test; (w) = Wilcoxon rank sum test.

Table Notes: There were 178 participants in the study. 3 did not complete the NorVold Abuse Questionnaire in reference to PAHC and thus were excluded from the analysis.

a Any Aboriginal ancestry refers to a participant self-identifying with First Nations, Inuit or Metis ancestry.

b Family member in residential school applies only to those with Aboriginal ancestry completing the First Nations questionnaire. 45 participants completed this question on residential school.

c Education is categorized as high school or greater and less than high school.

d Paid in exchange for sex in the prior 30 days applies only to those ever paid in exchange for sex (n=88), 2 missing sex work

e Maltreatment data comes from the childhood trauma questionnaire. Scores range from 5-25, higher scores indicating more severe maltreatment.

f Abuse in the prior 30 days refers to participants reporting at least one of emotional, physical, sexual abuse or perceived abuse in health care.

g PTE scores present the number of endorsed events including accidents and injuries, illnesses, abuse, lose of a loved one, etc. up to 34 events.

Illicit drug use, and physical and psychological health are presented in Table 10. There were no significant differences in lifetime or prior month illicit drug use between groups. Regarding health status, PAHC was significantly associated with all psychological health measures. Participants reporting PAHC were significantly more likely to report anxiety in lifetime (79.5% vs. 59.3%, $p=0.004$), and depression in lifetime (75.0% vs. 52.3%, $p=0.002$) and in the prior month (47.7% vs. 27.9%, $p=0.007$). The SCL-90 Global Severity Index also indicates poorer psychological health among those reporting PAHC (1.04 vs. 0.79, $p=0.03$). Those reporting PAHC scored significantly lower for health related quality of life (0.71 vs. 0.82, $p=0.001$) and endorsed the presence of significantly more negative health symptoms on the OTI (25.3 vs. 20.3, $p=0.006$). The likelihood of reporting a medical problem in the prior month was also significantly higher among those reporting PAHC (65.9% vs. 36.8%, $p<0.001$).

Table 10 Illicit drug use and health profile by perceived abuse in health care

	Total (n=175)	No PAHC (n=87)	PAHC (n=88)
Illicit drug use			
Prior Month			
Days using heroin	20.9 ± 11.3	22.2 ± 10.8	19.6 ± 11.7
Days using cocaine powder	4.5 ± 8.7	3.7 ± 8.0	5.3 ± 9.3
Days using crack cocaine	10.4 ± 12.5	10.4 ± 12.9	10.4 ± 12.2
Lifetime			
Age of first heroin injection	25.2 ± 9.5	24.9 ± 9.2	25.5 ± 9.8
Years of regular heroin use	16.0 ± 10.0	16.7 ± 9.8	15.4 ± 10.3
Health			
Prior Month			
Health related quality of life [†]	0.76 ± 0.21	0.82 ± 0.18	0.71 ± 0.23
OTI- Total health [†]	22.8 ± 12.1	20.3 ± 11.9	25.3 ± 11.9
SCL-90 GSI	0.79 [0.36,1.56]	0.72 [0.27,1.56]	0.93 [0.40,1.61]
Medical problem in the prior 30 days [†]	90 (51.4)	32 (36.8)	58 (65.9)
Any depression ^{a†}	66 (37.9)	24 (27.9)	42 (47.7)
Lifetime			
Anxiety in lifetime ^{a†}	121 (69.5)	51 (59.3)	70 (79.5)
Depression in lifetime ^{a†}	111 (63.8)	45 (52.3)	66 (75.0)
Prescribed psychiatric medications [†]	92 (52.9)	31 (36)	61 (69.3)
Has chronic medical problem(s) ^b	105 (60.0)	48 (55.2)	57 (64.8)

Statistics are p values for Students T-tests Chi-square tests * p<0.05 †p<0.01

Values are N(%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR)

Note: There were 178 participants in the study. 3 did not complete the NorVold Abuse Questionnaire in reference to PAHC and thus were excluded from the analysis.

a Anxiety depression and psych medication ratings come from the ASI where participants were asked if they had experienced any of these in the prior month and in lifetime.

b European Addiction Severity Index- self-reported chronic medical problems that interfered with life.

As shown in Table 11, those reporting PAHC were more likely to be in contact with all of the health care and drug treatment services presented (hospitalization, outpatient counseling, detox, general practitioner). Those reporting PAHC were significantly more likely to report prescribed psychiatric medications in lifetime (69.3% vs. 36.0%, $p < 0.001$) and in the prior month (38.6% vs. 22.1%, $p = 0.018$). Overall, those reporting PAHC were significantly more likely to have ever accessed detox (62.8% vs. 42.5%, $p = 0.008$), and to have had more than three hospitalizations in lifetime (60.2% vs. 37.9%, $p = 0.003$).

Table 11 Drug treatment and health care utilization by perceived abuse in health care

	Total (n=175)	No PAHC (n=87)	PAHC (n=88)
Addiction treatment			
Prior Month			
OMT adherence	108 (62.4)	54(62.1)	54(62.8)
Client Satisfaction score ^a	21.0 ± 6.4	21.7± 6.2	20.4 ± 6.5
Lifetime			
5 or more OMT attempts [*]	51 (29.1)	19 (21.8)	32 (36.4)
OMT Recent Dose ≥ 60mg	88 (52.1)	46 (53.5)	42 (50.6)
Satisfied with OMT recent dose	79 (46.2)	46 (52.9)	33 (39.3)
Health care utilization			
Prior month			
Access to general practitioner	79 (45.4)	35 (40.2)	44 (50.0)
Access to mental health worker ^{b*}	33 (19.1)	11 (12.6)	22 (25.6)
Lifetime			
Counselling Access	111 (65.3)	52 (60.5)	59 (70.2)
Detox access ^{c*}	89 (52.1)	37 (42.5)	52 (61.9)
Hospitalizations in lifetime ^{d†}	86 (49.1)	33 (37.9)	53 (60.2)
Ever prescribed opioids for pain	140 (80.5)	65 (74.7)	75 (86.2)
Ever prescribed sedatives	99 (58.9)	42 (50.0)	57 (67.9)
Ever prescribed stimulants	24 (14.5)	10 (12.2)	14 (16.9)

Values are N (%); Plus-minus values are means ±SD. Square brackets indicate medians and their inter-quartile range (IQR).

* p<0.05 †p<0.01

Note: There were 178 participants in the study. 3 did not complete the NorVold Abuse Questionnaire in reference to PAHC and thus were excluded from the analysis.

^a The CSQ ranges in score from 8-32, with a higher score indicating a higher satisfaction.

^b Mental health worker includes psychiatrist, counselor, psychologist, or social worker.

^c Reference group had accessed detox 0-2 times in lifetime. - 85% of participants accessed at least once so this cut point was chosen instead to better understand the distribution of the data.

^d Reference group had been hospitalized 0-3 times in lifetime- 86% of participants were hospitalized at least once so this cut point was chosen instead to better understand the distribution of the data.

Table 12 shows the results of the multivariable model for those lifetime characteristics independently associated with reporting PAHC. Socio-demographic variables significantly associated with reporting PAHC were gender, and the interaction between age and gender. The interaction between age and gender suggests that the effect of gender on the odds of reporting PAHC depended on age (see Figure 1). For example, compared to a 40-year-old man, the odds that a woman aged 40 had reported PAHC was 0.47 (95% CI=0.20-1.08) and at age 50 was 1.17 (95% CI=0.50-2.72). The odds of reporting PAHC were significantly higher for participants with 5 or more methadone maintenance treatment attempts in life (OR=2.36; 95% CI=1.10-5.07) and for participants who had been prescribed psychiatric medication in life (OR=3.83; 95% CI=1.90-7.71). In addition, per one unit increase in childhood emotional abuse score (out of 25 units), the odds of reporting PAHC increased significantly (OR=1.09; 95% CI=1.03-1.16). The Hosmer-Lemeshow test demonstrated that the model was a good fit for the data (p value=0.21). The value for the area under the curve was 0.77, indicating a good accuracy at quantifying the overall ability of the test to discriminate between those reporting and not reporting perceived abuse in health care.

Because there was a significant interaction between age and gender, models stratified by gender were explored. Small sample sizes (men: n=95; women: n=79) and force-in ethnicity and age variables limited the number of additional predictor variables that could be explored. Wide confidence intervals for the odds ratios resulting from the small sample size indicated that these models were not sound for the predictive modeling of PAHC, and thus this data is not presented.

Figure 1 Interaction of gender and age and probability of perceived abuse in health care



Table 12 Predictive model of perceived abuse in health care

	Perceived abuse in health care vs. No perceived abuse in health care N=169 (86/83)	
	OR	95% CI
Age	-	-
Gender*	-	-
Age*Gender ^a	0.47	0.20, 1.08
Aboriginal ancestry	0.88	0.39, 1.98
Prescribed psychiatric medication in lifetime [†]	3.83	1.90, 7.71
≥ 5 MMT attempts in lifetime*	2.36	1.09, 5.07
Childhood emotional abuse score [†]	1.09	1.03, 1.16

Values are N(%); Plus-minus values are means ±SD. * p<0.05 †p<0.01

Table definitions: OR= odds ratio; 95% CI = 95% confidence interval

Notes: The predictive model was built with 169 observations (86 reporting PAHC, 83 reporting no PAHC). 1 participant was excluded from the model due to identifying as neither man nor woman. 5 participants were excluded due to missing data in the Childhood Trauma Questionnaire. The model was adjusted for gender, age, and ethnicity, and a significant interaction between gender and age.

a. Interaction between age and gender: The interaction between age and gender suggests that the effect of gender on the odds of reporting PAHC in lifetime depends on age. The example provided in the table is for a 40 year old and can be interpreted as follows: compared to a 40-year-old man, the odds that a 40-year old woman reported PAHC were 0.47 (95% CI=0.20-1.08). The odds of PAHC in women compared to men increased significantly from age 21 up to the age of 50. When comparing women to men, for ages 50 and 60, the odds of reporting PAHC increase by 1.167 and 2.9, but not significantly.

