6-15-2016 12:00 AM

The Relationship between Elements of Health and Social Systems and Substance Use Severity for Individuals Experiencing Homelessness

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Graduate Program in Nursing
A thesis submitted in partial fulfillment of the requirements for the degree in Master of Science

Abstract

Canadians experiencing homelessness often live with severe substance use (Aubry et al., 2015; Khandor & Mason, 2007). Health challenges related to severe substance use contribute to the early mortality experienced by homeless Canadians (Hwang, Wilkins, Tjepkema, O'Campo & Dunn, 2009). This population also experience health and social system disadvantages. Using General Systems Theory, relationships between substance use severity and access to health care, housing stability, therapeutic relationship and quality of family and friends relationships were explored as elements of health and social systems. A correlational secondary analysis examined this in a sample of 65 individuals accessing housing first. Relationships were not found between health and social systems and substance use severity. However, other important relationships were found relating to addiction and homelessness, access to health care and therapeutic relationship and quality of social and family relationships. These findings have important implications for nursing practice and Canada's response in addressing homelessness.

Keywords

Homelessness, substance use severity, addiction, housing first, harm reduction, general systems theory, access to health care, therapeutic relationships, family relationships, social relationships

Co-Authorship Statement

Sommer Froats completed the following work under the supervision of Dr. Cheryl Forchuk with secondary advisement by Dr. Carol Wong. Both are co-authors of this manuscript and of any future publications resulting from this manuscript.

Acknowledgments

First and foremost, I extend a wholehearted thank you to my thesis supervisor Dr. Cheryl Forchuk, whose tireless effort to highlight social injustices and give voice to the most vulnerable has been motivational. For continued mentorship, I thank her.

To my committee member, Dr. Carol Wong, whose unwavering support throughout the development of my thesis was so very appreciated.

To my family, here and in spirit, my nursing colleagues and my friends, I thank you for your support. You've earned this along with me.

To the participants of London CAReS, who shared their most personal experiences to allow for this research to take place. It was an honour. I cherish your stories, which will forever motivate me to be a better nurse.

Finally, to all those Canadians living with substance use disorder, and those living without a home, I thank you for your strength and resilience. I thank you for your patience while we work towards a more compassionate and just society where judgment is not cast on those with substance use disorder, and where housing is a right, and not just a privilege.

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Introduction

Homelessness in Canada

Hulchanski, Campsie, Chau, Hwang, and Paradis (2009) suggest homelessness was primarily an issue for less developed countries before the 1980's. The term "homeless" was rarely used in the Canadian context (Hulchanski et al., 2009). Through a series of political decisions Canada created a homelessness crisis (Gaetz, 2010; Shapcott, 2004). A shift towards neo-liberal economic policies resulted in the federal government deferring social housing responsibility to the provincial governments, while providing insufficient funding to support housing and social programs (Gaetz, 2010; Hulchanski, 2006; Hulchanski et al., 2009; Moscovitich, 1997). In Ontario, the responsibility for affordable housing was further transferred from the provincial to municipal government (Forchuk et al., 2007).

Major Canadian cities reported an increase in homelessness beginning in the late 1990's to mid 2000's (City of Calgary, 2006; City of Toronto, 2013; Homeward Trust Edmonton, 2014; Human Resources and Skills Development Canada, 2008; Thomson, 2015). Currently, between 150,000 and 300,000 Canadians are living on the street, in shelters or in unsuitable housing (Gaetz, Gulliver, & Richter, 2014; Segaert, 2012). This crisis has been identified as a Canadian national emergency by the United Nations, who describes homelessness as a visible "…lack of respect for the right to adequate housing." (Office of the United Nations High Commissioner for Human Rights, n.d., p. 21).

Recently, the federal government has taken some ownership in addressing this socially unjust issue. Previous attempts have primarily focused on the provision of emergency shelter services (Gaetz, Gulliver, & Richter, 2014). Support has since shifted to more sustainable solutions that aim to end homelessness. Funding for a multi-million, five-year research demonstration project was awarded to examine the effectiveness of housing first in the Canadian context. This housing first "At Home" project was implemented in 2008 in five Canadian cities, including Vancouver, Winnipeg, Toronto, Montreal and Moncton (Goering et al., 2014). The Economic Action Plan 2013, as developed by the former Conservative government, then outlined a renewal of the Homelessness Partnering Strategy (HPS). HPS is a national community-focused program aimed at reducing homelessness (Employment and Social Development Canada, 2015). The renewed funds specifically support housing first programs in Canada (Government of Canada, 2013). In addition, the newly elected Liberal federal government has guaranteed the needed municipal funding for these programs to flourish (Liberal Party of Canada, 2015)

Housing First and Harm Reduction

Housing first originated in New York to assist individuals experiencing homelessness, mental health and addiction (Tsemberis & Eisenberg, 2000; Tsemberis, Gulcur, & Nakae, 2004). The approach offers permanent and immediate housing with supports (Tsemberis & Eisenberg, 2000). Support tends to be offered through an Assertive Community Treatment (ACT) team or through Intensive Case Management (ICM) (Goering et al., 2014). At the core of housing first is a belief in individual choice and the promotion of harm reduction, specifically in relation to substance use

(Tsemberis, Gulcur, & Nakae, 2004). This is an important consideration as a large proportion of Canadians experiencing homelessness have a substance use disorder (Goering, Tolomiczenko, Sheldon, Boydell, & Wasylenki, 2002; Grinman et al., 2010; Strehlau, Torchalla, Li, Schuetz, & Krausz, 2012). Harm reduction and housing first strategies challenge a more traditional belief that abstinence and treatment are needed as a prerequisite to obtain and maintain a home (Padgett, Gulcur, & Tsemberis, 2006).

The commitment to housing first may signal a federal system shift in response to substance use. The focus has been on prevention, treatment and enforcement of substance use since the introduction of the National Anti-Drug Strategy in 2007 (Government of Canada, 2015). This strategy omits harm reduction and promotes abstinence in regards to treatment. With the election of the Liberal federal government, there is hope that harm reduction strategies and programs will be embraced, as members of this party have spoken openly about their support (Church & Woo, 2016; Geller, 2016). Harm reduction can be defined as "….policies, programmes and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug consumption" (International Harm Reduction Association, 2015, para. 1). Using harm reduction philosophy, there is an acceptance that various severities of substance use exist in the community. Both housing first and harm reduction share the philosophical belief that individuals should be accepted as they are (Marlatt, 1996; Tsemberis, Gulcur, & Nakae, 2004). Some are not ready for treatment, nor are they willing or able to stop using substances (International Harm Reduction Association, 2015). As a result, there is a need to view substance use on a continuum of varying severities, and that

people will have a continuum of goals related to their substance use. This would replace the tendency to view problematic substance use as simply present or absent. It would also discourage the tendency to cast judgment or contingencies on those with substance use disorders.

Homelessness and Substance Use

Substance use disorder should be viewed as a chronic condition that affects Canadians of any socio-economic status (Goodwin & Sias, 2014). However, it disproportionately affects Canadians experiencing homelessness, with a greater severity of substance use often being reported (Ganesh, Campbell, Hurley, & Patten, 2013; Huntley, 2015; Grinman et al., 2010; Liebschutz, Geier, Horton, Chuang, & Samet, 2005; Somers et al., 2013; Strehlau, Torchalla, Li, Schuetz, & Krausz, 2012). Medium to severe substance use was reported by 50% of individuals in the "At Home" housing first demonstration project (Aubry et al., 2015). In the Toronto site, 62% reported severe substance use (Skosireva et al., 2014).

This greater prevalence and severity pose a greater risk of serious health consequences. Injection drug use is the third most common contributor to acquiring HIV in Canada (Public Health Agency of Canada, 2013). Hepatitis C is almost exclusively related to substance use, with 83% of new infections having occurred among those who inject drugs in 2007 (Public Health Agency of Canada, 2007). Individuals who inject drugs are also at higher risk for strokes, skin abscesses and cellulitis (Kerr et al., 2004; Lloyd-Smith et al., 2005; Palepu et al., 2001; Pettiti, Sidney, Quesenberry, & Bernstein, 1998; Spittal et al., 2006; Westover, McBride, & Haley, 2007). Regular high consumption of alcohol use has been linked to chronic liver disease, cancers, strokes,

arrhythmias and hypertensive disease (Danaier et al., 2009; Juvela, Hillborn, & Paolomaki, 1995; Single, Rehm, Robson, & Van Truong, 2000; Single, Robson, Rehm, & Xie, 1999; Thrift, Donnan, & McNeil, 1999). Injuries and accidents, such as fractures, concussions, wounds and motor vehicle accidents are risks for individuals who have problematic substance use (Kerr et al., 2004; Padgett & Struening, 1992; Single, Rehm, Robson, & Van Truong, 2000; Thornquist, Biros, Olander, & Sterner, 2002; Warner-Smith, Darke, & Day, 2002). High rates of overdoses have been found in studies of individuals who currently inject or use illicit drugs and poly substances (Coffin et al., 2007; Hasegawa, Brown, Tsugawa, & Camargo, 2014; Kerr et al., 2007; Fischer et al., 2004; Single, Robson, Rehm, & Xie, 1999).

These health inequities contribute to the 5-10 year lower average life expectancy for homeless Canadians (Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009; World Health Organization, 2014). The prominent cause for these deaths are related directly or indirectly to the severe substance use this population experiences (Baggett et al., 2013; Coffin et al., 2007; Fischer et al., 2004; Hwang et al., 2009; Kerr et al., 2007; Page, Thurston, & Mahoney, 2012)

Homelessness and Health and Social System Inequities

Individuals experiencing homelessness are a marginalized, vulnerable sub-population of Canadians. They experience a multitude of health and social inequities. Specifically, they experience disadvantages relating to health and social systems, such as accessing health care and social and family relationships.

Canadians experiencing homelessness are less likely to have a community care provider than the general population (Hwang et al., 2010; Khandor et al., 2011). This

may be due to the tremendous barriers they face accessing care, despite living in a country with universal health care coverage. Current living circumstance is cited as a reason for being unable to follow through with treatment or advice (Crowe & Hardill, 1993; Hwang, Wilkins et al., 2011; Khandor & Mason, 2007). Health cards are easily lost, creating a major challenge in receiving care (Butters & Erickson, 2003; Crowe & Hardill, 1993; Khandor & Mason, 2007; Khandor et al., 2011; McDonald, Dergal, & Cleghorn, 2007). Having little to no income also creates barriers, such as having no means of transportation (Mcdonald et al., 2007). When individuals experiencing homelessness do receive health care, they often report poor relationships due to negative health care professional attitudes. These experiences often leave individuals feeling judged and unsupported (Crowe & Hardill, 1993; Khandor & Mason, 2007; Khandor et al., 2011; McDonald et al., 2007; Wen, Hudak, & Hwang, 2007). They may then be less likely to seek treatment when needed, in an attempt to avoid these discriminating encounters (McDonald et al., 2007; Wen et al., 2007).

This population has also commonly experienced traumatic relationships with family and friends. These relationships may be characterized by experiences of neglect, physical and sexual abuse (Collins, 2013; Khandor & Mason, 2007; Lowe & Gibson, 2011; Patterson, Moniruzzaman, & Somers, 2014). They tend to have small social networks, low levels of social support and infrequent family and social contact (Bonin, Fournier, & Blais, 2007; Khandor & Mason, 2007; Lalonde & Nadeau, 2012; Lehman, Kernan, DeForge, & Dixon, 1995; Morrell-Bellai, Goering, & Boydell, 2000; Wasserman, Sorensen, Delucchi, Masson, & Hall, 2006).

Purpose

The severe substance use and health disparities experienced by the Canadian homeless population is concerning. There is a need to further explore substance use, and the elements that may contribute to the level of severity in this population. Hence, the purpose of this secondary analysis was to examine relationships between elements of the social and health system and severity of substance use. This was examined in a Canadian population experiencing homelessness and accessing support through a housing first program. Elements of health system in this study refer to access to health care, therapeutic relationships with a professional, and stable housing. Elements of social system include relationships with family and social contacts. Correlational relationships were assessed. By examining these relationships, there is hope for addressing the harms associated with the most severe substance use.

Theoretical Framework

General Systems Theory, as theorized by Ludwig von Bertalanffy, was the theoretical framework used to guide this secondary analysis (von Bertalanffy, 1973). This theory was first developed in response to reductionism, and aims to explore relationships within a system (Best et al., 2003; von Bertalanffy, 1973). Systems in the community that are continuously influencing individuals may include health care, social, family, socioeconomic, legal, social service and therapeutic systems (Douaihy & Daley, 2014; Pichot & Smock, 2009; Reiter, 2015; Snyder, 2001).