3.7 Qualitative reflection

Excerpts from the closed focus groups are discussed in order to illustrate the broad themes that emerged from the qualitative analysis and the concepts and experiences that characterize them. For women: caring qualities; patient voice; holistic approach. For men: joint health care provider and patient responsibility, health care providers as unapproachable, discrimination and compromised care, and systemic issues in the delivery of care. The themes that emerged from the open meetings are as follows: caring qualities; discrimination; patients as experts of their experiences. Findings from the closed meeting are elaborated on as they were smaller in scale, allowing for more rich discussions. The closed meetings further provide a picture of the gender specific experiences of men and women in the health care system. The results are presented in order of frequency with which references were made to each theme.

3.7.1 Women

Caring qualities

Caring qualities were emphasized as important components of health care interactions, and as often overlooked or disregarded by health care providers. These aspects of care include empathy, compassion, as well as respect, and listening skills. With these components of care, women felt health care providers could better address many of the health issues they often face. One of the participants discussed the importance of empathy to developing a relationship of trust:

“I find that....I guess I personally experienced that some doctors are not very empathetic, a lot of them have that tough love approach, no bull shit approach, but I know for me that kind of approach doesn't work and causes me to put up a wall and then I feel like I don't want to engage with them about everything that's going on because of the type of response I am getting so...and then that you know kinda ruins or could ruin the treatment that I am getting because I am not being honest about what is really going on because I am worried about you know, the type of

reaction I am going to get from the doctor, and how can he give me the best treatment, without knowing what is going on you know that type of thing.”

- Maggie, 26

Patient voice

The women emphasized that treatment decisions should be informed by their perspectives rather than by providers. Women recognized their position as experts of their own experiences and described a lack of authority or capacity to have their perspectives accounted for in decisions about their treatment (particularly around dose). This was tied to feelings of powerlessness.

Patients saw health care providers' recognition of patient perspectives as essential to developing a trusting relationship with open communication:

“I think respect is number one, you know you go in there and this is your doctor and you want to be respected and have the time to say hey you know I am going to listen to you, and be respectful. It's a relationship so it's important to have that communication.”

- Karly, 57

Holistic approach

The desire for the health care provider to consider patient health holistically (mental, physical, social), rather than just in relation to medication was highlighted. Patients stated that this requires actively engaging in and demonstrating interest in the patient to understand all of the aspects of their lives, beyond those medically related to addiction.

“I think that they have all you know done their time in school and stuff, and they're qualified, but I think it comes down to personality, and you can be full of knowledge to be a doctor but what is going to make your relationship with your clients work is your personality and your you know...that side of it. Some doctors, I just get the impression that they're just, it's like why are you even a doctor if you don't like to engage in conversation with patients, but you know so.”

- Maggie, 26

“I call it medical mafia, they just write out a script, especially with my doctor he just writes it out and says ok have a good day and that's about it, and it hurts my feelings too because there are certain things I would like to discuss but I just can't do it with him...It's like my other doctor, my

psychiatrist he never talked to me about anything, and then they said we figured you don't need us, you know he wouldn't talk to me about anything except pills, and I said you're the doctor, I mean my antidepressant basically that's what I take ... so I don't know"

- Karly, 57

3.7.2 Men

Joint patient and health care provider responsibility

The men emphasized that health care providers have the responsibility to recognize patient needs and probe with questions demonstrating their concern. The health care provider's role was viewed to entail accountability to delivery of care by ethical standards, demonstrating respect, and providing patients with privacy. This includes the establishment of professional boundaries for interactions with patients. Men also discussed the notion that patients must take their own initiative to ensure their health needs are addressed, in advocating for themselves. References to the health care provider's responsibility (15) outweighed the patient's (11). Jared described that the health care provider is the one with the power to help improve one's health situation, and thus patients should not feel fear in approaching them:

"It's weird I think it is just strange. If you go in there and you have something to say to your doctor and he is the only one that is between you and the dope, like get it out. If you can't then you can't but there should be that communication that open communication, yah, I mean as far as why people would have trouble talking to their doctors or... I don't know I don't get it. That is the closest person that you are ever going to be able to come to that is supposed to help you...at least physically."

- Jared, 60

Another participant described health as an individual responsibility:

"Your care is ultimately your responsibility, I mean in that sense, if you are feeling something wrong you gotta tell somebody right, you can't expect them to diagnose you on everything"

- Clay, 40

One of the men described his view of the health care provider's role to be both accountable to patients, and to establish professional boundaries:

"I would like to see doctors more accountable and responsible to... their position and asking the proper questions. Just being responsible and not just going through the motions."
– Terry, 43

"I find [this] problem with all sorts of professional people, the boundaries between professionalism and personal relationships, I think it sucks, because you really like somebody and then you start talking about other things and then all of a sudden it's like (snaps fingers) well we don't have a personal relationship we have a professional relationship, and that stuff we talked about doesn't exist or can't exist in a professional relationship and it shouldn't because there are roles I guess, I am skewed about it myself I don't know, you know there are boundaries and you don't always know where they are, and I think that have to be established right away or they don't work in relationships."
– Terry, 43

Health care providers as unapproachable

The men discussed their desire for the health care provider to explore solutions to their addiction and health concerns beyond simply the provision of methadone. This type of care is difficult to achieve with participants explaining that most health care providers are challenging to reach out to, for example, allowing patients only one question per visit, and lacking "bedside manner" and interpersonal skills. Clay and Lloyd described these challenges:

"Maybe a doctor should have a limit on how many scripts he can write a day, cause these guys we see there one day 50 patients, 50 scripts, you know what I mean. Obviously no questions are being asked about you know what's up? There is no care, you are just getting your script, see but that is something I am still kind of unsure of. Are you supposed to get another doctor to get your other stuff? Is it cool, he is a GP right?"
– Clay, 40

"My doctor is hard to address, some are obviously easier than others but mine is more difficult to address. In our society if you are a doctor, [you] know what is going on right, and shouldn't be questioned, but I totally have an experience of that that is totally not true. I have doctors that are

totally whacked, and I have had doctors that just listen to me and say hey okay let's try this...but not many, I don't know how many in my life maybe one or two.”
- Lloyd, 49

Discrimination and compromised care

Participants discussed experiences of discrimination in health care settings, based on their status as drug users. In some cases participants highlighted that this discrimination resulted in compromised care, or failure to provide care at all. The label received when entering emergency care as an injection drug user was described:

“When you go into St. Paul's (hospital) 90% of the emergency doctors there they think you are just drug seeking cause they are dealing with so many drug addicts on a daily basis and you go in there and as soon as they know you're an intravenous user or an ex intravenous user you are automatically fucking labeled fucking drug user so the only thing that you are there for in their eyes is dope. Whether you are fucking medically seriously ill or not. Like fuck my old lady goes in there in the morning all the time and fucking because of the pain meds that she is on and the methadone she is just automatically labeled a fucking drug user, here are some T3s get the fuck out”. – Jack, 49

Terry described a heart condition for which he was in hospital care long-term. The provision of the care he needed was denied based on his current drug use. His story was perceived by himself and by other group members as blatant discrimination in the health care system:

Terry: I was in St Paul's for 3 months and I have a heart problem and I needed valves removed and replaced and the operation was kyboshed because

Clay: because you are a drug user

Terry: and they didn't feel that I ...

Clay: that you are not worth the money

Jared: because what kind of, like you are on methadone

Terry: methadone and I was on heroin at the time

Jared: they're saying and you figure that because you...

Clay: oh no they would tell him straight up

Terry: they openly told me they...

Jared: because you're on methadone they won't do the surgery

Clay: probably because you relapsed

Terry: not just the methadone because I had relapsed and was getting high too, I was getting high at the time, smoking rock

Clay: because he had relapsed or was using drugs they wouldn't do the surgery

Terry: but the fact was that you know I had 5 surgeons come to me, heart surgeons say to me we simply don't want to waste the money and time. [...] The thing is that bothers me, I just want to say... the problem with this whole situation is that I sat in this hospital for three months doing antibiotics so they could get the endocarditis out of my heart and operate. They had people coming in that were like on deaths door and they immediately operated on them and they didn't even question it [...]"

Systemic issues in the delivery of care

The men discussed the potential for some of the poor treatment and care to be determinants of the health care system, rather than specific health care providers. For example, the fact that health care providers have many patients to see, and limited time to do so was discussed. The need for alternative treatment and flexibility in the delivery of care was also a focus of this discussion.

Jared described his experiences with treatment being affected by the volume of patients physicians provide care for:

"I noticed that when I am in an office over here where I see my GP (general practitioner) people behind you are come on hurry up (claps) hurry up don't take long and I am thinking holy shit man is this what it has come down to. They figured that they were going to straighten people out by giving them methadone and I don't know if they had any foresight to see what they were doing but they sure made a mess of things"

- Jared, 60

3.8 Knowledge translation

3.8.1 Feasibility

An open meeting was held to determine the feasibility of sharing study findings with this population. A knowledge translation meeting had not been held with this participant population by

our research team in the past and this meeting allowed for the format to be tested. Based on the research team's prior experience arranging focus groups with the participants, and based on the contact with participants in the days prior to the meeting, we expected around 10 participants to attend as a realistic number, but no more than 30 (as a total success of our efforts). On the day of the meeting, 61 participants arrived to take part. Events were held in the community in days prior to the meeting and participants reminded one another of our KT event⁴. This contributed to doubling the expected maximum attendance. As the meeting was open to all GeMa participants (to encourage participation as the turnout was expected to be low) no one was turned away. Because the participant population was largely concentrated in the Downtown Eastside, many participants heard of the meeting through word of mouth, rather than by invitation, as many attending had not previously confirmed their interest with the research team.

Because this was our first time piloting this type of meeting in the community, it was decided not to turn participants away as we did not want to disappoint those expressing such an interest in taking part. As the team was not prepared for the volume of participants attending the meeting, challenges were found in terms of sharing and gathering data from participants due to logistical reasons such as limited space and a large number of participants in each group. Nevertheless, participants left feeling engaged and interested in future participation in KT.

In working with a population of long-term opioid users or other vulnerable populations, planning for knowledge translation meetings must account for a variety of possible scenarios, and be prepared for potentially unexpected outcomes, not only in terms of the number of participants

⁴ Some participants of GeMa were also part of a different group that met in the days prior to our meeting in the DTES in reference to community issues, and they discussed the GeMa meeting. This unexpected word-of-mouth reminder in the day prior to the meeting greatly increased the attendance rate.

attending, but in terms of the participant receptiveness and interest in the meeting format and content. Settings that allow for both sharing findings at a large scale, and breaking into small groups to discuss in more intimate settings as needed are ideal. Feedback from the open meeting was used to develop plans for closed meetings where findings were presented and discussed. These were held separately with men and women with a maximum of 5 participants. These meetings were closed, and by invitation only, allowing control over the number (maximum) of possible attendees, thus ensuring a more comfortable environment for discussions.

3.8.2 Participant perceptions of the knowledge translation meeting formats

3.8.2.1 Quantitative findings

A questionnaire was administered to participants at the end of both open and closed meetings to allow for the determination of agreement or disagreement with specific statements that may not have been established by group discussions. Participants of both the open and closed meeting formats agreed or strongly agreed that the findings reflected their experiences, at 69.4% among participants of the open meetings, and 88.9% among participants of the closed meetings.

Arguably, the most important finding is surrounding the importance of participant involvement in knowledge translation. Among those completing the questionnaire, the majority of participants (89.7%) agreed or strongly agreed on the importance of participant involvement in knowledge translation, however only 35% had previously taken part in any knowledge translation activity. This reinforces that participants are interested in hearing the results and contributing feedback to studies they have taken part in. As the outcomes of these meetings will vary depending on the population of study and various other factors outside of the researcher's control, further piloting of formats with this population is required.

Table 13 Knowledge translation closing questionnaire findings for open and closed meetings

	Closed Meeting (n=9)	Open Meeting (n=49)	Total (n=58)
Do you think it is important for researchers to discuss findings with study participants? ^a	9 (100%)	43(87.8%)	52(89.7%)
Have you discussed the findings of a study (that you participated in) with researchers in the past? ^b	4(44.4%)	16(33.3%)	20 (35.0%)
Did the team’s presentation do a good job of describing your experiences with addiction treatment? ^a	8(88.9%)	34(69.4%)	42(72.4%)

Table Notes: All of those attending the closed meeting responded to the questionnaire. Of the 61 attending the open meeting, 12 did not respond to the questionnaire.

^a Cases indicate the number of participants responding either “agree” or “strongly agree”

^b Response options were yes or no, one participant did not respond to this question (n=48)

3.8.2.2 Qualitative findings

Focus group discussions were held to determine the relevance of the presented findings, and participant perceptions of the effectiveness of the KT formats at sharing findings and collecting their feedback. The discussions on the open meeting were primarily focused on the format of the meeting, with participants desiring smaller groups and more intimate settings to discuss the findings. The closed meetings provided such settings and more elaborate findings surrounding perceptions of knowledge translation. Themes from both open and closed meeting are presented.

Open meeting format

The discussions surrounding knowledge translation were focused on four themes. These were: suggestions for improved logistics; other methods of implementing KT; KT as advocacy; and sense of inclusion. The most commonly referenced theme was surrounding the logistics of the

meeting. Participants made suggestions for improved logistics and ultimately a more effective environment for listening to study findings and sharing their stories. These suggestions include: smaller groups, bigger space, and separate groups by gender. Participants also suggested other methods of effectively reaching participants. Suggested methods included mail outs, newsletters, and more frequent meetings in small group settings. Despite suggestions for other KT methods and improved logistics, participants cited the role of knowledge translation as advocacy. Participants noted that these meetings fulfilled their desire for information, which they could share with others in advocacy efforts. They cited the importance of knowledge translation for getting their ideas to policy makers and implementing change. The participants further described the sense of inclusion gained from taking part in the KT meeting. For many this was the first KT meeting they had been a part of. Hearing the findings was cited as a participant right, and participants were keen to take part in this type of meeting again in the future.

Closed meeting format

The closed, invite only meetings were held separately for men and for women. Men found the meeting to be a platform for reflection and confirmation of their experiences, while women emphasized the empowerment associated with their inclusion in KT, feeling valued, KT as a form of education. Themes are presented by gender as follows:

Men

The men noted that the meeting provided them an opportunity to hear one another's experiences. Mutual challenges with treatment provided the men clarity and confirmation of what they already thought to be true about methadone maintenance treatment and its delivery. All of the participants

agreed that the method used was successful in providing clear findings and that it gave them an opportunity to reflect on their experiences with addiction treatment and their desires for optimal treatment. While the men felt the meeting was effective for sharing findings, they suggested using an online format such as a website to reach more participants in sharing further information relating to the study.

Women

A major theme that arose was around the effectiveness of the format in sharing findings. Women noted that the presented findings were clear, the group size was suitable, and that the meeting was personal. Women expressed that the environment was a comfortable setting for open discussion. Despite discussing other formats, participants expressed that this format was the most effective for discussion and offered the opportunity to clarify questions relating to the findings. The women expressed feeling valued, and cared about, in that they were offered a platform to share and have their experiences and opinions heard. A platform for open, honest discussion was appreciated as most had never had the opportunity to hear study findings nor discuss them. Participants expressed the importance of having the original study findings that they had contributed to being reflect back to them. The women noted that knowledge translation was a form of education and advocacy, in that they gained knowledge they would discuss with those providing support such as family members, and share with peers encountering similar challenges in their experiences with addiction treatment and health care services.

Chapter 4: Discussion

The presented thesis was aimed at understanding the various factors associated with retention to opioid maintenance treatment, and with perceptions of abuse in the health care system among long-term opioid-dependent men and women. Knowledge translation (KT) formats were tested to account for participant perspectives of the presented findings and experiences in addiction treatment and health care services. OMT retention showed different associations with individual, program, and social factors among men and women. The concept of perceived abuse in the health care system was explored and childhood maltreatment and psychological health variables were associated with increased odds of perceiving offensive, degrading, or abusive behavior on the part of the health care provider. Finally, the feasibility of engaging patients in knowledge translation was tested, and participant perceptions of KT were gathered. Nearly all participants agreed on the importance of participant inclusion in KT, while most had never had the chance for such participation.

4.1 Profile of men and women in this study

This investigation was undertaken through an intersectional lens, accounting for social environments, violence and victimization, and a number of related social factors that could provide important information surrounding men's and women's experiences in addiction treatment and health care services. Prior to discussing findings addressing the study objectives, the profile of study participants by gender are discussed.

Addiction services including opioid maintenance treatment should aim to acknowledge and account for the simultaneous complex and interdependent interactions between opioid use and multiple inequities such as race, mental health problems, histories of abuse, homelessness, among others [260]. This frame is important to contextualizing the GeMa study findings, where women scored significantly worse than men on psychological (e.g. anxiety, depression, SCL-90- GSI) and physical health measures (EQ-5D, OTI total health symptoms) and reported higher scores for all types of childhood abuse measured. Further examination of socio-demographic variables reveal that women in the GeMa study were significantly more likely to identify with attributes historically known to be associated with discrimination and oppression [12], including Aboriginal ancestry and gay, lesbian, bisexual, or asexual sexuality. In aiming to understand the gender specific findings, it is important to consider the relevance of these participant attributes.

Our data showed that men used significantly more opioids in the prior month compared to women (i.e. heroin, hydromorphone, methadone, morphine, oxycodone, fentanyl, and any other illicit opioid used), while women reported significantly more days using crack cocaine, In Vancouver, injectable opioid users have access to the safe injection site (Insite) [261]; however, similar services for crack cocaine smoking are not available. This could partially explain why men were significantly more likely to access Insite compared to women. Public health programs have aimed to address the use of crack cocaine through the distribution of safer crack use equipment, however the impacts have been limited and use remains exposed to the context of policing, drug scene violence, and stigma characterizing illicit drug use in public spaces[262]. The lack of health and social supports surrounding crack cocaine use leave the safety and health of crack-smoking populations at risk. The observed significant differences between men's and women's patterns of

drug use, and limited availability of health and addiction services for drugs such as crack cocaine known to be commonly used by women [263, 264] and Aboriginal populations[265, 266], suggest a potential contribution to the significantly poorer measures of health observed among women.

Evidence has demonstrated that addiction treatment programs seek not only to reduce or stop the use of illicit drugs, but to assist patients in terms of personal, social, and economic aspects of their lives [267-269]. It has therefore been determined that efforts should be focused on social factors relating to the initiation, maintenance of, and relapse to illicit drug use [144]. In prior studies of treatment for substance dependence, patients' living situation is one of the most important variables in the explanation of variance in length of stay in treatment [270]. Among GeMa participants, men were significantly more likely to report living alone, and thus not exposed to the same potential social network of users as women, who were significantly more likely to live with someone with psychological problems, or using psychoactive substances.

Social networks, particularly intimate partners play an important role in the substance abuse treatment process [271-273] and prior studies have shown that having a substance using intimate partner, and the number of drug-using social network members not in treatment , significantly increased the likelihood of continued heroin use among individuals in methadone maintenance treatment [272]. This has shown to be particularly important for women who may be introduced to drugs by male friends or intimate partners and may continue use within the context of their relationships to these men [271, 274, 275]. Our data shows that women with an intimate partner

have more days of illicit opioid use compared to women with no intimate partner, while men with an intimate partner reported slightly less days of opioid use.⁵

These findings suggest that personal relationships strongly influence continued injection drug use, and that OMT programs assisting patients to develop social networks of non-users could be beneficial [276]. Studies suggest that specific sources (family and friends) and forms (reassurance of worth) of social support are important to recovery [277]. Interventions or program modifications should be designed specifically to strengthen these facets of social support. Further research into the specific processes by which social networks influence and affect injection drug use among OMT patients would be critical in efforts to reduce illicit drug use and its associated harms.