Substance use may be influenced by the interactions of these systems (Naaldenberg et al. 2009; Stockwell, Gruenewald, Toumbourou, & Loxley, 2005). Historically substance use had been viewed as a disease of moral failing, poor decisions

and a primary problem within itself (Goodwin & Sias, 2014). However, through a systems lens, the focus shifts to substance use as a symptom of a dysfunctional or problematic system (Reiter, 2015). This may assist with explaining why individuals experiencing homelessness, who face a multitude of system inequities, experience a greater severity of substance use. Therefore health promotion involves improving the elements of the system that are negatively influencing health, such as severe substance use, as opposed to solely focusing on the health problem or behavior (Frohlich, Poland, & Shareck, 2012).

Significance

Canada has an ethical responsibility to address the emergence of homelessness, of which the federal government played a major role. These Canadians are currently living precariously, facing challenges in their personal lives with family and friends, as well as more broadly with the health care system. Severe substance use contributes to major health concerns leading to a greater risk of early mortality than the general Canadian population. General Systems Theory will allow for a greater understanding of how health and social systems inequities may influence the severity of substance use experienced by this population. Findings will guide registered nurses' practice when working with and advocating for these marginalized Canadians. The findings from this study will also support Canadian policy in hopes of addressing the health and social system needs of Canadians experiencing homelessness and severe substance use.

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Chapter 2

Manuscript

Homelessness has risen in Canada due to the lack of a national affordable housing strategy. Severe substance use is prominent in the homeless population and is associated with a greater risk of poorer health. These health challenges contribute to the early mortality experienced by homeless individuals (Baggett et al., 2013; Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009). Individuals experiencing homelessness also live with health and social system challenges such as barriers to accessing health care and being less likely to have a community primary care provider (Hwang et al., 2010; Khandor et al., 2011). They may have negative relationships with professionals due to feeling judged or discriminated (Khandor & Mason, 2007; Khandor et al., 2011; Wen, Hudak, & Hwang, 2007), small social support networks and less family and social contact (Bonin, Fournier, & Blais, 2007; Khandor & Mason, 2007; Lalonde & Nadeau, 2012; Morrell-Bellai, Goering, & Boydell, 2000). It is unclear how these health and social system challenges are related to the severity of substance use in the homeless population. Hence, the purpose of this study is to examine the relationship between elements of health and social systems and severity of substance use in homeless individuals. These systems include housing stability, therapeutic relationships, access to health care and quality of social and family relationships. Understanding this relationship will aid in the promotion of health and reduction of harms related to substance use for Canadians experiencing homelessness. This information will be important for registered nurses, whose roles include supporting harm reduction strategies and engaging in health

promotion through social justice advocacy for vulnerable populations (Canadian Nurses Association, 2008).

Background

Emergence of Homelessness in Canada and the National Response

The emergence of homelessness in Canada is primarily attributed to a political shift in policies. This led to the downloading of social housing responsibilities to the provincial, and in Ontario, municipal governments in the 1990's (Gaetz, 2010; Forchuk et al., 2007; Hulchanski, 2006; Moscovitich, 1997). The increase of homelessness has been identified as a direct result of these government changes (City of Calgary, 2006; City of Toronto, 2013; Crowe, 2007; Homeward Trust Edmonton, 2014; Thomson, 2015). It is estimated that between 150, 000 and 300 000 Canadians are living on the street, in shelters or in unsuitable housing (Gaetz, Gulliver, & Richter, 2014; Segaert, 2012).

Housing first has recently gained federal support in Canada. Originally developed in America, housing first aims to help those experiencing homelessness, mental health and addiction, achieve housing stability while promoting harm reduction (Tsemberis & Eisenberg, 2000). Harm reduction and housing first initiatives acknowledge that varying severities of substance use occur. They recognize that individuals will have varying degrees of goals, and aim to reduce harms, while not expecting or enforcing abstinence or reduction (Padgett, Gulcur, & Tsemberis, 2006). As such, there is a need to view substance use on a continuum of varying severities. This aligns with the conceptualization that substance use disorder occurs on a mild to severe continuum, as defined by the DSM-5 (American Psychiatric Association, 2013).

Homelessness and Substance Use Severity

Canadians experiencing homelessness live with health and social inequities. Perhaps the most prominent and severe is that of substance use. Substance use disorder is a chronic condition that affects 4.4% of the general population (Goodwin & Sias, 2014; Pearson, Janz, & Ali, 2013). In comparison, studies of homeless Canadians have reported 40% to 80% of samples as having a substance use disorder (Goering, Tolomiczenko, Sheldon, Boydell, & Wasylenki, 2002, Grinman et al., 2010; Strehlau, Torchalla, Li, Schuetz, & Krausz, 2012). Furthermore, individuals experiencing homelessness have reported a greater severity of substance use (Aubry et al., 2015; Huntley, 2015; Liebschutz, Geier, Horton, Chuang, & Samet, 2005; Skosireva et al., 2014).

This greater severity poses increased risk of serious health consequences. Overdoses and chronic health conditions relating to substance use are prominent contributors to early mortality for individuals experiencing homelessness (Baggett et al., 2013; Coffin et al., 2007; Fischer et al., 2004; Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009; Kerr et al., 2007; Page, Thurston, & Mahoney, 2012). HIV/AIDS (Hayden et al., 2014; Spittal et al., 2006; Tyndall et al., 2003), hepatitis C (Butters & Erickson, 2003; Khandor et al., 2011; Kim et al., 2009; Klinkenberg et al., 2003) and liver disease (Danaier et al., 2009) are argued to be the most detrimental chronic conditions associated with severe substance use. These all contribute to the 5-10 year lower average life expectancy for homeless individuals (Hwang et al., 2009; World Health Organization, 2014).

The health disparities are socially unjust in a progressive nation such as Canada. Elements that are influencing the severity of substance use for Canadians experiencing

homelessness need to be explored. This will assist with addressing the harms associated with the most severe substance use and this information is critical for the nursing profession. Registered nurses are in contact with individuals experiencing homelessness on the street, in the community and in the hospital. Nurses have a responsibility to advocate for change and health equity for disadvantaged groups (Canadian Nurses Association, 2008). Ultimately the goal nurses should work towards is moving individuals from a fractured inequitable system, to one that influences positive health and the reduction of harms related to substance use.

Purpose

The purpose of this secondary analysis was to explore relationships between social and health systems, and substance use severity. Health system in this study refers to access to health care, therapeutic relationship with a professional, and stable housing. Social system refers to relationships with family and friends. The correlation between these variables and substance use severity were assessed. These relationships were examined in a sample of individuals experiencing homelessness and receiving support through housing first.

Theoretical Framework

General Systems Theory was the theoretical framework used to guide this secondary analysis. This theory was first developed by biologist Ludwig Von Bertalanffy in the 1920's -1970's (Best et al., 2003; von Bertalanffy, 1973). The general goal of the theory is to explore the interactions and forces between elements that comprise a system (von Bertalanffy, 1973; von Bertalanffy, 1974). He described a system as "sets of elements standing in interrelation" (von Bertalanffy, 1973, p. 38).

As a grand theory, its concepts can be applied across disciplines (Von Bertalanffy, 1973). From a health promotion systems perspective, substance use is influenced by multiple systems in the community continuously interacting (Naaldenberg et al. 2009; Stockwell, Gruenewald, Toumbourou, & Loxley, 2005). These systems may include health care, social, family, socioeconomic, legal, social service and therapeutic systems (Douaihy & Daley, 2014; Pichot & Smock, 2009; Reiter, 2015; Snyder, 2001). An individual's system is comprised of elements of any of these systems (Snyder, 2001; Pichot & Smock, 2009). Substance use may be maintained through the interactions of an individual's problematic system (Lewis, Dana, & Blevins, 2014). Homeless individuals tend to experience a variety of disadvantages, including in relation to health and social systems. General systems theory may provide a better understanding of how these system disadvantages relate to the greater severity of substance use this population experiences.

Gaining a greater understanding of the interaction between systems and substance use severity will provide an opportunity for harm reduction and health promotion. This can take place by focusing on improvement of the systems that are contributing to severe substance use. The focus would shift to addressing harmful systems, as opposed to solely focusing on the behavior of substance use.

Literature Review

A literature review was completed by searching electronic databases. Databases included; the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, ProQuest Nursing & Allied Health Source and Scopus. Key words included; homelessness, homeless persons, substance use, substance abuse, substance use disorder, substance dependence, housing stability, social support, psychosocial support, family

relations, interpersonal relations, primary care, case management, working alliance and therapeutic relationship. In addition, ancestry searches were completed for relevant articles. Articles were included primarily from 2000-2015. The literature review focused on substance use severity and the homeless population. Other literature was included from samples not necessarily experiencing homelessness if it was relevant. Housing stability, therapeutic relationship, access to health care and social and family relationships are explored in relation to homelessness and substance use severity.

Housing Stability and Substance Use Severity

Substance use severity and homelessness often perpetuate each other**.** Substance use has been associated with loss of housing (Collins, 2013; Greenberg & Rosenheck, 2010; Thompson, Wall, Greenstein, Grant, & Hasin, 2013; Khandor & Mason, 2007). Once homeless, substance use may become more severe, with those experiencing chronic homelessness having a greater severity of substance use than individuals who are transitionally homeless or living in marginal housing (Eyrich-Garg, Cacciola, Carise, Lynch, & McLellan, 2008; Johnson & Chamberlain, 2008; Kertesz et al., 2005; Marshall et al., 2011; Patterson, Somers, & Moniuruzzaman, 2012). Severe substance use may then act as a barrier to transitioning out of homelessness, as outlined by both qualitative and quantitative studies (Grinman et al., 2010; Morrell-Bellai, Goering, & Boydell, 2000; North, Eyrich-Garg, Pollio, & Thirthalli, 2010).

American studies of homeless individuals accessing abstinent or treatment contingent housing demonstrated that abstinence and less severe substance use was associated with greater housing stability (Bebout, Drake, Xie, McHugo, & Harris, 1997; Collard, Lewinson, & Watkins, 2014; Milby, Schumacher, Wallace, Vuchinich,

Mennemeyer, & Kertesz, 2010). Other studies have examined the relationship between housing stability and substance use severity in housing first programs. These studies report inconsistent findings in relation to substance use severity. Some have found individuals decrease the amount of substance use and have less alcohol problems over time (Bean, Shafer, & Glennon, 2013; City of Toronto, 2007; Collins et al., 2012; Kirst, Zerger, Misir, Hwang, & Stergiopoulos, 2015; Larimer et al., 2009; Padgett, Stanhope, Henwood, & Stefancic, 2011). Other Canadian studies found substance use severity decreased. However, this was similar for both housing first programs and the treatment as usual groups, even though housing first showed greater housing stability (Aubry et al., 2015; Goering et al., 2014; Kirst et al., 2015). For those who did lose their housing, severe substance use was cited as the main contributor (Patterson, Currie, Rezansoff, & Somers, 2015). In contrast, findings from Vancouver found no relationship between number of days spent in stable housing and substance dependence or daily substance use (Palepu, Patterson, Moniruzzaman, Frankish, & Somers, 2013; Somers, Moniruzzaman, & Palepu, 2015). Similarly, an American study found an increase in housing stability, however no increase or decrease in substance use severity at 2-year follow-up (Edens, Mares, & Rosenheck, 2011). Furthermore, Tsai, Kasprow and Rosenheck (2014) reported no difference in housing stability for those with or without a substance use disorder at 6-month follow-up.

In summary, homelessness and severe substance use can occur as a perpetual cycle. A relationship may exist between substance use abstinence and housing stability for those accessing contingent housing. However, a relationship may not exist between substance use severity and housing stability for individuals accessing housing first. It is

unclear whether housing stability, supported through housing first, assists with decreasing substance use. Given the various findings more research should be conducted examining the relationship between housing stability and substance use severity.

Therapeutic Relationship, Homelessness and Substance Use Severity

Studies have assessed the case manager therapeutic relationship and substance use severity in samples of individuals experiencing homelessness and mental illness. American qualitative studies found participants felt the nonjudgmental relationship with their case manager facilitated their comfort with discussing their addiction (Davis, Tamayo, & Fernandez, 2012). This therapeutic relationship in turn may lead to individuals working on substance use goals, which may include a reduction in substance use (Tiderington, Stanhope, & Henwood, 2013). Individuals with a better case manager therapeutic relationship have been shown to access outpatient substance use treatment more often (Tsai, Lapidos, Rosenheck, & Harpaz-Rotem, 2013). Cunningham, Calsyn, Burger, Morse, and Klinkenberg (2007) used structural equation modeling to demonstrate that a working alliance led to less substance use, rather than vice versa. However, this regression coefficient was small, indicating a weak relationship. No correlation has been found between case manager therapeutic relationship and substance use severity in other quantitative studies (Calsyn, Klinkenberg, Morse, & Lemming, 2006; Calsyn, Morse, Klinkenberg, & Lemming, 2004; Chinman, Rosenheck, & Lam, 2000; Stergiopoulos et al., 2014; Tsai et al., 2013).

In general, similar findings have been found in samples with substance use issues who are not necessarily homeless. Qualitative studies have outlined the importance of this nonjudgmental relationship in making positive changes and forming a sense of

identity independent from substance use (Brun & Rapp, 2001; Redko, Rapp, Elms, Snyder, & Carlson, 2007). Better therapeutic relationship with therapist was associated with decreased frequency of substance use in samples enrolled in substance use treatment (Connors, Caroll, DiClemente, & Longabaugh, 1997; Glazer, Galanter, Megwinoff, Dermatis, & Keller, 2003). However, Barber et al. (2001) and Rogers, Lubman, and Allen (2008) found no association between therapist therapeutic relationship and follow up substance use severity for individuals accessing substance use treatment.

In summary, therapeutic relationship and substance use severity is complex. Qualitative studies suggest close relationships with professionals assists with positive changes. For some this is in relation to substance use. A relationship may exist between better therapeutic relationship and decreased frequency of substance use for individuals receiving treatment. However other studies assessing therapeutic relationship for both those accessing treatment, and those experiencing homelessness, have not supported this relationship. Due to limited Canadian research and incongruent findings there is a need to further explore whether therapeutic relationship and substance use severity are associated for individuals experiencing homelessness.

Access to Health Care, Homelessness and Substance Use Severity

Individuals experiencing homelessness tend to have negative encounters with health care professionals (Khandor & Mason, 2007; Khandor et al., 2011) Substance use has been cited as a reason for perceived discrimination (Butters & Erickson, 2003; Khandor et al., 2011; Khandor & Mason, 2007). Physicians have reported reluctance prescribing narcotics to those with chronic pain if they are homeless and have substance use issues (Hwang, Wilkins et al., 2011). Individuals may be less likely to seek treatment

when needed, in an attempt to avoid these discriminating encounters (McDonald et al., 2007; Wen et al., 2007).

Canadians experiencing homelessness are less likely to have a community primary care provider than the general population (Hwang et al., 2010; Khandor et al., 2011). It's unclear from the literature whether there's a relationship between access to health care and substance use severity. Khandor et al. (2011) found a trend towards an inverse relationship between regular substance use and having a community care provider in a Canadian homeless sample. However, this was not statistically significant.

American prospective studies have examined whether having a community primary health care provider is related to decreased substance use severity over time. However, these studies used samples accessing substance use treatment. They found having primary medical care available at the treatment program, and continuing to visit the primary care provider on a regular long-term basis following treatment was associated with decreased substance use severity (Chi, Parthasarathy, Mertens, & Weisner, 2011; Friedmann, Zhang, Hendrickson, Stein, & Gerstein, 2003; Mertens, Flisher, Satre, & Weisner, 2008; Saitz, Horton, Larson, Winter, & Samet, 2005).

The American findings demonstrate a relationship between having access to community care providers and decreased substance use severity. However, these samples did not focus on the homeless population. In addition, they were individuals who had entered substance use treatment. Individuals experiencing homelessness may not want or are ready for formalized treatment (Collins et al., 2012; Khandor & Mason, 2007). This makes it unclear whether this relationship would still exist in the homeless population. It also remains to be seen whether similar results would be found in the Canadian universal

health care context. The relationship between access to health care and substance use severity needs further examination in the Canadian homeless population.

Social and Family Relationships, Homelessness and Substance Use Severity

Individuals experiencing homelessness have strained relationships with friends and family (Khandor & Mason, 2007; Lalonde & Nadeau, 2012). Substance use has been described as a way to cope, self-medicate, and "ease the pain" from distressing experiences and traumatic relationships (Collins, 2013; Lowe & Gibson, 2011; Burlingham, Peake-Andrasik, Larimer, Marlatt, & Spigner, 2010; Ullman, Relvea, Peter-Hagene, & Vasquez, 2013). Substance use appears to also play a role in diminished support. Individuals experiencing both homelessness and substance use issues report feeling; dissatisfaction with family social support, difficulty maintaining relationships due to substance use, and distance from family after commencement of substance use (Burkey, Kim, & Brekey, 2011; Shier, Jones, & Graham, 2011; Zugazaga, 2008).

Literature examining the quantitative relationship between quality of social and family relations and substance use severity in homeless samples is sparse. Experiencing more conflict with members of a social network was associated with more substance related behaviours in a sample of American young adults experiencing homelessness (Tyler, 2008). Edens, Mares, Tsai, and Rosenheck (2011) found individuals who were using substances frequently had worse overall quality of life scores compared to individuals not using substances. Satisfaction with family and social relations contributed to the overall subjective quality of life measure. However, the authors failed to report on these specific subscales.

A few studies were found that examined the relationship between severity of substance use and the quality of family and social relations in samples who were not homeless. Prospectively, Wasserman et al. (2006) found a relationship between satisfaction with social relationships and substance use. Although, this was a negative correlation indicating participants who were more satisfied with their social relationship, were more likely to use substances. No relationship was found between the other measures of quality of social and family relationships and substance use. In a sample of dually diagnosed individuals receiving treatment, no relationship was found between the quality of family relationships and substance use at follow-up (Clark, 2001). Heinz, Wu, Witkiewitz, Epstein, and Preston (2009) found an association between having a close relationship with a partner and decreased substance use over time for individuals accessing treatment. Similarly, Tracy, Kelly, and Moos (2005) found poorer quality relationship with a partner was associated with more severe substance use following substance use treatment.

To summarize, individuals experiencing homelessness tend to have diminished social support. Substance use may be both a cause and a result of this. Inconsistent findings have been reported between quality of family and social relations and substance use. Specifically, there is a gap in the literature regarding the relationship between quality of family and social relationships and the severity of substance for homeless Canadians.

Hypothesis

The literature suggests individuals experiencing homelessness often live with severe substance use and disadvantages in regards to the health and social systems. General Systems Theory suggests that an individual's system, which may encompass

health and social systems, can influence and maintain substance use. Substance use may be a sign of an individual's problematic system. When an individual's system improves, it is hypothesized that a positive influence on substance use severity will coincide.

Maintaining a stable home following episode(s) of homelessness may create a sense of confidence and control over substance use and potentially a sense of readiness to address substance use goals (Collins et al., 2012; Davis, Hawk, Marx, & Hunsaker, 2014; Patterson, Currie, Rezansoff & Somers, 2015). A strong therapeutic relationship with a health/social service provider fosters a nonjudgmental, trusting setting that allows for the open discussion of substance use (Davis, Tamayo, & Fernandez, 2012). Substance use goals can be discussed, as directed by the individual, and care providers can assist in developing strategies to meet their goals (Tiderington, Stanhope, & Henwood, 2013). Individuals with a regular primary care provider may gain the added benefit of having a health care professional monitor substance use, identify severity, and refer to substance use treatment, if desired by the individual (Khandor et al., 2011; Mertens, Flisher, Satre, & Weisner, 2008). Greater quality of family and friend relationships may lead to less use of substances as a coping mechanism for emotional and relational trauma (Stein, Dixon, & Nyamathi, 2008; Tyler, 2008). Supportive relationships may promote positive social identity, and positive changes relating to substance use goals (Nelson et al., 2015).

Using General Systems Theory as the theoretical framework, the following is the study hypothesis: housing stability, therapeutic relationship with health/social service provider, access to health care and quality family and social relationships negatively predict substance use severity. See Figure 1 for hypothesized model.

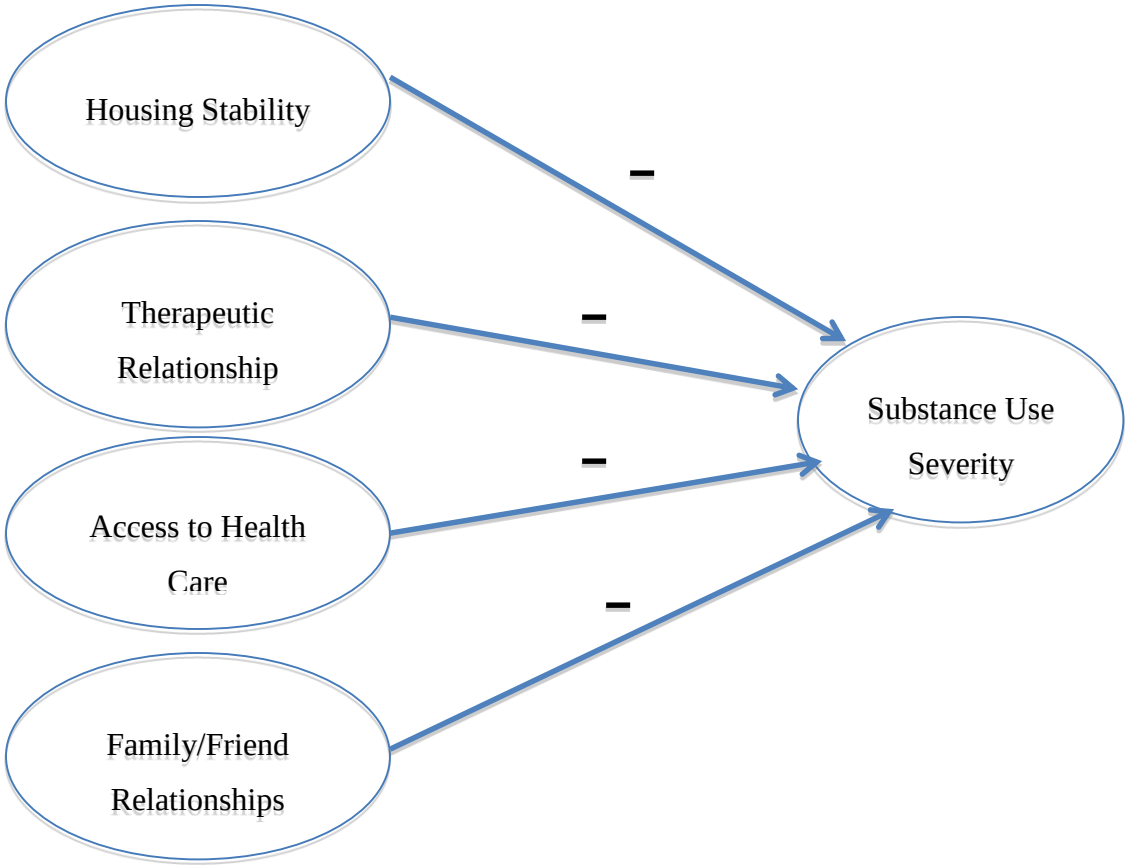

Figure 1: Proposed Model of Health and Social Systems Elements in Relation to Substance Use

Methodology

Primary Study

This secondary analysis used data from the primary study entitled "An Assessment and Evaluation of London CAReS: Facilitating Service Integration through Collaborative Best Practices." Funding was received through the Homelessness Partnering Secretariat and the City of London (Forchuk, Richardson, Oudshoorn, Csiernik, & Martin, 2015). This longitudinal, mixed methods, participatory action research study was conducted in 2013-2014. London Community Addiction Response Strategy (London CAReS) is a housing first, harm reduction community-based program. The goal of the strategy is to improve the housing and health outcomes of individuals experiencing chronic and persistent homelessness in London, Ontario (City of London,

2015). The purpose of the primary study was to evaluate housing and health outcomes, as well as the community implementation of London CAReS.

Secondary Analysis

Design. Baseline data was used from the longitudinal primary study. Substance use was viewed within the context of the individual's system. This allowed the focus to shift from solely on substance use, to the health and operation of the entire system (Lewis, Dana, & Blevins, 2014). Therefore, although this analysis focused on substance use severity as an outcome, interrelations between all variables were analyzed. This better examined how a change in one variable affects another and whether substance use was influenced by elements of the system.

Setting. Data collection included questionnaires completed during approximately one-hour interviews between participants and research assistants. These were completed in natural settings such as coffee shops, participant's homes, park benches and the local library located in London, Ontario.

Sample. A total of 65 individuals experiencing chronic or persistent homelessness and who were receiving support through a housing first strategy were enrolled in the primary study. The participants completed various questionnaires that examined; demographics, access to health care, community integration, substance use, health, social, and justice service use, housing history, perceived housing quality, quality of life, overall health and therapeutic relationship with a health or service provider. The sample was obtained through London CAReS staff mentioning the study to individuals accessing support. Trained research staff met with interested potential participants to assess for eligibility and to obtain informed consent.

Participant inclusion criteria from the primary study included: having a diagnosed or undiagnosed serious or moderate mental illness with or without a co-existing substance use disorder, being homeless, precariously housed or street-involved prior to involvement with the housing first strategy, being between the ages of 16 and 80, and being able to understand and speak English to the degree necessary to participate in the interview. Exclusion criteria included: individuals not involved with the housing first strategy.

G*Power was used to determine an appropriate sample size for this study (Faul, Erdfelder, Lang, & Buchner, 2007). This calculation revealed 85 participants were needed for a moderate effect size (0.15). This was based on an alpha of 0.05, a power of 0.80 and four predictors. Due to the actual sample size of 65, the analysis was underpowered. This is noted as a limitation as it increased the risk of a Type II error.

Variables and instruments. See Appendix A, Table A1 for instrument summary.

Demographics. A demographic form collected self-reported descriptive statistics. This information included; age, gender, race, education, employment status, marital status, mental health diagnoses, current and past substance issues, age when first homeless and number of times homeless.