4.2 History of victimization by gender

Nearly all participants (98%) reported at least one form of childhood maltreatment (abuse or neglect). Histories of victimization have known detrimental impacts on adulthood physical and psychological health, substantially contributing to child mortality and morbidity, substance use, risky sexual and criminal behaviours, obesity. These effects extend to families, and to society in general, posing a major public health and social welfare problem [278]. Studies have demonstrated such abusive histories to further pose financial burdens on the health care system, where patients with abuse histories have significantly higher primary care and outpatient costs than those without such histories [279]. The present analysis confirms that childhood abuse and neglect are highly prevalent among substance dependent populations. Consistent with other studies involving similar populations women report higher scores for all abuse and neglect types measured, scoring

⁵ Women reporting having an intimate partner reported on average 23.1 days of illicit opioid use compared to women without an intimate partner who reported on average 20.5 days. Men reporting having an intimate partner reported on average 24.3 days of illicit opioid use compared to 24.4 days among those without.

significantly higher for sexual and emotional abuse [49]. Women were also significantly more likely than men to report a parent as a perpetrator of both physical and sexual abuse. The role of perpetration by parents has been explored under betrayal trauma theory, exploring the degree to which a negative event represents a betrayal by someone trusted and needed that will influence the way in which that event is processed and remembered [280]. Studies have determined gender differences, with women almost twice as likely as men to report a high betrayal abuser [281]. Researchers have postulated that childhood abuse perpetrated by a caregiver or someone close to the victim results in worse adulthood health outcomes compared to abuse perpetrated by a non-caregiver [281].

It is further imperative to recognize that childhood maltreatment and the various associated circumstances (i.e. relationship to the perpetrator) will differ for each individual, as will the processing of the event, dependent on various social factors such as age, gender, ethnicity, and social and familial supports. These diverse patient circumstances and experiences must be recognized in attempts to engage and retain patients in addiction treatment and health care services. It is further important to acknowledge that much of what researchers and health care providers know in relation to childhood maltreatment varies over time, as it is dependent on systems of action beyond the child as the victim, relying on public and professional awareness, investigations into potential maltreatment, and on legislation and case management practices [282]. In this case, health care providers may wish to consider the potential for abuse histories to exist among their patients and ground their understanding of each patient's experience in each individual social context. Providers may wish to maintain an awareness of current research and knowledge on childhood maltreatment, in order to be well equipped to engage in conversations about maltreatment and abuse with patients.

Consistent with prior studies in this population, women were significantly more likely to report adulthood sexual and emotional abuse, while men were significantly more likely to report physical abuse [283, 284]. There are a number of potential important reasons for lower reported rates of sexual and emotional abuse among men, and gendered distinctions contributing to the ways in which violence and victimization more broadly have been explored among men and women[35]. It is important for example, to consider the role of reporting. Studies suggest that it could be more difficult for a man than for a woman patient to reveal a history of abuse to a health care provider due to prevailing gender norms, i.e. “a real man is strong, active and capable.” [285] Masculinity is constructed differently in different contexts, however these contexts almost always reject the role of “victim” [158](Connell, 1995; Swahnberg, et al., 2011). In prior studies among men, social desirability has been shown to introduce a negative report bias for emotional and sexual abuse but not for physical abuse, while this did not exist among women (Dutton & Hemphill, 1992). Further, where studies have acknowledged violence against men it has generally done so without expanding to associations with or reference to health outcomes[174]. This suggests the importance of offering more attention to the victimization experiences of men, and studying the environments in which both men and women can be made to feel comfortable disclosing and discussing their histories of abuse (regardless of the type), free from predetermined gendered constructions of victimization and perpetration.

The present analysis confirms that history of suicidal thoughts and behaviours are prevalent among long-term opioid-dependent men and women [243]. Women however were more likely than men to report suicidal thoughts, plans, and attempts. Suicidal behaviours have known associations with childhood abuse [23], and women in the GeMa sample reported more prevalent childhood abuse.

A study of opioid users reporting childhood abuse showed that severe sexual, physical, and emotional childhood abuse pose a considerable risk of suicidal behavior in adulthood[286]. In a cohort of young Aboriginal people who use drugs in Canada, those with a history of sexual abuse were twice as likely to have attempted suicide in their lifetime[21]. The combination of abuse and suicide attempts among drug users places this population in a highly vulnerable position. Without detracting from the experiences of men, our findings indicate that, along with more prevalent and severe histories of childhood abuse, women are at an increased risk of engaging in suicidal behaviours. Studies of suicidality among long-term opioid users have suggested that screening for suicidal ideation at treatment intake should be considered in order to refer patients to services that could prevent suicide attempts[40] and that intensive secondary suicide prevention efforts should be offered to those with a history of childhood trauma[287]. Our findings indicate a substantial need for these interventions among long-term opioid users, and the potential importance of integrating gender specific considerations into such interventions.

4.3 Predictors of opioid maintenance treatment retention

The aim of this analysis was to determine predictors of retention to OMT among long-term opioid-dependent men and women, highlighting gender specific predictors. Among the full sample, 110 (62.5%) participants were considered retained, among which 59 (53.6%) were men, 50 (45.5%) were women, and 1 (0.9%) identified as neither man nor woman. Among men and women the proportion of participants retained was very comparable (62.7% of men and 61.7% of women). Consistent with prior literature indicating the importance of considering gender specific predictors of retention to OMT, a number of gender differences have been determined in terms of socio-demographic, drug use, physical and mental health, addiction treatment and health care utilization, victimization, and social predictors of OMT (see Table 7).

4.3.1 Individual related factors

A number of individual related factors were shown to be independently and significantly associated with retention to opioid maintenance treatment. Aboriginal ancestry was associated with significantly lower odds of retention, while having been a parent was associated with significantly higher odds of retention. Increases in scores for childhood physical neglect were associated with significantly higher odds of retention.

Aboriginal ancestry

MMT has shown to be effective for Aboriginal opioid-dependent men and women in Vancouver, with known reductions in heroin use [288-290]. Nevertheless, rates remain low compared to non-Aboriginal participants, with less than half of participants in a cohort of regular opioid injectors in Vancouver reporting having ever been on MMT[288] Our findings demonstrate that participants reporting Aboriginal ancestry have less than one fifth the odds of retention compared to those not reporting Aboriginal ancestry.

From an intersectional perspective, it is important to recognize that the experiences of opioid-dependent men and women are shaped by a number of factors that intersect and make up their social identity, including gender, sexuality, ethnicity, class, age, immigration status, religion, etc. [12] [9-11]. In the Canadian context, the dispossession and dislocation of Aboriginal people has occurred through various colonial processes such as residential schools, the child welfare system, and the reserve system. These historical and structural inequalities have shaped the health and well-being of Aboriginal men and women, with consequent disadvantages in the form of overrepresentation of HIV/AIDS, chronic health problems, and greater risks of experiencing trauma and violence [291, 292] and substance use[293].

While OMT is known as a form of treatment with values of non-judgement and non-coercive approaches to service delivery[294], in a study of Aboriginal men and women accessing MMT in Vancouver, participants identified “race” as relevant to their everyday realities, including their experiences accessing treatment [12]. Studies have suggested that there is a lack of culturally appropriate treatment programming in Canadian settings, (Canadian Aboriginal AIDS Network, 2004) as well as a lack of Aboriginal MMT treatment providers [295], resulting in a potential disconnect between the values and beliefs of Aboriginal patients and non-Aboriginal providers. (Cedar). Further strategies to support and train Aboriginal physicians would be critical to ensuring culturally appropriate addiction treatment services for Aboriginal men and women, who in Canada are overrepresented among injection drug users[296].

Parenting

Our multivariable logistic regression model indicates that having biological children significantly increases the odds of retention. In the gender specific descriptive tables (Table 7) it can be seen that this association remains significantly associated with retention for women and not for men. This may be explained by the known adverse neonatal and obstetric outcomes of opioid dependence during pregnancy, such as infant mortality and premature delivery [297]. A recent study of pregnant women in Canada showed that women in Toronto and Montreal were significantly more likely to be on methadone prior to becoming pregnant, compared to women in Vancouver, who were initiated onto the treatment during gestation [298]. This indicates that in Vancouver, women who may not otherwise be initiating MMT are brought onto this treatment as a standard of care to protect both the mother and the fetus. This contact serves for potential longer-

term engagement in care. In Vancouver, services such as Sheway aim to achieve this engagement, offering a comprehensive set of services, and treatment referrals [298]. The British Columbia Women's Hospital and Health Care Centre Fir Square Combined Care Unit program aims to provide care for both substance-using women and substance-exposed newborns, keeping them together. Such services have been described as promising, as they integrate supports and services for pregnancy, parenting, and child related services, with women specific addiction treatment [299].

As in the general population, substance dependent women are far more likely than men to have custody of their children [300] child-rearing responsibilities [301], and to express concern about parenting issues as they enter treatment (Gerstein et al., 1997; Wechsberg et al., 1998). For example, a study of 9018 women in the USA entering MMT found that those residing with their children were 73% more likely to enter MMT than mothers that did not [301]. Societal constructions of men and women's roles leave women more likely to be involved with the child protective system, facing the effects of their drug use on their children and other family members [302] while men are more likely to be involved in the criminal justice system with limited contact with children, and other family. These known intersections of gender and parenting could partially explain the fact that in this study women were more likely to be retained in methadone compared to men.

Despite our finding that women with children were more likely to be retained in MMT compared to those without children, the majority of these women continue to regularly inject illicit opioids. This suggest that optimal treatment outcomes, ensuring positive health for both parents and their children have not been achieved. Treatment programming for opioid-dependent men and women

should consider the gender expectations surrounding parenting and work toward expanding services that will support the roles and responsibilities of both men and women in providing care for their children.

Childhood physical neglect

The logistic regression model indicates that participants with higher scores for childhood physical neglect on the childhood trauma questionnaire were more likely to be retained. This variable remained significant in bivariate statistics for men and not for women, and was included in the final predictive model for men. Measures of physical health, mental health, and health related quality of life were all highly correlated with childhood physical neglect ($p < 0.001$), indicating that participants reporting high scores for childhood physical neglect also report poorer health. Opioid-dependent men and women report prevalent histories of abuse and neglect and these histories have direct and negative impacts on health outcomes such as depression, anxiety, and feelings of low self-worth (Guitierres, 2006). Childhood emotional and physical neglect are at least as damaging in the long-term as abuse, while neglect has received the least scientific and public attention (Gilbert, 2009). Thus further studies to explore the association of physical and emotional neglect in relation to patterns of drug use and treatment retention among opioid-dependent men and women are important [303, 304].