Housing stability. Housing stability has been defined as "….the extent to which an individual's customary access to housing of reasonable quality is secure." (Frederick, Chwalek, Hughes, Karabanow, & Kidd, 2014, p. 965). Housing stability includes access to permanent housing (Frederick et al., 2014). For the purpose of this analysis, the more time spent in housing, was the operational definition of greater housing stability. The definition of stable housing included living in a room, apartment or house where the participant was paying rent, or staying with a family member (Goering et al., 2014;

Tsemberis, McHugo, Williams, Hanrahan, & Stefancic, 2007). This included time spent in a shelter where the individual indicated they were paying rent, as well as a boarding home and group home. Time spent in an emergency shelter, correctional facility, hospital, at a friend's place, in a motel or spent couch surfing were not considered time spent in stable housing. Consistent with the Canadian Observatory on Homelessness' (2012) definition of homelessness, these would be considered settings where individuals are lacking stable, permanent or appropriate housing.

Housing stability was assessed using the Housing History Survey (Forchuk, Csiernik, & Jensen, 2011). This instrument recorded type of residence (including homelessness), and length of time spent in each. The number of weeks spent in housing in the previous year was summed. A higher amount indicated greater housing stability.

The Housing History Survey was developed for Community-University Research Alliance (CURA), Partnerships in Capacity Building: Housing, Community Economic Development, and Psychiatric Survivors research study (Forchuk et al., 2011). CURA enrolled a sample experiencing mental illness and living in the community. Many also had co-existing substance use issues. The Housing History Survey can be categorized as a "time-line follow-back" as participants recount their type of residence for the previous 2 years. A similar instrument that used the time-line follow-back method of residence in a homeless sample, demonstrated test-retest reliability, with intra-class correlation coefficients between 0.8-0.93. One residential measure however had a correlation coefficient of 0.59 (Tsemberis et al., 2007). Concurrent validity was demonstrated when self-report recall of housing was compared with agency documented housing for previous 6 months. Pearson correlations ranged from 0.84-0.92 (Tsemberis et al., 2007)

Therapeutic relationship. Therapeutic relationship was operationally defined using the working alliance as conceptualized by Edward Bordin. Working alliance is composed of goals, tasks and bonds. Goals are mutually agreed upon, tasks are exchanges and activities that take place, and bonds is the intimate relationship formed (Bordin, 1979). The belief is the stronger working alliance, the more positive outcomes achieved (Bordin, 1979). Therapeutic relationship was measured between participant and their health or social service worker. In many cases, this was their housing first worker.

The therapeutic relationship was measured using the Working Alliance Participant Version Short Form (WAI-SF), the short form of the Working Alliance Inventory (Horvath & Greenberg, 1986). The sum of 12 items that make up 3 subscales was used creating one score for therapeutic relationship. These subscales assessed goals, tasks and bonds. Responses were based on a 7-point likert scale, ranging from 'never' to 'always.' An example of a question that assessed goals is '(name of worker) and I are working toward mutually agreed upon goals.' The tasks subscale included a question that asked '(name of worker) and I agree about the things I will need to do to help improve my situation.' Assessment of bonds included 'I am confident in (name of worker)'s ability to help me' (Horvath & Greenberg, 1986). Higher scores indicated a stronger working alliance (Tracey & Kokotovic, 1989).

The full Working Alliance Inventory (WAI) was developed using both expert and professional ratings. This process supported content validity. The WAI-SF was created from the WAI using a confirmatory factor analysis (Tracey & Kokotovic, 1989). This factor analysis demonstrated a goodness of fit statistic of 0.88 for the overall alliance score. This suggests the WAI-SF measures the overall working alliance and supports

construct validity (Tracy & Kokotovic, 1989). Intercorrelations between the WAI-SF and WAI subscales ranged from 0.71-0.92 (Busseri & Tyler, 2003). A multimethod-multitrait matrix was performed on the subscales, demonstrating convergent validity, and some support for discriminant validity (Horvath & Greenberg, 1989). Predictive validity was demonstrated with a moderate correlation (0.34) between WAI-SF and the client composite improvement index (Busseri & Tyler, 2003). The WAI-SF internal consistency was measured to be .98 overall, with the subscales ranging from .90 to .92 (Tracy & Kokotovic, 1989). This instrument was used in a Canadian sample of individuals accessing supporting through a housing first strategy (Goering et al., 2011; Stergiopoulos et al., 2014). In the current study, the Cronbach alpha coefficient was .92. The task subscale had a Cronbach alpha coefficient of .87, bonds *a*=.89, goals *a*= .73.

Access to health care. Access to health care has been defined as having "….the power to command resources to cope with or adapt to the challenges of their own environment when they perceive they need them, so that the outcome is the preservation or the improvement of their health" (Gulliford et al., 2001, p. 21). For the purpose of this secondary analysis, access to health care was operationally defined as having a primary health care provider (Hwang et al., 2010).

Access to health care was measured using a 2-page ACCESS questionnaire (Goering et al., 2011). One question from this questionnaire was used, which included "do you have a regular medical doctor?" A response of "yes" was scored as 1, indicating better access to health care. A "no" response was scored as 0. The Toronto site of the Canadian multi-site housing first project "At Home" developed this questionnaire (Goering et al., 2011). Questions were taken from the Canadian Community Health

Survey (CCHS) (Statistics Canada, 2007). Specialists and experts from Statistics Canada, and various government and academic departments developed the CCHS. In addition, interviews or focus groups were held to assist with the appropriate wording of questions (Statistics Canada, 2007). These efforts demonstrate face validity. The ACCESS questionnaire was administered to samples experiencing homelessness to allow for comparison of access to primary care between the general Canadian population and homeless Canadians (Hwang et al., 2010; Hwang et al., 2011; Khandor et al., 2011; Khandor & Mason, 2007; Palepu, Gadermann et al., 2013). Internal consistency and validity have not been reported in these studies.

Quality of social and family relationships. The quality of social and family relationships is one dimension of quality of life. Quality of life is a multi-dimensional construct, including both subjective and objective indicators (Haas, 1999; The WHOQOL Group, 1995). The operational definition of quality of social and family relations included both the subjective satisfaction with these relationships and the objective frequency of contact (Lehman, Postrado, & Rachuba, 1993).

The quality of social and family relationships was measured using objective and subjective subscales from the Lehman Quality of Life Brief Version (QOLI-BV) (Lehman, Kernan, & Postrado, 1995). Subjective subscales included satisfaction with family contact (2 items) and social relations (3 items). Responses were based on a 7-point likert scale, ranging from 'terrible' to 'delighted.' An example of a subjective question included 'how do you feel about the people you see socially?' Objective subscales included frequency of family contact (2 items) and social contact (4 items). Reponses were based on a 5-point scale, ranging from 'not at all' to 'at least once a day.' An

example of an objective question included ‘in the past year, how often did you get together with a member of your family?’(Lehman et al., 1995). For each subscale, the mean of the items was taken, resulting in an overall score. A higher score indicated better satisfaction with family and social relations, and more frequent family and social contact (Lehman et al., 1995).

The QOLI-BV is based on the full version (Lehman et al., 1995). Both were developed to measure the quality of life of individuals experiencing mental illness (Lehman, 1988; Lehman et al., 1995). Correlations were found, ranging from 0.64-0.81, between the brief and the full version, supporting convergent validity (Lehman et al., 1995). In a sample who injects drugs, the QOLI-BV subjective scales showed significant correlations, ranging from 0.19 to 0.64, with the SF-36, and the Beck Depression Inventory. This supports convergent and discriminant validity (Wasserman, Sorensen, Delucchi, Masson, & Hall, 2006). The QOLI-BV demonstrated internal consistency with Cronbach alphas ranging from 0.63-0.92 on the subjective and objective subscales (Subjective family relations a= 0.92, subjective social relations a= 0.84, objective social contact a= 0.63, objective family contact, a= 0.80) (Wasserman et al., 2006). The current study demonstrated a Cronbach alpha coefficient of .84 for the quality of family relationships, and a coefficient of .63 for quality of social relationships. With these subscales combined, the quality of family and social relationships, a Cronbach alpha coefficient of .75 was achieved.

Substance use severity. The operational definition of substance use severity was the gravity of substance use symptoms (Riley, Conrad, Bezrucko, & Dennis, 2007).

Severity can be defined as mild to severe, with severe causing more symptoms (American Psychiatric Association, 2013).

Substance use severity was measured by a 5-item sub-screener from the Global Appraisal of Individuals' Needs Short Screener (GAIN-SS) (Dennis, Chan, & Funk, 2006). It measured the recency of substance use problems with responses ranging from 'past month' '2-12 months ago' '1 or more years ago' or 'never.' An example of a question included 'when was the last time that you kept using alcohol or drugs even though it was causing social problems, leading to fights, or getting you into trouble with other people?' (Dennis et al., 2006). This analysis focused on past month scores. Scores ranged from 0-5, with 5 indicating participant responded with 'past month' to all 5 questions. Therefore a higher score represented greater severity of substance use (Riley et al., 2007).

The GAIN-SS has good internal consistency (alpha = .96). The sub-screener for substance use problems from the GAIN-SS is highly correlated with the full GAIN's Substance Problem Scale (r= .96), supporting convergent validity (Dennis et al., 2006). The average correlation between the sub-screener for substance use problems from the GAIN-SS and other subscales from the full GAIN was a weaker correlation (r=0.42), suggesting discriminant validity (Dennis et al., 2006) This instrument was used in the multi-site housing first project in Canada (Goering et al., 2011; Kirst, Zerger, Misir, Hwang, & Stergiopoulos, 2015). In the current study, the Cronbach alpha coefficient for the past month substance use severity was .88.

Ethical Consideration

Ethics approval was obtained from Western University Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB). The letter of information included that the data would be used for secondary analysis.

Data Analysis

Screening, Cleaning and Manipulation of Data

All data was analyzed using the Statistical Program for Social Sciences version 22. Data were checked for errors. The range of responses was reviewed. Minimum and maximum values were observed for each variable and subscale, where applicable, to ensure the numbers made sense (Pallant, 2010).

Continuous variables were assessed for missing data (See Appendix B, Table B1 for count and percentages of missing data). The Missing Value Analysis was used in SPSS to determine the pattern of missing data (Tabachnick & Fidell, 2007). Individual cases were reviewed for missing patterns (see Appendix B, Table B2). A Separate Variance T Test was run to assess for relationships between variable missing values (Tabachnick & Fidell, 2007; see Appendix B, Table B3). The following statistically significant relationships were found; quality of family and social relationships and number of times homeless (t= 2.7, d= 12.8, p=0.02), substance use severity and age when first homeless (t= 8.1, d= 60, p<0.01), and age when first homeless and quality of family and social relationships (t= 4.3, d=3.7, p=0.014). This suggests a relationship exists between the missing data on these variables. A Little's Missing Completely at Random (MCAS) test showed overall data is MCAR (Chi-Square = 30.981, *DF* = 33, Sig. = .568; see Appendix B, Table B4). According to Tabachnik and Fidell (2007), if the MCAS test

indicates data is MCAR, then any variables that were shown to have a statistically significant relationship during the Separate Variance T Test would be missing at random (MAR). Therefore, number of times homeless, age when first homeless and quality of family and social relations were MAR. This was important to check, as generalizability is less likely to be affected when data is missing at random as opposed to missing systematically (Tabachnick & Fidell, 2007).

Missing data was addressed by imputing the mean for normally distributed variables and the median for skewed distributions (Duffy & Jacobsen, 2007). This has been identified as a conservative, systematic approach to handling missing data (Duffy & Jacobsen, 2007). Where the instrument used subscales, the missing value was replaced by the mean or median from that particular subscale. However, this only occurred in circumstances where there was only 1 missing item from that particular subscale and the other item values were close in range. Subscales that were missing more than 1 item were left as missing (see Appendix B, Table B5 for summary of missing data and imputation technique used for each variable). Mental health diagnosis was the only categorical variable with missing data. Seven cases, or 10.7% was missing. Five stated they did not have a diagnosis, one was missing with no explanation, and one participant declined.

The continuous variables were examined for outliers using box plots (See Appendix C, Figures C1- C9). Two variables were found to have extreme outliers. This included the descriptive variable number of times homeless, and the independent variable of therapeutic relationship, as measured by the WAI-SF. It was decided to alter these outliers due to; their influence on the mean, and their potential impact on the correlation coefficient, specifically due to the small sample size (Tabachnik & Fiddell, 2007).

Altering was a better option than deleting these cases due to the important information they provided for these variables (Duffy & Jacobsen, 2007). Outliers were changed to the next highest or lowest score in the distribution (Tabachnik & Fiddell, 2007). Number of times homeless had varying values of extreme outliers. The lowest of the extreme values was assigned a value one higher than the highest non-outlier. The next highest outlier was then assigned one value higher, and so forth. Therefore, outliers remained after the alteration, but were less extreme than the original distribution (See Appendix C, Figure C2 and C3 for before and after box plots). No outliers remained for WAI-SF scores after the alteration (See Appendix C, Figure C6 and C7 for before and after box plots). The influence of the outliers and the alteration of outliers on descriptive analyses were examined (see Appendix C, Table C1 and Table C2).