4.3.2 Program related factors

Higher satisfaction scores on the client satisfaction questionnaire were found to be significantly associated with retention to OMT in the final predictive model. These scores reflect patient perceptions of a number of aspects of their care including quality of service and met and unmet needs.

Satisfaction with opioid maintenance treatment

Associations between treatment satisfaction and long-term retention to OMT have been demonstrated among opioid-dependent patients [141, 154, 268]. The multivariable logistic regression model affirms this, where participants that were retained in treatment reported significantly higher satisfaction with treatment (Client Satisfaction Questionnaire (CSQ) scores) compared to those not retained. Further benefits of satisfaction with treatment include greater service utilization, reduction in illicit substance use, reduced illegal activity, improved mental and physical health [141]. In bivariate statistics, this association remained significant among women, but not among men. Prior studies with a similar population of long-term opioid users in Vancouver demonstrated that women were significantly more likely than men to be satisfied with their received OMT [141]. In our sample, this association was also found as women that were retained scored significantly higher on the CSQ compared to men that were retained⁶.

Our data further demonstrate that women were significantly more likely than men to have received a most recent dose at or above the College of Physicians and Surgeons of British Columbia guidelines for stabilizing patients (60 mg or more). This variable was significantly associated with retention among women, while not for men. Studies of retention to OMT have consistently indicated that higher doses of methadone are associated with better retention rates, [107, 129, 136, 305] and that there is a positive dose-response relationship between methadone dose and patient retention [306]. Higher methadone doses are further known to be more effective at reducing illicit opioid use [135]. Women that were retained used on average nearly ten days less of illicit opioids in the prior month compared to women that were not retained (28.2 vs. 18.6).

⁶ Men that were retained had an average CSQ score of 22.6 while women that were retained had an average CSQ score of 24.9, $p=0.009$.

Among men the difference between retained and not retained participants was only 4.5 days (27.0 vs. 22.5). It can be hypothesized that the larger difference in illicit opioid use between retained and not retained women may be explained by women being more likely to have a higher OMT dose and significantly higher satisfaction with their most recent OMT compared to men.

4.3.3 Social factors

Among social factors tested, it was found that higher scores for risky sexual and drug use behaviours significantly increased the odds of retention to OMT. It was also found that those reporting illegal activities as their main source of income (i.e. drug dealing, property theft, or sex work) had a significantly lower odds of being retained in OMT compared to those reporting legal activities.

Risky sexual and drug use behaviours

The logistic regression modeling of retention determined that men and women that were retained in treatment reported significantly lower scores for risky sexual and drug use behaviours, on the opioid treatment index (OTI). This association remained significant in final predictive model of retention for women but not for men. In conceptualizing women as having higher scores for risky sexual behaviours it is important to consider these behaviours as shaped by interactions between the individual and his/her environment, understanding behaviours as effects of social, cultural, and political conditions [307]. The relevance of social concepts such as “structural violence”, “structural vulnerability”, and “risk environment” for understanding sexual and drug use behaviors among marginalized populations has been suggested [307].

OMT has consistently been shown to reduce risky sexual and drug use practices among long-term opioid-dependent men and women [308-310]. Studies suggest however that certain behaviours (e.g. accepting more money for sex without a condom) are more likely among particular

subgroups, such as women who identify as sexual minorities (e.g. lesbian, gay, bisexual), and who have experienced prior client violence[311]. This suggests particular sub groups of women, perhaps those already most marginalized, to be more vulnerable to engaging in these “risky” behaviours. In order to be effective for all patients, OMT must then be tailored not only to the gender specific needs of men and women, but must also account for other intersecting factors in patients’ lives such as involvement in sex work, and aim to develop alternative methods of engaging these groups in care.

Illegal activity

The predictive model of retention demonstrates that those reporting illegal activity as the main source of financial support were significantly less likely to be retained in OMT. Illegal activity included drug dealing, sex work, and property theft. This association remained only marginally statistically significant in the men’s model, however this variable was the best of the possible predictors (determined as described in Section 2.7.1) available for inclusion in the model with the limited sample size and number of positive cases (retained) among men (n=59). Clinically this variable made sense in the model, where the literature has shown that among men, criminal activity is negatively associated with retention in MMT [4] [312] [267].

There are well-established gender differences in criminal involvement, with women known to be significantly more likely to engage in sex work and men in activities such as property theft and drug dealing [313, 314]. In men’s focus group discussions the environments within which methadone clinics are situated were described as tempting, or triggering to using illicit drugs, and engaging in criminal behavior. They described entering these environments to access pharmacies and engage in treatment as potentially risky, as these services are often located in environments

where illicit drugs and the potential for engagement in illicit activity are openly available. This discussion highlights the potential logistic and environmental components of OMT in the context of Vancouver that could be considered as barriers to treatment retention among this population (particularly among men) and suggest potential areas for intervention. Further, beyond just retention in treatment short term, longer term retention is important for the reduction in criminal involvement, and it has been suggested that stability of two years or more is necessary to observe optimal reductions in crime among opioid-dependent patients [312]. In order to be most effective, OMT programs should be oriented toward encouraging participants to remain in treatment long-term [315]. This may require a more attracting medication than those currently available for OMT in Vancouver, such as diacetylmorphine, which has been proven effective for those not engaged in more common forms of OMT such as methadone [8, 88-90].

4.4 Perceived abuse in the health care system

The actions of health care providers in delivering OMT are often regulated by strict policies and guidelines [81], which are meant to protect the patient. Patients may instead view these as punitive and shaming [12]. Research has consistently shown that patients' status as "drug user" can present a barrier to accessing health care and can have negative effects on the quality of care received [316, 317]. It is important to investigate patients' perceptions of their encounters with health care providers, in order to determine how to better attract and retain patients in care, with the ultimate aim of reducing the harms associated with illicit drug use, and improving physical and mental health and social functioning among this population.

The aim of this analysis was to determine factors associated with perceived abuse in the health care system among long-term opioid-dependent men and women. Half of the participants reported perceived abuse in the health care system in lifetime, and a very high prevalence of childhood and adulthood physical, sexual, and emotional abuse were reported. Consistent with prior studies of perceived abuse in the health care system in other populations (K. Swahnberg, Edham, S., Fredman, K. & Wijma, B., 2012; K. Swahnberg, Wijma, Wingren, et al., 2004), those participants reporting lifetime perceived abuse in the health care system reported higher rates of childhood and adulthood abuse compared to those not reporting such experiences. In comparison to general population samples (I. M. Swahnberg & Wijma, 2003; K. Swahnberg, 2011), the prevalence of lifetime perceived abuse in the health care system is extremely high in our study (50%) and is particularly concerning as it appears to be reported predominantly among an already vulnerable and marginalized group of participants (those reporting more psychiatric problems, more medical problems, and more prevalent and severe abuse histories).

4.4.1 Role of history of childhood emotional abuse

Our multivariable logistic regression model indicates that childhood emotional abuse scores are independently associated with reporting perceived abuse in the health care system. This is consistent with a study of obstetrics and gynecology patients in Sweden, where the association between perceived abuse in the health care system and different types of abuse were compared and emotional abuse showed the strongest association (K. Swahnberg, Wijma, Wingren, et al., 2004). Furthermore, in this study, childhood emotional neglect, and childhood emotional abuse were more prevalent than the other three types of childhood abuse collected. A recent national cohort study of youth in the United States showed psychologically maltreated youth to exhibit greater

baseline levels of behavioral problems, symptoms, and disorders compared with physically or sexually abused youth (Spinazzola et al., 2014). Another recent study of childhood abuse types showed patients with histories of emotional abuse to score higher on symptoms such as depression, anxiety, impulsivity, and suicidal ideation, as compared to those with physical or sexual abuse histories (Martins, Von Werne Baes, de Carvalho Tofoli, & Juruena, 2014). While many studies have focused on the implications of childhood physical and sexual abuse in adulthood (Briere & Elliott, 2003; Malinosky-Rummell & Hansen, 1993; Miller & Krol, 1995; Read, Agar, Argyle, & Aderhold, 2003; Springer, Sheridan, Kuo, & Carnes, 2007), our study findings, along with other recent studies (Martins et al., 2014; Spinazzola et al., 2014) indicate the importance of investigating the implications of childhood emotional abuse in relation to adulthood psychiatric outcomes.

Studies have suggested that compared to other patients, men and women with substance use disorders are often subjected to more task oriented approaches to care. Health care providers take an avoidant approach, making shorter visits, and demonstrating less personal engagement and empathy in providing care [318]. In focus groups, men discussed health care providers as unapproachable with limited interpersonal skills and “bedside manner” and women described the general lack of caring qualities held by health care providers. These are consistent with prior studies of the importance of health care providers’ interpersonal skills including respect, a caring intent, and interest in patients ideas, values, and concerns[319].

Furthermore, the men’s discussion focused on the role of both patients to make health care providers aware of their medical concerns, and of the health care providers to creating a

comfortable and open environment for these discussions. This reflects findings of prior studies on patient centered care, where stronger patient-physician communication has been known to be positively associated with patient treatment satisfaction [320, 321] and retention [322].

4.4.2 Psychological health problems

Connections between perceived abuse in the health care system and psychological health were also found in our model, where participants that had been prescribed psychiatric medications at any point in life had nearly four times the odds of reporting perceived abuse in the health care system. There is strong evidence that patients with psychiatric problems are subject to stigma and discrimination in the health care system (Ahern et al., 2007; Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; van Boekel et al., 2013) and that this stigma has a fundamental influence on favorable health outcomes (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001; Link et al., 1997). Our data supports this connection, where patients reporting lifetime perceived abuse in the health care system reported poorer overall physical and psychological health compared to those not reporting such an experience. While the relationship between stigma and poor physical and mental health has been shown (Pascoe & Smart Richman, 2009), the results of this study go a step further in presenting a similar relationship between perceived abuse in the health care system and poor psychological health (prescribed psychiatric medications in this case). The challenge of addressing the negative health effects of stigma rest with the health care provider, whose work to reduce and eliminate stigma will have great implications for the quality of life of their patients, and will assist in maintaining the benefits of treatment long-term (Link et al., 1997).

Focus group discussions highlighted patients' views of health care and addiction treatment services as not tailored to the needs of those with psychological health problems. Women's focus

groups brought to light the desire for holistic approaches to health encompassing psychological and social supports, rather than focusing solely on the medical components of care. In our study prevalence of psychiatric health problems was high (rates of anxiety and depression in prior month and lifetime). This is consistent with prior studies of methadone patients where opioid addiction is often associated with other comorbid psychopathology [323]. These rates suggest the need for thorough assessment for general psychopathology in opioid-dependent men and women entering addiction treatment, along with treatment that focuses on the diagnosed mental disorders in addition to drug counseling for the substance abuse disorder [323].

4.4.3 Addiction treatment and health care utilization

Having reported a greater number of methadone maintenance treatment (MMT) attempts in lifetime was independently associated with perceived abuse in the health care system in our model. Numerous treatment attempts speak to the nature of opioid dependence as a chronic disease [64, 65], and stabilizing patients is essential for MMT to be effective. When stabilized, patients are shown to have reduced illicit opioid use, improved psychiatric symptoms, and diminished use of other substances (Mattick, Breen, Kimber, & Davoli, 2009; Maxwell, Bigg, Stanczykiewicz, & Carlberg-Racich, 2006). It has also been shown that patients' assessment of treatment (J. Trujols, Sinol, & de los Cobos, 2010) (eg., dose adequacy) (Rook et al., 2006) and the patient-physician relationship play a vital role in optimizing MMT outcomes (Lions et al., 2014). The potential association between patients' assessments of treatment and treatment outcomes is supported by our predictive model, where PAHC is significantly associated with more MMT attempts. However, our data is derived from a cross-sectional study and thus causal relationships between PAHC and treatment outcomes can not be determined, and it is unclear how the perceptions of abuse are

associated with dropping out of or initiating treatment. Such investigations provide potential areas for future research and also suggest the importance of incorporating patient perspectives and preferences into health care decision-making, in order to strengthen the health care provider-patient relationship and create the potential for improved treatment outcomes (Lions et al., 2014; Rook et al., 2006; Joan Trujols, Iraurgi, Oviedo-Joekes, & Guàrdia-Olmos, 2014).

In focus groups, women discussed the fact that their concerns around dose were ignored. This is consistent with a prior study of women reporting perceived abuse in the health care system that found that often women felt health care providers either violated or were not aware of their rights as patients. In the aforementioned study, women described powerlessness as a lack of authority or capacity to act, and that often even after speaking up were still ignored [155]. This has been tied to views of patients as lacking in trustworthiness, that have in prior studies left patients to feel ignored, miserable, and disappointed [174]. The men in our study described similar sentiments, noting that their status as drug users resulted in discrimination and compromised care.

Men further recognized the systemic constraints faced by health care providers and the way in which these affect the delivery of care. These can therefore have real and significant impacts for the way in which patients achieve success in care. For example, Swahnberg et al. found that time was a significant aspect of feeling ignored by staff, and that staff were often in a hurry, trying to treat patients as quickly as possible. The provision of training to providers surrounding effective and sensitive communication is important to best equip them for working with the diverse attitudes, language, and behaviors of patients with opioid dependence.

It is possible that increased exposure to the healthcare system puts patients at greater risk of reporting perceived abuse in the health care system. Although only frequency of MMT episodes

remained significant in the model, the bivariate analysis showed that participants with more lifetime and current health care utilization were more likely to report lifetime perceived abuse in the health care system. On the other hand, it is also feasible that the inherent patient characteristics, such as severe psychiatric health conditions and opioid-dependence leave these patients increasingly vulnerable to perceived abuse in the health care system, and that such abuse affects treatment engagement. Regardless of these hypothesized associations, continued access to the health care system is vital for treatment engagement, and the improvement of health outcomes, and thus it is crucial that patients do not perceive abusive experiences in their health care encounters.

Perceived abuse in the health care system cannot be considered as a series of isolated events, but rather as a reflection of patients' collective experiences in the health care system (Schroll, Kjærgaard, & Midtgaard, 2013). For example, an imbalance of power has consistently been cited as a challenge to the patient-health care provider relationship, and a contributor to negative patient perceptions of care [195] [196]. Empowerment of patients is extremely important to the ethical effectiveness of health care encounters, and compassion on the part of the health care provider is essential to this empowerment [195]. Patients must be placed as the experts on their own bodies, health care preferences and life situations in order to overcome the patients' sense of powerlessness, and restore a balanced relationship.

It has been suggested that health care providers working with populations that are socially excluded have a role to play in helping them to effectively manage their health and well-being [324] and should attempt to integrate tolerance, empathy, and respect into the delivery of care to reduce the development of stigmatizing attitudes toward patients (Lovi & Barr, 2009; Zbikowski et

al., 2012). Further, strategies to prevent, or to address the effects of stigma include a range of patient centered communication approaches such as active patient participation and shared decision-making (Thompson & McCabe, 2012). Such strategies have shown correlations in other populations with a number of positive outcomes such as reduced anxiety and an overall higher quality of life (Street Jr, Makoul, Arora, & Epstein, 2009) and have been shown to improve engagement and retention in mental health treatment (Sitapati et al., 2012). Patients reporting perceived abuse in the health care system have complex psychological problems and histories of abuse. Patient centered approaches to care, along with access to services such as counseling have the potential to offer a safe place for healing and recovery (Dale, Allen, & Measor, 1998).

4.5 Knowledge translation

In health research there has been a recognition of the need for patient involvement in health service planning and health care decision making, particularly among marginalized groups whose perspectives were often ignored[325]. This recognition has been largely driven by the public demands for increased response among health care professionals and policy makers to the health needs of marginalized populations. Participant populations are seen to hold direct knowledge relating to their own values, needs, and concerns, as well as understandings of the way in which policies, programs, and services affect their health[326]. This however has not translated to knowledge translation components of research, where connections are made primarily with community representatives, and knowledge brokers [327, 328] rather than participants. While evidence suggests that KT is an important component of health research, there are limited studies on implementing knowledge translation with opioid-dependent men and women, and even fewer focused on the inclusion of this population in the knowledge translation process. This analysis

therefore was exploratory, and aimed to frame the well-known importance of KT for health research in the context of research with long-term opioid-dependent men and women.

4.5.1 Feasibility

To our knowledge, the feasibility of engaging long-term opioid users in knowledge translation, and sharing study findings with them has not been previously tested. With other populations, it has been shown that valuing both listening and speaking, honoring and respecting differing points of view, and developing a shared language is important to fostering an open and comfortable environment for participants to express themselves [200]. All participants of the closed meetings agreed or strongly agreed that the meeting was effective at sharing the study findings compared to just over half of those in the open meeting. This confirms findings of prior studies, where group discussion and collection of data are known to be best facilitated in small group settings[329, 330]. Such settings are known to foster openness to expressing differing opinions and new ideas and thus could create an opportunity for richer discussions to arise (Downey et al., 2009; Nimegeer et al., 2011; Zapata, 2009). In instances where there is an opportunity to hold small groups, closed invitation only meetings may work well, however numerous small group meetings can be resource intensive. Settings accommodating both large groups for the dissemination of findings, and offering space for smaller break out settings may provide an effective and cost effective option. The flexibility to accommodate a variety of circumstances is essential to ensuring the feasibility of knowledge translation with a population of long-term opioid users. Depending on the interest of the participants and objectives of the KT process, a combination of small and large group settings may provide the most feasible option, however it is important to be prepared to accommodate a

variety of circumstances. In both meeting formats, participants highlighted their involvement in KT as a form of advocacy and were enthusiastic and interested in engaging in future KT activities.

4.5.2 Participant perceptions

Our questionnaire data revealed that the majority of participants (89.7%) felt that the involvement of study participants in knowledge translation was important. This involvement should also be seen as important from the perspective of researchers who have much to learn from participants in terms of the relevance of their research to the real life experiences of patients in the health care system. Relevance of research to intended users has also been previously identified as a key component of knowledge translation [328]. Studies have highlighted the importance of engaging in research that includes the expertise of both researchers and decision makers to ensure not only the relevance of findings to practice, but also that research findings are used[331, 332]. These views sometimes fail to recognize the role of participant perspectives that have a part to play in various stages of the research process from conception through to implementation, interpretation, synthesis, dissemination and uptake. Researchers should consider the relative benefits of this inclusion.

The majority (65.5%) of participants in the analysis reported never having taken part involved in knowledge translation activities. This highlights the limited inclusion of this population in research beyond the stages of data collection. Previously, the inclusion of participants has been viewed as time consuming, as a risk to the quality of the research, and as putting researchers at risk of losing control of the research process [200]. Contrary to this view, studies have suggested that researchers may underestimate the existing knowledge of participants and the potential

contributions of the knowledge and unique insights participants can provide. Several cautions exist however in integrating participants in the research process in a way that is just. For example, the literature on KT has recognizes the need for financial support for collaborative research activities [333] and must account for the time and resource demands of community partners such as participants. Just as researchers gain benefits from including participants, participants seek benefits from their inclusion, and enter the research processes with the expectation that financial costs be covered, and their time not be wasted [200]. Such concerns may be seen as barriers to engaging participants in the research process and in KT, particularly due to the potential ethical concerns of working with marginalized populations such as long-term opioid users. Such concerns can be managed in developing a sense of mutual trust, value, and respect, along with an understanding of one an others' roles. An agreement of each party's roles and responsibilities can be recorded as contract to ensure transparency and accountability.

While the importance of participant voice, along with the involvement of various stakeholders has been highlighted, it is becoming increasingly understood that the process of knowledge translation is not simply the creation and dissemination of evidence [334]. Simply making results known to a lay audience or to participants in a unidirectional knowledge transfer provides limited benefit. The effective use of health services information can be restricted by its accessibility to decision makers, and knowledge translation strategies must work to communicate findings in a manner that can influence decision making[335]. Among long-term opioid-dependent men and women, knowledge translation can contribute to efforts to implement evidence based policies [336], with the intent to support advancements in the care of and services for this population.