Continuous variables were considered normally distributed if they met the following criteria; a histogram that approximated the bell curve line, a skewness coefficient between -1 and +1, and kurtosis close to 0 (Hildebrand, 1986; Munro, 2005). Age and age when first homeless, both descriptive variables, were normally distributed. Number of times homeless was positively skewed, and remained skewed after alteration of outliers. The dependent variable, substance use severity, and the three independent continuous variables were normally distributed. This included therapeutic relationship with worker, as measured by WAI-SF scores, which became normally distributed after alteration of outliers (See Appendix D, Table D1 for descriptives, and Appendix D, Figures D1- D7 for histograms)

Statistical Tests

The significance level was set at $p<0.05$ and two-tailed tests were run. Relationships between the independent and dependent variables, as well as the descriptive variables were examined. A Pearson correlation co-efficient was used between the continuous and normally distributed variables to test for the presence and strength of relationships. A Spearman Rho correlation co-efficient, the non-parametric correlation statistic, was used for the correlations involving the skewed and ordinal variables (Plichta & Kelvin, 2013). Independent sample t-tests were run between continuous normally distributed variables and nominal variables in order to test for differences (Munro, 2005). Mann-Whitney U, the non-parametric alternative to the T-Test, was used for the one skewed continuous variable (Pallant, 2010). ANOVA was run to test for differences with the nominal variable that had more than 2 groups, with the continuous normally distributed variables (Munro, 2005). Finally, chi-square was used to test for association between nominal variables (Munro, 2005).

Results

Sample Descriptions

Descriptive statistics were completed to describe the sample and are displayed in Table 1. From the sample of 65, 66.2% (43) were male and 33.8% (22) were female. The average age was 41.26 (*SD*= 14.40). The most common reported race was European origins (75.4%). In regards to level of education, completion of high school and grade school were nearly evenly split between 41.5% and 40.0% of the sample, respectively. Nineteen percent of the sample (18.5%) had completed community college or university.

Sixty-five percent of the sample (64.6%) identified as being single and never married, followed by separated or divorced (26.2%).

All but one participant (98.5%) identified as experiencing homelessness in their lifetime. When the housing history was reviewed, it was noted that this person had precarious housing in the previous two years (halfway house, jail). Homelessness was first experienced at age twenty eight (27.67, *SD*=13.43), and has been experienced three separate times (2.88, *SD*=2.41), on average. The majority of individuals (78.5%) stated they have a current addiction. The most common addiction was tobacco (56.9%), followed by alcohol (27.7%) and marijuana (24.6%). Substance issues was the most commonly reported mental health diagnosis, experienced by more than half of the sample (55.4%) See Appendix E, Table E1 for mental health diagnoses and further sample characteristics.

Table 1
Sample Characteristics

Characteristic	Frequency	Percent	Mean (*SD*)	Range
Age			41.26 (14.40)	17-75
Sex				
Male	43	66.2		
Female	22	33.8		
Race				
European origins (i.e. Caucasian)	49	75.4		
Aboriginal	11	16.9		
Other visible minority	1	1.5		
Mixed race	4	6.2		
Completed Level of Education				
Grade school	26	40.0		
High school	27	41.5		
Community college/University	12	18.5		
Marital Status				
Single, never married	42	64.6		
Separated/Divorced	17	26.2		
Married/Common Law	3	4.6		
Widowed	3	4.6		
Currently Has a Substance/Addiction Issue				
Yes	51	78.5		
No	13	20.0		
Current Substance/Addiction Issues				
Tobacco	37	56.9		
Alcohol	18	27.7		
Marijuana	16	24.6		
Prescription drugs	14	21.5		
Caffeine	12	18.5		
Other	11	16.9		
Cocaine/Crack	5	7.7		
Heroin	3	4.6		
Hallucinogens	2	3.1		
Has Been Homeless in Lifetime				
Yes	64	98.5		
No	1	1.5		
Age When First Homeless			27.67 (13.43)	9-59
Number of Times Homeless			2.88 (2.41)	0-10

Study Variable Descriptions

Study variable statistics are outlined in Table 2. Participants spent on average 28.43 weeks in stable housing in the previous year (*SD*=16.58). Therapeutic relationship

with worker, as measured by WAI-SF scores, had a mean total score of 69.49 (*SD*=11.51) and a median of 74.00. Actual scores ranged from 42-84, where possible scores could range from 12-84. In regards to access to health care, seventy-four percent (73.8%) reported having a regular medical doctor. The average score for quality of family and friend relationships was 14.19 (*SD*=3.78) with a median of 13.5, as measured by the Lehman QOLI-BV. Where scores could range from 4-25, actual scores ranged from 5-22.8. Participants experienced a 1.89 (*SD*= 1.94) severity of substance use, on average, on the GAIN-SS where possible scores could range from 0-5. Thirty-seven percent (36.9%) were categorized as having a low severity, followed by thirty-four percent (33.8%) of participants reporting high severity, and twenty nine percent (29.2%) being categorized as medium severity.

Table 2
Study Variable Statistics

Variable	Frequency	%	*M* (*SD*)	*Mdn*	Range
Number of weeks spent in stable housing[a]			28.43 (16.58)	28.00	0-52
Therapeutic Relationship With Worker[b]			69.49 (11.51)	74.00	42-84
Access to Health Care: Regular Medical Doctor					
Yes	48	73.8			
No	17	26.2			
Quality of Family and Friend Relationships[c]			14.19(3.78)	13.5	5.0-22.8
Substance Use Severity[d]			1.89 (1.94)	1.0	0-5
Low (0)	24	36.9			
Medium (1-2)	19	29.2			
High (3-5)	22	33.8			

[a] Number of weeks spent in stable housing is for previous year
[b] Higher score indicates better therapeutic relationship. Total possible scores range from 12-84
[c] Higher scores indicate more satisfaction and more frequent contact with family and friends. Total Possible scores range from 4-25.
[d] Higher scores indicate greater severity of substance use. Total possible scores range from 0-5.

Relationships between Study Variables and Demographic Statistics

The relationship between the demographic and the independent and dependent variables were assessed. This was examined in order to determine whether any demographic variables were influencing the results. The demographic variables included; age, sex, race, level of education and marital status. Demographic items relating to homelessness and addiction were also included, such as age when first homeless, number of times homeless and presence of current addiction. Relationships between the demographics relating to homelessness (age when first homeless, number of times homeless) and addiction (presence of current addiction) were also tested.

There were five statistically significant relationships found. This included the relationship between; age and access to health care, age when first homeless and access to health care, sex and substance use severity, having a current addiction and substance use severity and having a current addiction and number of times homeless. See tables 4-6 for these statistically significant results. Importantly, the relationship between number of times homeless and access to health care approached statistical significance. See Appendix F, Tables F1 - F6 for the non-statistically significant results.

T-tests indicated participants who had a regular medical doctor were older in age, on average, (*M*= 43.65, *SD*= 13.27), compared to those with no regular medical doctor (*M*=34.53, *SD*= 15.71) at the time of data collection (*t*=2.32, *d*= 0.5, *p*= 0.024). Participants who had a regular medical doctor had experienced their first episode of homelessness at an older average age of 30.06 (*SD*= 13.26) compared to those with no regular medical who experienced their first homelessness episode at an average age of 22.53 (*SD*= 12.26; *t*=2.05, *d*= 0.59, *p*=0.045). Table 3 displays these results.

In regards to substance use severity, t-tests revealed males experienced greater GAIN-SS scores (*M*= 2.23, *SD*= 2.05) compared to females (*M*=1.23, *SD*= 1.54; *t*= 2.22, *d*= 0.55, *p*= 0.031). Those participants who identified as having a current addiction reported greater GAIN-SS scores (*M*=2.18, *SD*= 1.97), compared to those who reported no current addiction (*M*= 0.54, *SD*= 0.88; *t*= -4.46, *d*= 1.08, *p*=0.000). See Table 4.

A Mann-Whitney U test showed a statistically significant relationship between having a current addiction and experiencing more episodes of homelessness (*Mdn*= 2.00) compared to those identifying as having no current addiction (*Mdn*= 1.00; *U*= 213.50, *z*= -2.028, *p*= 0.043, *r*= 0.12). Table 5 displays this result.

Finally, although not statistically significant, a Mann Whitney U test uncovered a trend toward experiencing more episodes of homelessness and currently having no regular medical doctor, compared to those who indicated they have a family doctor (*U*= 291, *z*= -0.801, *p*= 0.072, *r*=0.22). See Appendix F, Table F3.

Table 3
Independent Sample T-Tests Comparing Independent Categorical Variable Access to Health Care and Continuous Normally Distributed Descriptives

Variable	Access to Health Care: No Regular Doctor Mean (*SD*)	Access to Health Care: Regular Doctor Mean (*SD*)	*T*	*DF*	Sig
Age	34.53(15.71)	43.65(13.27)	**2.319***	63	0.024
Age When First Homeless	22.53(12.26)	30.06(13.26)	**2.046***	62	0.045

*$p<0.05$

Table 4
Independent Sample T-Tests Comparing Categorical Descriptive Variables and Continuous Dependent Variable Substance Use Severity

Variable	Male Mean (*SD*)	Female Mean (*SD*)	*T*	*DF*	Sig
Substance Use Severity	2.23(2.045)	1.23 (1.541)	**2.219***	53.99	0.031
Variable	Current Addiction Mean (*SD*)	No Current Addiction Mean (*SD*)	*T*	*DF*	Sig
Substance Use Severity	2.18(1.97)	0.54(0.88)	**-4.458****	44.81	0.000

*$p<0.05$
**$p<0.01$

Table 5
Mann-Whitney U Test comparing Categorical Descriptive Variable Current Addiction and Continuous Skewed Descriptive Variable Number of Times Homeless

Variable	Current Addiction Mean Rank	No Current Addiction Mean Rank	Mann-Whitney U	*Z*	Sig
Number of Times Homeless	34.81	23.42	**213.50***	-2.028	0.043

*$p<0.05$

Relationships between Independent and Dependent Study Variables

The relationships between the independent and dependent variables were examined in order to test the hypothesis that housing stability, therapeutic relationship with health/social service provider, access to health care and quality family and social relationships negatively predict substance use severity. This involved Pearson correlation coefficients between the continuous independent and dependent variables. An independent sample t-test was run between the one independent categorical variable and the continuous independent and dependent variables. See Tables 6-7 for these results.

One statistically significant relationship was found amongst the independent variables. A positive correlation was found between therapeutic relationship and quality

of social and family relationships (r=0.379, p=0.007). This suggests a medium strength relationship, with a 14.4% shared variance (Cohen, 1988). Table 6 displays these results.

No statistically significant results were found between the independent and dependent study variables. The planned hierarchical multiple regression was not run due to the absence of statistically significant relationships. Therefore, the hypothesis that housing stability, therapeutic relationship, access to health care and quality family and social relationships negatively predict substance use severity was not supported.

Table 6
Pearson r Correlation Coefficient between Continuous Independent Variables

Variable	1	2	3	4
1. Housing Stability	-	0.086	0.222	-0.107
2. Therapeutic Relationship with Worker	0.086	-	0.379**	-0.025
3. Quality of Social and Family Relationships	0.222	0.379**	-	-0.155
4. Substance Use Severity	-0.107	-0.025	-0.155	-

** p<0.01

Table 7
Independent Sample T-Tests Comparing Categorical Independent Variable Access to Health Care and Continuous Independent & Dependent Variables

Variable	Access to Care: No Regular Doctor Mean (*SD*)	Access to Care: Regular Doctor Mean (*SD*)	*T*	*DF*	Sig
Quality of Family and Social Relations	15.28(3.92)	13.78(3.69)	-1.412	61	0.163
Therapeutic Relationship with Worker	69.20(12.99)	69.56(11.30)	0.088	49	0.930
Housing Stability	26.25(15.65)	29.20(16.99)	0.628	63	0.533
Substance Use Severity	1.71(2.02)	1.96 (1.92)	0.459	63	0.648

Discussion

The purpose of this study was to explore the influence health and social systems have on substance use severity for individuals experiencing homelessness. The overall

hypothesis was not supported. However, this study found five statistically significant relationships amongst demographic and independent variables. These relationships can be categorized into different themes, including relationships found with substance use severity and addiction, access to health care, and the relationship between therapeutic relationship and quality of social and family relationships.

Relationships with Substance Use Severity and Addiction

The overall mean of substance use severity was 1.89, suggesting an average medium severity of substance use. This severity is consistent, although lower, than the Vancouver housing first site, where an average score of 2.1, or medium severity, was reported (Somers et al., 2013). Males had a greater severity of substance use than females, which has been reported in the homeless literature (Dietz, 2009).