4.5.3 Gender specific perceptions of knowledge translation

Women saw the involvement in KT as empowering and emphasized the importance of having their voices heard. They valued the opportunity to meet with the research team and other participants and provide feedback on the study findings. Returning the findings of a study to the participants who contributed to them offers them ownership of their experiences, and encourages an openness and interest in KT [200, 337]. Prior studies have identified that engaging in knowledge translation processes offers participants a chance to learn in various capacities including factual learning (i.e. findings of the study); how to locate and access needed information; and change in views of and relationship to research (Bowen, 2005). Women are known to share this learning among their social networks[337] and women in the GeMa study highlighted the potential for KT to serve as a tool of education, and planned to share the study findings with peers and others that could benefit from such knowledge[210]. Men's discussions were less focused on action and more on the meeting as an opportunity to reflect on their experiences, and to gain confirmation of their views of the health care and addiction treatment they had received. Reflection represents the potential to transform ideas and experiences into new knowledge and action [338] which men learned from this process. Men suggested using an online platform to share findings with study participants, which prior studies have noted as a means of distributing information to a wide audience, and potentially to participants that may not otherwise be reached. It is important to keep in mind nevertheless that study findings should be regarded not only from the technical point of view but also from a social dimension. From an ethical sense, researchers implementing KT should account for the potential need for patients to interact with researchers to make sense of and ask questions relating to study findings. While further research is needed to identify optimal strategies for knowledge translation and exchange, our findings suggest that among long-term opioid users,

small group meetings provide an opportunity to engage this population in knowledge translation and present as an effective KT method, as defined by both participants and researchers.

4.6 Recommendations

Optimizing opioid maintenance treatment and additional treatment supports

Our study findings indicate that currently available opioid maintenance treatment is not meeting the needs of all participants in this study. For example, rates of illicit opioid use remain high among men and women while retained in OMT (on average 20.7 days) highlighting the potential need for the provision of optimized OMT, or for some participants, the provision of more reinforcing medicine (e.g. diacetylmorphine). Further, criminal involvement persists among participants and is largely driven by the need to financially support drug use [339, 340].

Satisfaction with treatment remains low, particularly among those not retained in OMT. These findings highlight the need for a diversified opioid maintenance portfolio, delivering currently available OMT such as methadone and Suboxone® in different modalities, and offering alternative injectable and non-injectable opioids to meet the individual needs of all those affected by opioid dependence. While the guidelines surrounding the delivery of OMT in British Columbia are in place for patient safety[81], this treatment could be optimized for example, to include psychosocial supports directly linked to the pharmacological treatment. Further changes should be advocated for in terms of prioritizing patient perspectives. A more patient centered approach to care can be developed through shared decision-making [341] and practicing aspects of communication that patients may feel are missing from patient-health care provider interactions, such as basic listening skills, empathy, compassion, and respect for patients' opinions. Such practices have positive impacts on patient satisfaction, retention, and overall health.

Both men and women in the focus groups identified daily pharmacy visits as a barrier to their adherence and retention, women in discussing the lack of flexibility in picking up medication daily, and men in discussing the environments in which pharmacies are located. Take home doses and delivery were described as potential solutions, and the criterion set in place for both of these by the CPSBC are extremely strict. For instance, in order to qualify for take home doses or “carries”, patients must demonstrate social, cognitive and emotional stability, by adhering to any of the following examples: attending all scheduled appointments; having no missed doses; returning to school or work; improving social relationships. Additionally, proof of the capacity for safe storage of methadone must also be provided [81]. If patients demonstrate “*instability*” their carry “*privileges*” must be reassessed. Furthermore, in Vancouver, policy-71 of the College of Pharmacists of British Columbia (CPBC) on the delivery of methadone maintenance have made it increasingly challenging to have methadone delivered, in that delivery services can only be authorized for individuals with severe mobility restrictions⁷ [342]. As highlighted by the women’s focus group discussions, this provides a source of discrimination, accommodating patients with mobility restrictions due to physical health, but failing to account for the potential barriers to care among those with psychological health problems such as anxiety and depression. The failure to acknowledge the diverse physical and psychological health profile of opioid-dependent men and women in drafting these policies, strongly reflect the fact that these changes have been

⁷ A severe mobility restriction as defined by CPBC is a temporary or permanent mobility impairment. Should the prescribing physician determine that, due to the patient’s immobility, delivery is required; the physician may authorize delivery by signing the declaration on the Methadone Maintenance Program, Controlled Prescription Program form. As per the CPBC: i If the pharmacist or pharmacy technician has concerns regarding the authenticity of the prescriber’s signature they must contact the prescriber for verification. ii. Physicians will not authorize delivery unless patient safety is assured and restrictions in mobility have been identified. iii. Distance between patient home and pharmacy does not qualify as a restriction in mobility.

implemented with little to no input from people on methadone[262]. It is important to consider alternatives that have shown to be successful in other contexts and have been developed accounting for patient perspectives. In some provinces for example, low threshold programs designed for patients who do not have abstinence as an immediate treatment goal are provided, and offer more creative and supportive ways of ensuring patients have access to methadone on a daily basis[343]. Directions 180, in Halifax for example has been successful in reaching a wide group of injection drug users with a mobile bus program, bringing methadone to patients in collaboration with other organizations such as infectious disease clinics, needle exchanges, and outreach teams [344]. Such programs have been in place in European countries such as the Netherlands since the 1980's [345] and if adopted in Vancouver, could be of great benefit to the adherence and retention of opioid-dependent men and women to OMT.

While some of the opioid-dependent men and women in the study could benefit from currently available OMT (particularly if optimized), others may require a more reinforcing drug. Clinical trials have shown that injectable diacetylmorphine is successful at attracting and retaining those not benefitting from more common forms of OMT such as methadone [88-91, 346]. Despite this evidence, Canada has not adopted DAM as part of the addiction treatment system, primarily due to regulatory and political barriers [347, 348]. While there are known barriers to implementing DAM in Canada, a strong commitment on the part of community stakeholders to advocating for the treatments most needed by men and women struggling with opioid dependence have the potential, with dedication and time, to overcome these barriers. For example, in Vancouver, various stakeholders collaborated through a Community Advisory Board (CAB) to advocate for the provision of heroin-assisted treatment for long-term opioid users in Vancouver. The CAB

included participants of the SALOME clinical trial, Providence Health Care (the organization providing the treatment) and PIVOT, a local legal advocacy society, and challenged the barriers set in place by the Federal government prohibiting the prescription of diacetylmorphine for opioid dependence. An injunction was granted allowing participants of the SALOME trial to continue receiving injectable DAM through Health Canada's Special Access Programme (SAP). A court case has been launched to determine whether all Canadians have a constitutionally protected right to access DAM if their physicians recommend this treatment.

While treatment for opioid dependence is paramount to the health and well-being of opioid-dependent men and women, it does not present the extent of their addiction treatment needs, with many opioid-dependent patients engaged in other regular illicit drug use. The provision of much needed treatments, resources, and supports however are extremely challenging in the context of Bill C2, the Federal Government's Respect for Communities Act. Bill C2 consists of a range of regulations making it increasingly complicated for addiction services such as safe injection sites to open and operate. Vancouver's supervised injection site is unable to accommodate those using non-injectable drugs, such as crack cocaine smokers, leaving an important gap in treatment services in this context. Consistent with the recommendations of prior studies of crack cocaine use in Vancouver, the provision not only of more readily available smoking equipment, but of medically supervised safer smoking facilities (providing sterile equipment, a clean and safe environment and education) for crack cocaine users are desperately needed [262, 349]. Studies have shown that there is a strong willingness among crack cocaine smokers in Vancouver to use such a facility [262, 265, 350, 351] and a strong potential to minimize the harms and risks associated with crack cocaine smoking [349, 352].

While the role of evidence based medicine in improving health outcomes and services is well known, often decisions surrounding policy, programming and services are not made on the best available scientific evidence [353-355]. This is demonstrated among addiction treatment services for long-term opioid users, where the transfer of knowledge to policy makers and into practice faces a number of barriers. This may in some instances be based on ideological political opposition to approaches to care, despite scientific evidence [356]. In other settings aiming to achieve access to politically opposed treatments for patients, it is recommended that the potential benefits of collaboration in forms such as Community Advisory Boards be recognized and modeled after, in hopes that this advocacy will overcome political barriers to ultimately benefit the most vulnerable patients in most need of health care and addiction treatment system supports.

There is a need to recognize that the provision of addiction treatment services for vulnerable populations must cater to the diverse individual, social, and cultural needs of patients. For example, Aboriginal men and women are overrepresented among long-term opioid users, and are exposed to a number of health related problems stemming from historical and structural inequalities, having associations with adulthood drug use and treatment. It is important for health care and addiction services to be culturally sensitive and relevant. This may be in part achieved by training Aboriginal physicians and health care providers, as evidence has suggested that when patients are treated by providers from a similar background, they are more likely to seek and comply with care, and to be responsive to health promotion and prevention advice [357]. In Canada, Aboriginal physicians remain underrepresented when compared to the general population [295] and as non-Aboriginal health care providers will continue to provide care to Aboriginal

patients, the provision of culturally relevant training and education to these providers is paramount. These training programs should be informed by those with “lived” experience, namely Aboriginal, rather than non-Aboriginal men and women, to ensure the cultural relevance of the curricula.

The inclusion of those with lived experience, and strong connections to the patient community has been used as a strategy to engage some of the most difficult to reach populations in care [358]. Such peer-based strategies could be effectively used to reach for example, those who are engaging in risky sexual or drug use behaviour and connect them with desired services. While many peer based outreach models have been implemented for drug users in Vancouver, few have been formally operated, and most are small in scale, operating with few supports[358]. Our findings suggest the importance of recognizing the role of, and scaling up the provision of peer-led services in order to target specific subgroups whom are not in regular contact with care. The recommendation for peer-led support services, further shifts the notion of the health care provider as all-knowing, to acknowledge the expertise of patients and peers. The role of this involvement as empowering should be recognized, providing patients with ownership over their own addiction treatment and health care, recognizing them as experts on their own health and well-being.