This study did not find statistically significant relationships between substance use severity and elements of the health (access to health care, housing stability, therapeutic relationship) and social (quality of family and social relationships) systems. A variety of factors have been cited in the literature as relating to substance use, suggesting this population tends to be heterogeneous. Some of these factors include experiencing physical and mental health issues, emotional distress, traumatic childhoods and experiences of neglect, sexual and physical abuse (Burlingham, Peake-Andrasik, Larimer, Marlatt, & Spigner, 2010; Chambers et al., 2013; Collins et al., 2012; Dietz, 2009; Rhoades & Wenzel, 2013). Based on these previously cited factors, and the current findings from this study, it may be that substance use severity is unique to the individual, and generalizations cannot be made in regards to system influences.

Although severity of substance use was not associated with the number of weeks spent in stable housing in the previous year, perception of experiencing a current addiction was associated with experiencing more episodes of homelessness in the lifetime. Two key discussion points arise. Firstly, this suggests that perhaps with the support of a housing first, harm reduction program, there is no relationship between substance use severity and maintaining a home. With appropriate supports, individuals may be able to maintain their home regardless of how severe their substance use may be (Palepu, Patterson, Moniruzzaman, Frankish, & Somers, 2013; Somers, Moniruzzaman, & Palepu, 2015). Secondly, it may be proposed that having an addiction and experiencing housing instability occurred in a perpetual cycle prior to housing first support. This may explain why those with an addiction have experienced greater episodes of homelessness in their lifetime. The literature supports this perpetual cycle (Collins, 2013; Grinman et al., 2010; Morrell-Bellai, Goering, & Boydell, 2000; Khandor & Mason, 2007).

Interestingly, substance use severity was not related to the number of episodes of homelessness in lifetime, whereas having an addiction was. This implies that perhaps perception of addiction is more important to assess when examining the relationship between substance use and homelessness. A relationship between addiction and severity of substance use was also uncovered, suggesting those with lower severity of substance use may not identify as having an addiction. This further supports the idea that presence of addiction may be more important to assess, as it demonstrates that individuals with severe substance use will tend to self-identify as having an addiction.

Relationships with Access to Health Care

Seventy-four percent (73.8%) of the sample had a regular medical doctor. This is higher than studies done in Toronto, where 43% (Khandor et al., 2011) and 68% (Hwang et al., 2010) of homeless reported having one. The higher percentage in this study may be an outcome of housing first, where the aim is to shift care to community resources, to reduce hospital and emergency room usage (Goering et al., 2014).

Participants were less likely to have doctor if they were younger in age. Findings from Hwang et al. (2010) suggest younger individuals experience more unmet health care needs, implying decreased access to health care. Individuals who experienced their first episode of homelessness at an earlier age were also less likely to have a doctor. Previous research has shown experiencing first episode of homelessness at a younger age may lead to chronic homelessness (McDonald, Dergal, & Cleghorn, 2007; Patterson, Somers, & Moniruzzaman, 2012), which in turn may lead to a decreased likelihood of having a doctor (Khandor et al., 2011). One explanation for these findings suggests individuals become more entrenched in barriers that prevent them from accessing health care when they experience chronic and persistent homelessness beginning at an earlier age.

Because causation cannot be implied from correlation, another possible explanation could be primary care providers recognize homelessness risks. They may assist with addressing some of these needs, delaying the loss of a home. This could explain why older individuals experiencing homelessness for the first time were more likely to have a doctor. For example, they might help individuals meet their substance use, mental health, and family relationship goals, or help facilitate income by connecting with social services. All of these issues have been cited as pathways leading to

homelessness (Collins, 2013; Khandor & Mason, 2007; Lowe & Gibson, 2011; O'toole et al., 2004). However, this explanation should be viewed cautiously as it is merely a suggested explanation by the author.

Therapeutic Relationship and Quality of Family and Social Relationships

The current study suggests therapeutic relationship, is related to quality of family and social relationships. Similar results have previously been reported in the homeless population (Chinman, Rosenheck, & Lam, 1999; Stergiopoulos et al., 2014; Tsai, Lapidos, Rosenheck, & Harpaz-Rotem, 2013). A system lens would view this relationship as fluid, and more reciprocal than causal (Naaldenberg et al., 2009). Having better quality of relationships may allow individuals to feel more connected or have greater capacity to develop strong therapeutic relationships with primary care providers (Chinman et al., 1999; Tsai et al., 2013). It may also suggest that development of a therapeutic relationship helps improve relationships in other aspects of life. Through the development of a positive relationship, where care providers express empathy, engage in active listening, and provide non judgmental client centred care, clients may feel more comfortable improving other relationships in their lives (Davis et al., 2012; Redko, Rapp, Elms, Snyder, & Carlson, 2007; Tsai et al., 2013).

Limitations

This study has several limitations. Firstly, this secondary analysis was limited to using the variables and measures from the primary study. Secondly, the small sample size increased the chance of a Type II error as the statistical analyses were underpowered. Although there may have been significant relationships present, this may not have been detected. Thirdly, correlational analysis does not suggest causality, but simply suggests a

relationship exists. It is possible that other variables may be influencing the relationships, but were not included in the study. Fourthly, convenience sampling, is not representative of the population, therefore the external validity of this study is limited. The results should be interpreted cautiously when generalizing to the population of individuals experiencing homelessness and receiving support through a housing first program. Fifthly, the measurement of access to health only included a regular medical doctor as an indicator of increased access to health care. Other primary health care providers, such as nurse practitioners, were not included in the analysis of this measurement. Therefore, it can be assumed that this measurement is not a completely accurate portrayal of better access to health care. Finally, the data was based on self-reported data. It is quite possible that individuals under-reported their substance use.

Conclusions

Canadians experiencing homelessness often experience inequitable access to health care, housing instability and poor relationships with professionals, family and friends. Greater severity of substance use is often reported, leading to poorer health and earlier mortality. General System Theory allows substance use to be viewed within the context of an individual's system. There is an acknowledgment that substance use is influenced by health and social systems, and a rejection of the traditional belief that substance use disorder is primarily related to individual moral failure. This theory allows for an examination of how these poor health and social relationships influence the severity of substance use, permitting the identification of areas where health can be promoted and harms reduced. The overall study hypothesis that greater health (access to health care, housing stability, therapeutic relationship) and social (quality of relationships

with family and friends) system relationships would negatively predict severe substance use was not supported. Key limitations, such as small sample size, may have been a factor. Relationships were found between the following; current addiction and greater episodes of homelessness, being of a younger age currently, as well as during first episode of homelessness, and lack of a primary care provider, and stronger therapeutic relationship with health/social service provider and higher quality of family and friend relationships. An important implication stems from the findings that suggest a relationship exists between addiction and homelessness, but not severity and homelessness. This implies that presence of addiction may be more important to examine. These findings have practical implications for nurses when working with individuals experiencing homelessness. They also suggest a need for greater political support to address the needs of this population. Future research will allow for a deeper understanding of how General Systems Theory can uncover relationships that are negatively influencing substance use severity, and where harm reduction strategies can be implemented to promote the health of the most vulnerable Canadians.

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Chapter 3

Summary of Key Findings, Implications and Conclusion

Summary of Key Findings

Canada is currently experiencing a national homelessness crisis. Recently, the federal government has taken some ownership in addressing this socially unjust issue. There has been greater political support for strategies that address homelessness and the severity of substance use this population tend to experience. This includes housing first and harm reduction strategies, and a shift towards viewing substance use on a continuum. Research is needed to identify and address harms related to substance use severity for the most vulnerable. Overall, the study hypothesis that housing stability, therapeutic relationship with health/social service provider, access to health care and quality family and social relationships negatively predict substance use severity was not supported. However, other important findings and implications for the nursing practice, research and Canadian policy stem from this study.

Aspects of the health and social system were not found to have statistical significant relationships with the severity of substance use, for individuals experiencing homelessness. On average, individuals reported a medium severity of substance use. Participants who perceived themselves as having a current addiction, were more likely to have experienced homelessness a greater number of times in their lifetime. Presence of a current addiction was also associated with greater severity of substance use, as measured by the GAIN-SS. In regards to access to health care, younger individuals at the time of data collection, were less likely to have a regular primary care provider. As well, individuals who were younger during their first episode of homelessness were less likely

to currently have a regular primary care provider. In respect to the main study variables, a positive relationship was found between having a therapeutic relationship with a professional and quality of family and social relationships.

Implications for Nursing Practice

Nurses in all faucets of practice at some point will likely work with individuals experiencing homelessness in Canada. Some areas of nursing may allow for encounters to occur over a period of time, permitting the opportunity to build relationships. These practice areas may include community or mental health and addiction nursing (Lightfoot et al., 2009). Other areas may only foster short, albeit, frequent encounters, such as the Emergency Department (ED) (Khandor & Mason, 2007). Regardless of the practice area, findings from the current study have practical implications for nursing practice.

Substance Use Severity and Addiction

Participant's substance use was assessed through two different methods; severity of substance use, as measured by the GAIN-SS, and perception of having a current addiction, a yes/no response. Perception of having an addiction was associated with greater episodes of homelessness, however, severity of substance use was not. This finding suggests that perhaps it's the perception of having an addiction that is more important to assess when examining risk of homelessness, as opposed to the severity. In addition, individuals with greater severity of substance use were more likely to self identify as having an addiction. Therefore, it can be suggested that individuals recognize when their substance use is severe and tend to self-identify as having an addiction. This adds validity to the self-report of experiencing an addiction.

Nurses may choose to incorporate this finding into their assessment while working with individuals experiencing or at risk of homelessness. By simply asking individuals whether they feel they currently have an addiction, nurses may be able to also identify those at greater risk for housing instability. For those who identify as having an addiction, nurses may then pose open-ended questions to gain a better understanding of individual's lived experience of substance use. This may help guide the implementation of supports to assist these individuals in maintaining their home. In addition, it may help identify where individuals are at with their addiction, and whether they currently have any goals in regards to their substance use.

With that being said, it would be important for nurses to understand that substance use may become severe during episodes of homelessness, as demonstrated in previous studies (Baggett et al., 2013; Coffin et al., 2007; Fischer et al., 2004; Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009; Johnson & Chamberlain, 2008; Kerr et al., 2007; Marshall et al., 2011 Page, Thurston, & Mahoney, 2012). Individuals who identify as not having an addiction at one point in time, may go on to experience one at a later time. Therefore, perceived presence of addiction should be assessed regularly.

Therapeutic Relationship and Family and Social Relationships

This study found that individuals who had a strong therapeutic relationship with a health/social service provider were more likely to have quality family and friend relationships. A systems lens would suggest this relationship is more reciprocal than causal (Naaldenberg et al., 2009). Therefore, improving the therapeutic relationship may improve quality of family and social relationships, and vice versa. This has important implications for the nursing profession, as it suggests that by establishing a strong

therapeutic relationship with individuals experiencing homelessness, the quality of other relationships may improve as well, potentially leading to a better overall quality of life.

The College of Nurses of Ontario (2006) recognizes the therapeutic relationship as a responsibility of nurses to establish and maintain. Previous research has found that individuals experiencing homelessness have had negative encounters with health care professionals, where they've felt judged or treated poorly (Butters & Erickson, 2003; Crowe & Hardill, 1993; Khandor & Mason, 2007; Khandor et al., 2011; McDonald et al., 2007; Wen, Hudak, & Hwang, 2007). Nurses need to be aware that clients' perception of care providers may be negatively skewed due to these previous experiences. They may bring these preconceptions into current nurse-client encounters (Registered Nurses' Association of Ontario, 2002). Therefore, in order to establish a therapeutic relationship, nurses should focus on establishing trust (CNO, 2006). This may require frequent self-reflection and self-knowledge of the nurse's own values and life experiences. Using these techniques will aid in the delivery of consistent empathetic and nonjudgmental care (RNAO, 2002). These qualities have been cited by individuals experiencing homelessness in a previous study as contributing to the development of a positive relationship (Davis, Tamayo, & Fernandez, 2012). Using these strategies may allow for an opportunity for the therapeutic nurse-client relationship to develop, which in turn may assist with improving other relationships in the individual's life.

Implications for Nursing Research

Nurses have an ethical responsibility to support research that promotes competent care (Canadian Nurses Association, 2008). The findings from this study provide guidance for the nursing profession when working with individuals experiencing homelessness.

These practice implications need to be viewed cautiously, however, due to the limitations of the current study. Important limitations included the cross-sectional, correlational design, as well as the small sample size. Future research should incorporate a longitudinal design, in order to gain a better understanding of which variables are exerting a greater influence on others (Polit & Beck, 2012). This may reveal, for example, whether therapeutic relationship and relationships with family and friends are interrelated, or whether one has a greater influence on the other. Future studies should include a larger sample size that ideally aims for a power of 0.8 (Duffy, Munro, & Jacobsen, 2007). Greater statistical power may uncover relationships that this study may not have been able to detect (Polit & Beck, 2012). Specifically, there is a need to further explore the relationship between substance use severity and elements of health and social systems using a larger sample size.

General Systems Theory (GST) supports both quantitative and qualitative methods for exploration of relationships (Naaldenberg et al., 2009). A qualitative approach would allow for a deeper understanding of the system elements that may or may not be influencing substance use severity. Personal accounts of the affect of health and social systems on homeless individual's health will enhance dissemination of quantitative findings to policy makers (Raphael, 2012).

GST has been incorporated into the nursing profession, most commonly as family systems theory. It has been used in the conceptualization of families and as a guide for family nursing practice (Doane & Varcoe, 2005). GST has also formed the basis of substance use treatment (Lewis, Dana, & Blevins, 2014; Pichot & Smock, 2009; Stevens & Smith, 2009), as well as health promotion more broadly (Frohlich, Poland, & Shareck,

2012; Naaldenberg, 2009). However, no research was found that incorporates GST as a framework for exploring relationships that are influencing substance use severity. Future research should consider using this framework. This will provide better insight into whether this theory helps explain the influences on substance use severity in the homeless population.

Implication for Policy

Nurses have an ethical responsibility to advocate for social justice and promote change in systems that maintain social inequities (CNA, 2008). This includes recognizing and addressing policies that affect the health of Canadians (CNA, 2008). The current study suggests housing first programs may provide appropriate support, regardless of the severity of substance use. It also suggests access to health for the younger population experiencing homelessness or who are at risk for homelessness needs improvement. Finally, this study suggests the importance of fostering therapeutic relationships, as this may also improve social and family relationships for these vulnerable Canadians.

The findings from this study are consistent with the philosophical beliefs that housing is a right (Padgett, Gulcur, & Tsemberis, 2006). No relationship was found between substance use severity and housing stability. This suggests with the support of housing first, individuals are able to maintain their homes regardless of extent of substance use. The previous Conservative government committed funding to housing first in Canada (Government of Canada, 2013). The newly elected Liberal government has promised to do more by providing the needed funding to municipalities for these initiatives (Liberal Party of Canada, 2015). Nurses should remain vocal in their advocacy

for these programs and continue to write letters to the municipal, provincial and federal government to convey the importance of prioritizing these issues.

Findings from this study suggest younger individuals may have decreased access to health care, as they were less likely to have a community care provider. Those who experienced homelessness at a younger age were also less likely to currently have a community care provider. There is a need to address the health care barriers the younger population experiences. Nurse Practitioners (NPs) increase access to primary health in settings such as community health centres and nurse practitioner-led clinics (CNA, 2009). NPs may be able to connect with youth or younger adults experiencing homelessness through youth drop in centres. Providing outreach clinics at these centres or emergency shelters with a specific focus on younger adults, may help increase access to health care for this population. Specifically, this strategy may help address lack of transportation, a previously cited barrier to accessing care (Mcdonald, Dergal, & Cleghorn, 2007). Providing outreach clinics to these settings may require increased advocacy on the part of nurses and NPs at the community and provincial levels. Re-allocation of resources at community centres, and increased funding from the provincial government to community primary care may allow for improved access to health care for these vulnerable individuals. The unmet health care needs the younger homeless tend to experience, as reported in previous studies, may then begin to be addressed (Argintaru et al., 2013; Hwang et al., 2010).

Finally, this study found that a strong therapeutic relationship is related to increased quality of relationships with family and friends. Settings that provide the opportunity for therapeutic relationships to develop with this often hard to reach

population should also be a consideration for improving their health. Harm reduction programs specifically allow for a unique opportunity for nurses to connect with individuals often experiencing both homelessness and severe substance use (Wood et al., 2006). There is currently a law in Canada that poses barriers for implementation of harm reduction programs, specifically supervised injection sites. The Respect for Communities Act (Bill C-2) was passed by parliament in 2015 (Parliament of Canada, 2015). With the change in federal government, nurses have the opportunity to advocate for the amendment of this law to allow for easier implementation of these harm reduction programs. This would allow for more settings where nurses can connect with and establish therapeutic relationships with individuals experiencing homelessness and severe substance use. In turn, the development of these therapeutic relationships may lead to an increased quality of life, through increased quality of family and social relationships.

Conclusions

Findings from this study support a variety of promising implications for nursing practice, future research, and Canadian policy. Nursing practice suggestions involve the following; perceived addiction assessment when examining risk of homelessness and implementation of strategies that promote establishment of therapeutic relationship, which in turn may help improve family and social relationships. Future research should build on the limitations of this study. For example, larger sample size, longitudinal design and mixed methods approach would substantiate these findings. General System Theory should be used as the guiding theoretical framework to gain a better understanding whether this theory is useful to describe relationships influencing substance use severity. There is a need to increase access to health care, specifically to younger individuals

experiencing homelessness. Nurses can advocate for funding that allows Nurse Practitioners to participate in outreach clinics to increase access to care. The newly elected Canadian Liberal government needs to act on its proclaimed support for housing first and harm reduction. Nurses should remain vocal advocates for these programs, which will provide practice settings for nurses to build relationships, increase access to health care and help address the harms of substance use for individuals experiencing homelessness.

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Appendices

Appendix A
Variable and Instrument Summary

Table A1
Variable Description and Instrument

Variable	Description	Instrument	Source	Psychometric
Demographic	Sample characteristics	Demographic Form	In house tool	
Housing stability	Sum of weeks spent in housing in previous year Continuous scale Greater sum = greater housing stability	Housing History Survey	Forchuk, Csiernik, & Jensen, 2011	Time-line follow-back residence instrument (Tsemberis et al., 2007) Test-retest: r=0.59-0.93 Concurrent validity
Therapeutic relationship	Sum of 3 subscales (goals, tasks & bonds) Continuous scale Higher score = stronger therapeutic relationship	Working Alliance Inventory-Participant Version	Horvath & Greenberg, 1986	α= 0.90-0.92 Construct validity Predictive validity
Access to health care	yes/no response to if they have a regular doctor Categorical Yes response = increased access to health care	ACCESS	Goering et al., 2011	No α reported Face validity
Quality of	Sum of mean of	Lehman Quality	Lehman,	α= 0.63-0.92

social & family relationships	subscales (satisfaction & contact frequency with family & social relations) Continuous scale Higher score = better social and family relations	of Life: Brief Version	Kernan, & Postrado, 1995	Construct validity
Severity of substance use	Sum of 5-item subscale Continuous Scale Higher scores = greater severity of substance use in past month 3-5: Severe 1-2: Medium 0: Low	Global Assessment of Individual Needs Substance Problems Scale (GAIN-SPS)	Dennis, Chan, & Funk, 2006	α= 0.96 Construct validity

Appendix B
Missing Data

Table B1
Count & Percentage of Missing Values for Continuous Variables

Variable	Missing	
	Count	Percent
Number of Times Homeless	11	16.9
Age When First Homeless	4	6.2
Housing Stability	1	1.5
Therapeutic Relationship	20	30.8
Quality of Relationships	4	6.2

Note: This table only includes continuous variables that had missing data. Continuous variables with no missing data are not listed.

Table B2
Individual Cases with Missing Values

Missing Patterns (cases with missing values)

Case	# Missing	% Missing	Missing and Extreme Value Patterns[a]					
			GAIN Substance Use Problem Scores	Number of Weeks Spent in Stable Housing	Age When First Homeless	Quality of Family and Social Relationship Scores	Number of Times Homeless	Working Alliance Inventory Scores
1	1	16.7					S	
3	1	16.7					S	
7	1	16.7					S	
14	1	16.7					S	
21	1	16.7					S	
24	1	16.7					S	
39	1	16.7					S	
50	1	16.7					S	
35	2	33.3					S	S
15	2	33.3					S	S
22	1	16.7						S
9	1	16.7						S
25	1	16.7						S
26	1	16.7						S
27	1	16.7						S
31	1	16.7						S
33	1	16.7						S
19	1	16.7					+	S
37	1	16.7						S
41	1	16.7						S

42	1	16.7						S
47	1	16.7						S
58	1	16.7						S
62	1	16.7						S
65	1	16.7						S
20	2	33.3			S			S
61	1	16.7			S			
5	1	16.7				S		
4	1	16.7				S		
34	1	16.7				S		
56	4	66.7			S	S	S	S
32	3	50.0		S	S			S

- indicates an extreme low value, while + indicates an extreme high value. The range used is (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

a. Cases and variables are sorted on missing patterns.

Table B3

Relationships Between Variable Missing Values

Separate Variance t Tests[a]

		Number of Times Homeless	Age When First Homeless	Number of Weeks Spent in Stable Housing	Working Alliance Inventory Scores	Quality of Family and Social Relationship Scores	GAIN Substance Use Problem Scores
Number of Times Homeless	t	.	.2	1.8	-.2	2.7	-.6
	df	.	13.5	13.5	9.5	12.8	12.7
	P(2-tail)	.	.859	.100	.855	.020	.550
	# Present	54	51	53	37	51	54
	# Missing	0	10	11	8	10	11
	Mean(Present)	4.13	27.80	30.2206	67.92	14.7990	1.81
	Mean(Missing)	.	27.00	19.8182	69.00	11.4500	2.27
Age When First Homeless	t	2.2	.	.2	.	-1.3	8.1
	df	6.4	.	2.2	.	3.7	60.0
	P(2-tail)	.068	.	.870	.	.262	.000
	# Present	51	61	61	44	58	61
	# Missing	3	0	3	1	3	4
	Mean(Present)	4.27	27.67	28.5195	67.84	14.1853	2.02
	Mean(Missing)	1.67	.	26.6667	80.00	15.5000	.00
Working Alliance Inventory Scores	t	1.2	-.8	.0	.	-1.3	1.8
	df	39.2	23.6	28.8	.	41.3	46.1
	P(2-tail)	.249	.408	.965	.	.205	.074
	# Present	37	44	45	45	42	45
	# Missing	17	17	19	0	19	20
	Mean(Present)	4.68	26.66	28.4976	68.11	13.8552	2.16
	Mean(Missing)	2.94	30.29	28.2789	.	15.1228	1.30
Quality of Family and Social Relations	t	.4	4.3	-.2	-1.0	.	-.1
	df	6.4	3.7	3.4	2.5	.	3.2
	P(2-tail)	.694	.014	.888	.422	.	.932
	# Present	51	58	60	42	61	61
	# Missing	3	3	4	3	0	4
	Mean(Present)	4.16	28.40	28.3448	67.69	14.2500	1.89
	Mean(Missing)	3.67	13.67	29.7500	74.00	.	2.00

For each quantitative variable, pairs of groups are formed by indicator variables (present, missing).

a. Indicator variables with less than 5% missing are not displayed.

Table B4
EM Correlations & Little's MCAR Test

EM Correlations[a]

	Number of Times Homeless	Age When First Homeless	Number of Weeks Spent in Stable Housing	Working Alliance Inventory Scores	Quality of Family and Social Relationship Scores	GAIN Substance Use Problem Scores
Number of Times Homeless	1					
Age When First Homeless	-.283	1				
Number of Weeks Spent in Stable Housing	-.187	.035	1			
Working Alliance Inventory Scores	.149	.007	.017	1		
Quality of Family and Social Relationship Scores	-.080	.074	.223	.356	1	
GAIN Substance Use Problem Scores	-.263	.027	-.111	.008	-.148	1

a. Little's MCAR test: Chi-Square = 30.981, DF = 33, Sig. = .568

Table B5
Summary of Missing Data & Imputation Techniques for Continuous Variables

Variable	*N* Before Imputation	Imputation Method	*N* After Imputation	Comments
Age	65	N/A	N/A	
Number of Times Homeless	54	median	65	
Age When First Homeless	61	mean	64	1remained missing due to no hx of homelessness
Housing Stability	64	mean	65	
Therapeutic Relationship	45	median	51	8 remained missing due to indicating they had no relationship with a worker; 6 remained missing due to missing 2 items on 4 item subscale
Quality of Relationships	61	mean	63	2 remained missing due to missing 2 items on 2 item subscale
Substance Use Severity	65	N/A	N/A	