Perceived Abuse in the Health Care System

Our findings indicate that among long-term opioid users, histories of victimization are extremely prevalent (i.e. 98% for childhood maltreatment). As health care providers working with patients with opioid dependence, it is important to have an awareness of these histories, and their associations with patient perceptions of care. While studies of childhood maltreatment typically

emphasize the role of physical and sexual, rather than emotional abuse, our findings demonstrate that childhood emotional abuse has the strongest association with perceptions of abuse in the health care system. This finding suggests that providers should account for all abuse disclosed by patients without preconceived notions surrounding the potential implications of specific types of abuse. Providers' awareness of the various abuse and neglect histories of their patients should inform the means by which they make sense of patients' behaviours and responses in health care encounters. The associations between childhood emotional abuse and adulthood behavioural and psychological problems are very recent in the literature[359]. Further, our findings are the first to determine associations between childhood emotional abuse and perceived abuse in the health care system among long-term opioid users. Future studies investigating perceptions of abuse in the health care system, and psychological health in adulthood should pay particular attention to potential associations with childhood emotional abuse.

Childhood maltreatment has known associations with adulthood psychological health problems, and our findings indicate that both factors place patients at higher odds of perceiving abuse in the health care system. As patients with psychological health problems are known to face stigma in the health care system, it is recommended that health care providers working with this population do their best to ensure that care is not perceived as potentially offensive, degrading, or abusive. Studies have suggested a focus on developing the health care provider-patient relationship into more of a partnership, where positive effects have been seen for patient satisfaction, treatment retention, and health status [360]. The inclusion of patient perspectives on communication and treatment preferences could provide important information to guide the physicians practice in a way that is patient centered. Further, in order to better tailor care to the needs of patients with

psychological health problems, the integration of psychosocial supports should be considered for patients engaging in OMT. Prior studies have confirmed that methadone combined with psychosocial supports such as counselling can result in care that is both more effective [361] and cost-effective than treatment not integrating these services [362]. For those patients with long-term opioid dependence in Vancouver, opioid maintenance treatment programming should consider the appropriateness of integrated psychosocial services for patients desiring such supports.

Health care providers working with long-term opioid users strive to create an environment of trust, respect, and comfort, in which patients are made to feel safe in discussing their health concerns.

This is particularly important among this population, as it has been suggested that patients that are socially excluded may feel let down by or suspicious of mainstream health care services [324].

Recommendations from participants in this study indicate that patients desire discussions to flow in a compassionate, non-stigmatizing manner, emphasizing the importance of the provider's approach to communication as empathetic and respectful. These suggestions simply provide starting points, and regardless of patient characteristics, or the treatment context, the responsibility not to hurt patients will always remain with health care providers (K. Swahnberg, Edham, S., Fredman, K. & Wijma, B., 2012).

Knowledge Translation

In order to determine the most effective means of engaging patients in addiction treatment and health care services, we must gather their perspectives on care. As part of the research process, sharing study findings with participants presents not only an ethical obligation, but an essential and beneficial component of the learning process for the research team, surrounding the potential relevance of findings to participants and real world settings.

It is suggested that studies aiming to incorporate knowledge translation in their research include consent to contact participants in their original study consent form. As contact information may change from the time of the original contact to the time of KT, and some marginalized groups have frequent changes in living situations, it is important to collect various methods of contact where possible (e.g. current housing, social worker, friend, community services regularly accessed, etc.). If telephone is used as a method of contact participants may return phone calls outside of business hours. It is important that these calls are answered, as often participants will not have a return phone number and the potential for contact will be lost. A telephone line that is monitored outside of business hours is recommended to maintain contact with participants, particularly in the days leading up to the planned meeting. It is also suggested that those making contact to invite participants to KT are the members of the research team with which participants have the strongest sense of rapport, to generate a sense of interest and trust.

In the first stages of preparing to share study findings with participants it is important to conceptualize a realistic number of expected attending participants. This estimate can be based on prior experience working with the population and perceived interest and accessibility of participants. It is important that all participants of the study however have an equal opportunity to be involved in knowledge translation activities, and to hear study findings. With this philosophy, researchers must be prepared for all scenarios, where significantly more or less participants than expected will choose to attend. In settings where substantial interest is shown beyond what the research team is prepared for, it is suggested that participants are offered the option of returning on a separate day, with a small stipend offered on the day of the initial meeting. Based on our experience, it is recommended that research teams be prepared to accommodate a variety of

circumstances in carrying out KT with this population. This means providing settings that can accommodate presentations to a large group, as well as smaller break out groups where findings can be discussed in more intimate settings. A combination of these formats and settings may be used depending on the population, and objectives of the knowledge translation meeting.

There are various important considerations for ensuring the comfort and interest of participants, and the quality of data presented and collected. The staff sharing findings should be well known to participants, instilling a sense of familiarity and trust in the knowledge translation process. If staff are required beyond the capacity of the research team, involving students with experience and interest in the field of research as note takers can be beneficial, in recording non-verbal cues and dynamics between participants not picked up by audio recordings. The involvement of peers representing the participant community can be beneficial in ensuring that the findings shared and topics discussed are relevant. It is with caution however, that the engagement of peers is recommended, as often the interpretation of roles and responsibilities, as well as views on appropriate and fair compensation may be conflicting. These should be firmly agreed upon and understood prior to collaborating, and recorded in writing to ensure the accountability and trust of both researchers and peers. While in some settings such formal contracts may not be seen as necessary, in working with marginalized populations it is important to protect both the participants and peer groups, as well as the reputation of the research and researchers.

For studies that are sharing gender specific findings, participant gender should be accounted for in logistical considerations. While men and women have the potential to learn from one another's experiences, it is recommended that researchers sharing findings on sensitive topics consider doing

so in separate sessions for men and for women. This is particularly important for those topics that are historically known to be sensitive in nature, and those for which specific gender patterns have been determined, (e.g. intimate partner violence, childhood sexual abuse) in order to create safe spaces for discussion. This format is also conducive to the emergence of gender specific themes. Nevertheless, decisions surrounding formatting groups by gender should be made with input from peers and/or participants, and may not be of necessity in all circumstances. Both men and women have the potential to learn from one another's experiences, and should have the opportunity to hear findings relevant to all participants, rather than just gender specific findings, and engage in discussions surrounding the results with members of the opposite gender if desired.

Despite the various considerations and potential challenges of sharing study findings with participants, the benefits to both the research and participant community should be considered. Beyond the typical dissemination of results through scientific journals and conferences, researchers owe participants and the communities in which the research is based the results of studies that they have contributed to. This process is known to be empowering for participants, and inspiring for researchers, gaining an enriched perspective on their research findings.

4.7 Limitations and next steps

The findings of these analyses are subject to several limitations. These include threats to internal and external validity common in cross-sectional studies such as recall and reporting bias, selection bias, as well as issues of internal and external validity. While these limitations are recognized, those specific to the study analyses will be discussed in more detail.

The GeMa study was cross-sectional, and thus does not allow for the establishment of causal relationships between the range of examined independent variables and the outcomes measured

(OMT retention and perceived abuse in health care). As OMT retention was measured only over the prior month, longitudinal studies are required to explore the complex relationships between a range of individual, program, and social factors predicting retention to OMT among men and women over time. Perceived abuse in the health care system was measured at any point in adulthood (age >18 years) and thus the temporality of PAHC in relation to other lifetime data is unknown. Furthermore, there are a number of potentially important factors not accounted for in the GeMa study, such as the relationship (i.e. trust, power, communication, etc.) between patients and health care providers.

Health care providers face a number of stressors in the workplace that serve as barriers to providing the highest quality of care to patients, such as restrictions of time, inadequate staffing, and limited training [363-365]. This study was unable to identify whether patient perceptions of abuse in the health care system resulted from the actions of individual health care providers, or from the broader characteristics of the health care system. As health care providers do not operate independent of health care contexts, health care provider support systems such as training, and supervision (or lack thereof) must be considered when examining patients' perceptions of care (Siril et al., 2011). If these supports cannot be measured, more details could be collected from the patient to elicit a stronger picture of the context of the encounter in which abuse was perceived. Additionally the tool does not account for the varying patient conceptualizations of abuse and it is important to consider the potential intersections between perceptions of abuse and other factors such as ethnicity and race.

As the results of this study indicate that OMT may not be effectively meeting the treatment needs of this sample of long-term opioid users, the potential to explore patient outcomes on alternative treatments is greatly needed. My proposed PhD work will be focused on long-term opioid users that took part in the Study to Assess Long-term Opioid Maintenance Effectiveness (SALOME), the only patients in the world receiving injectable hydromorphone for the treatment of opioid dependence and in North America receiving injectable diacetylmorphine. This work will explore facets of the patient-health care provider relationship with the aim of determining associations between communication and health and treatment outcomes (e.g. retention to treatment). GeMa was a pilot study and the small sample size limited the ability to stratify by variables that were potentially important to understand the specific experiences of sub-populations. SALOME provides a larger sample size with the opportunity for stratified models as well as longitudinal data with the potential to determine causal relationships between various patient experiences and perceptions and health and treatment outcomes among a population of long-term opioid users.

The knowledge translation component of this thesis is limited by the lack of prior literature on conducting KT with marginalized groups such as long-term opioid users. This analysis then was restricted to determining the feasibility of knowledge translation formats with this population. As this component of the thesis was meant to serve as a pilot, there was one open meeting held, and two closed meetings held for women and for men. The generalizability of the closed meeting findings were limited as none of the participants of the closed meetings self-identified as Aboriginal. Further testing of this format with additional participants of both Aboriginal and non-Aboriginal ancestry is required to ensure the feasibility of these methods for all study participants, as well as for similar populations in other settings.

4.8 Conclusion

In conclusion, there is a need to apply what we know from research about the health and treatment experiences of men and women in the design of opioid maintenance treatment service provision and policy, and in best practices for providers working with these patients. Patients' interactions with providers can have strong influence on their overall perceptions of care, and thus communication with opioid dependent patients must account for basic qualities such as empathy, compassion, listening, and respect. It is important to recognize the range of existing actions and efforts of individual providers to embody these qualities and support patients to the best of their abilities. These efforts can be further enhanced and supported through the provision of training relating to communications and cultural competencies. Health care providers and researchers have a unique opportunity to improve practice by strengthening communication efforts with patients. The collaborative efforts of these groups have the potential to propose and advocate for health and treatment services that can be both relevant to and effective for patients with long-term opioid dependence.

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