Appendix C
Continuous Variable Box Plots

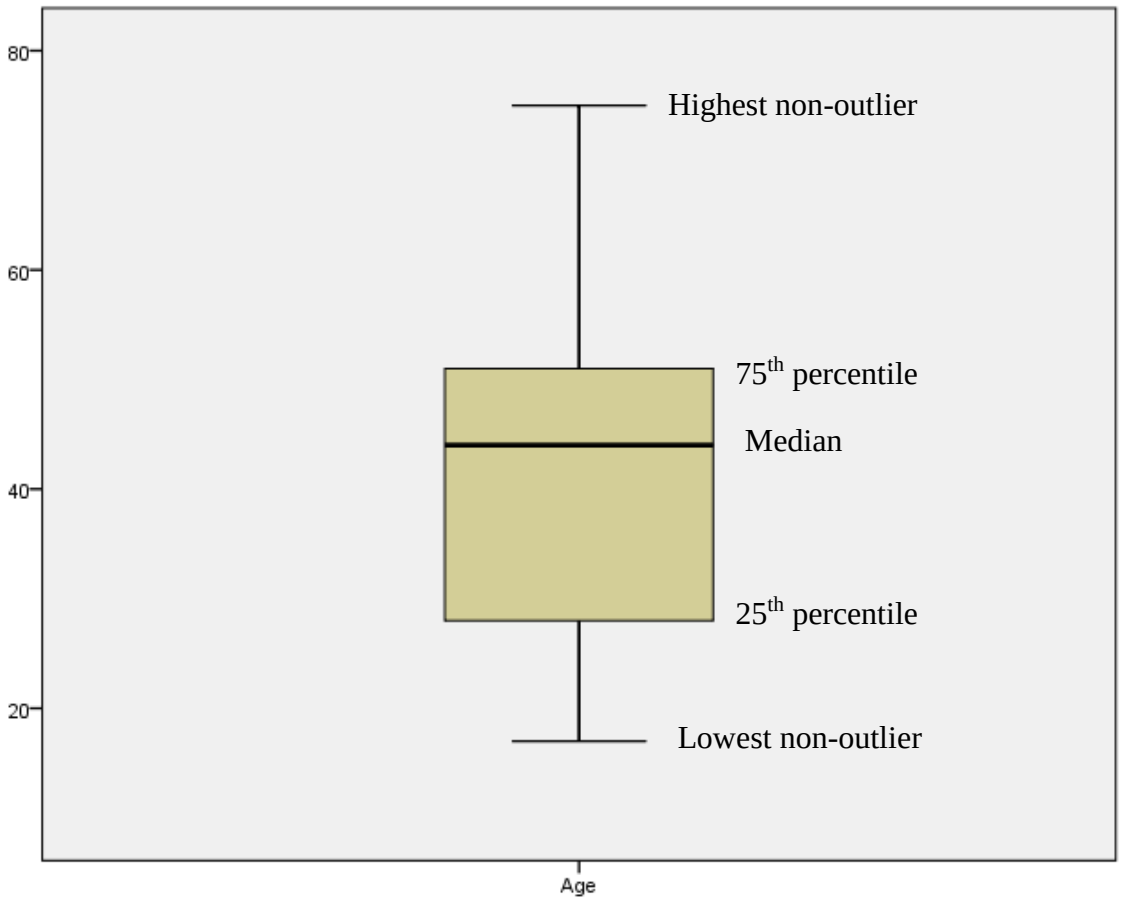

Figure C1. Box plot outlining the distribution of participant age. No outliers have been identified.

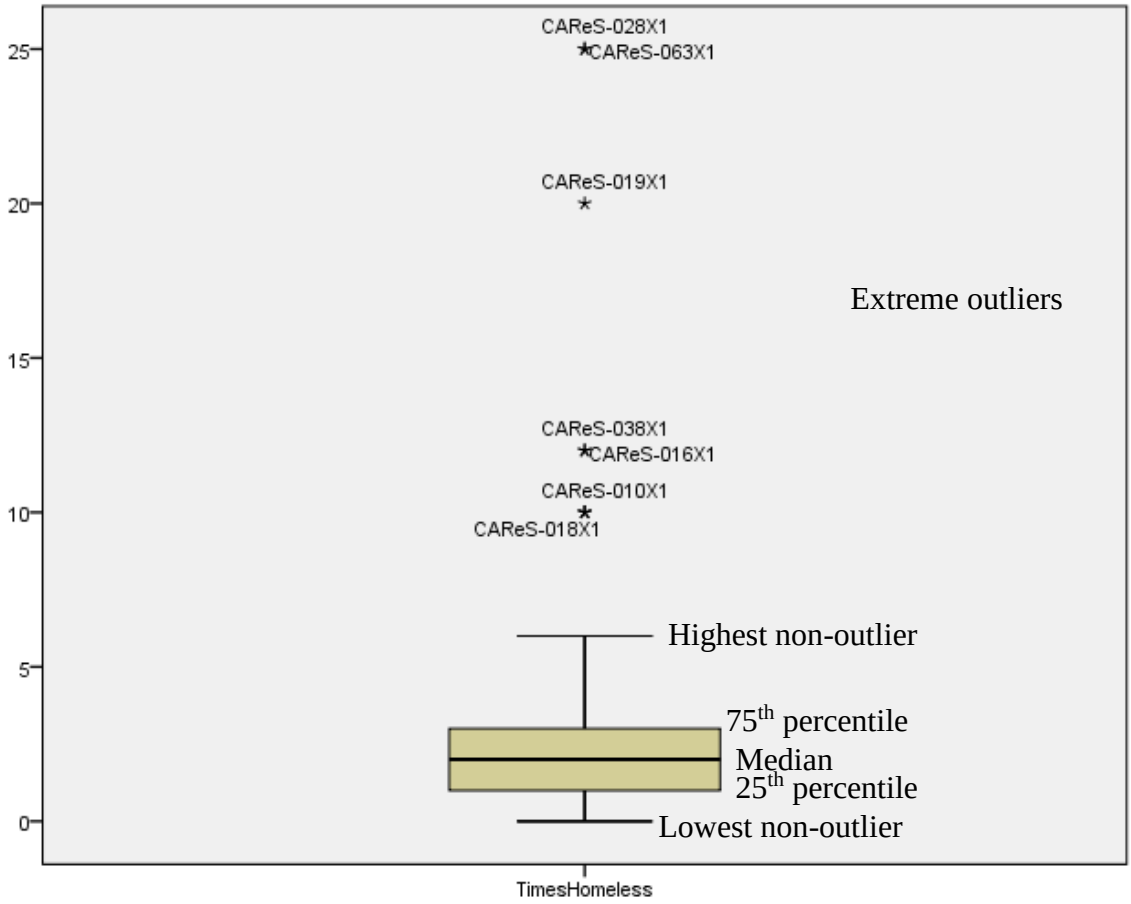

Figure C2. Box plot outlining the distribution of number of times homeless, before alteration of outliers. Extreme outliers have been identified.

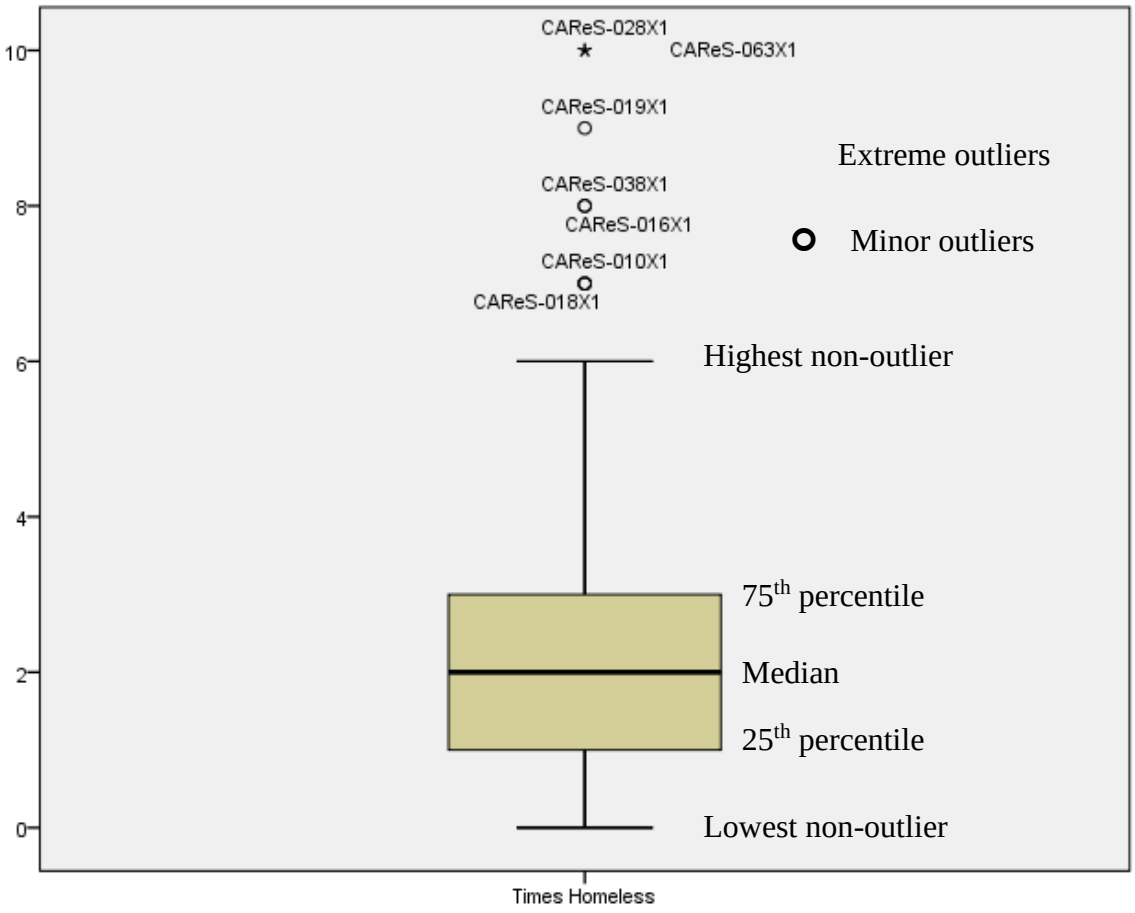

Figure C3. Box plot outlining the distribution of number of times homeless, after alteration of outliers. Minor and extreme outliers have been identified.

Table C1
The Influence of Outliers on Number of Times Homeless Descriptives

Statistic	Outliers Included	Outliers Removed	Outliers Altered
N	65	57	65
Mean	3.77	2.12	2.88
Median	2.00	2.00	2.00
Mode	1	1	1
SD	5.11	1.32	2.41
Skewness	2.98	1.11	1.52
Kurtosis	9.24	0.70	1.57

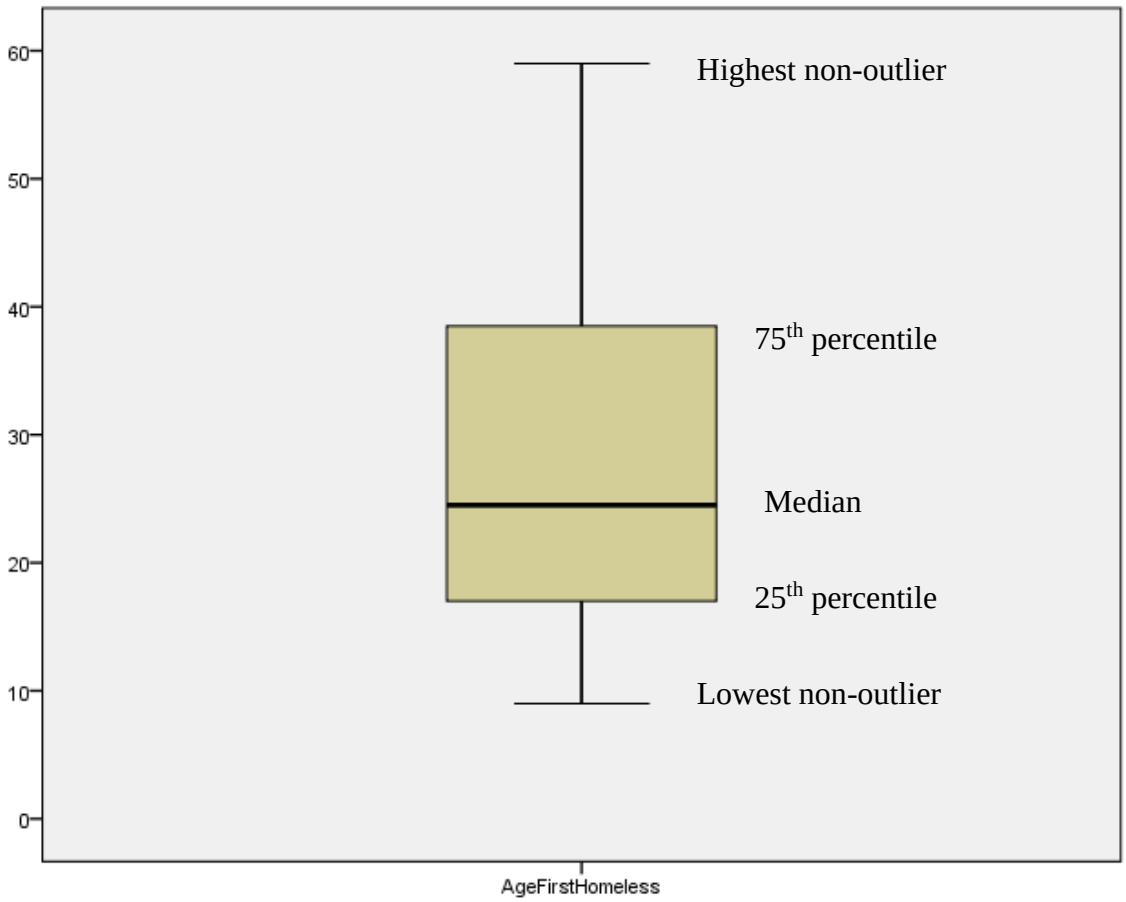

Figure C4. Box plot outlining the distribution of age when first homeless. No outliers have been identified.

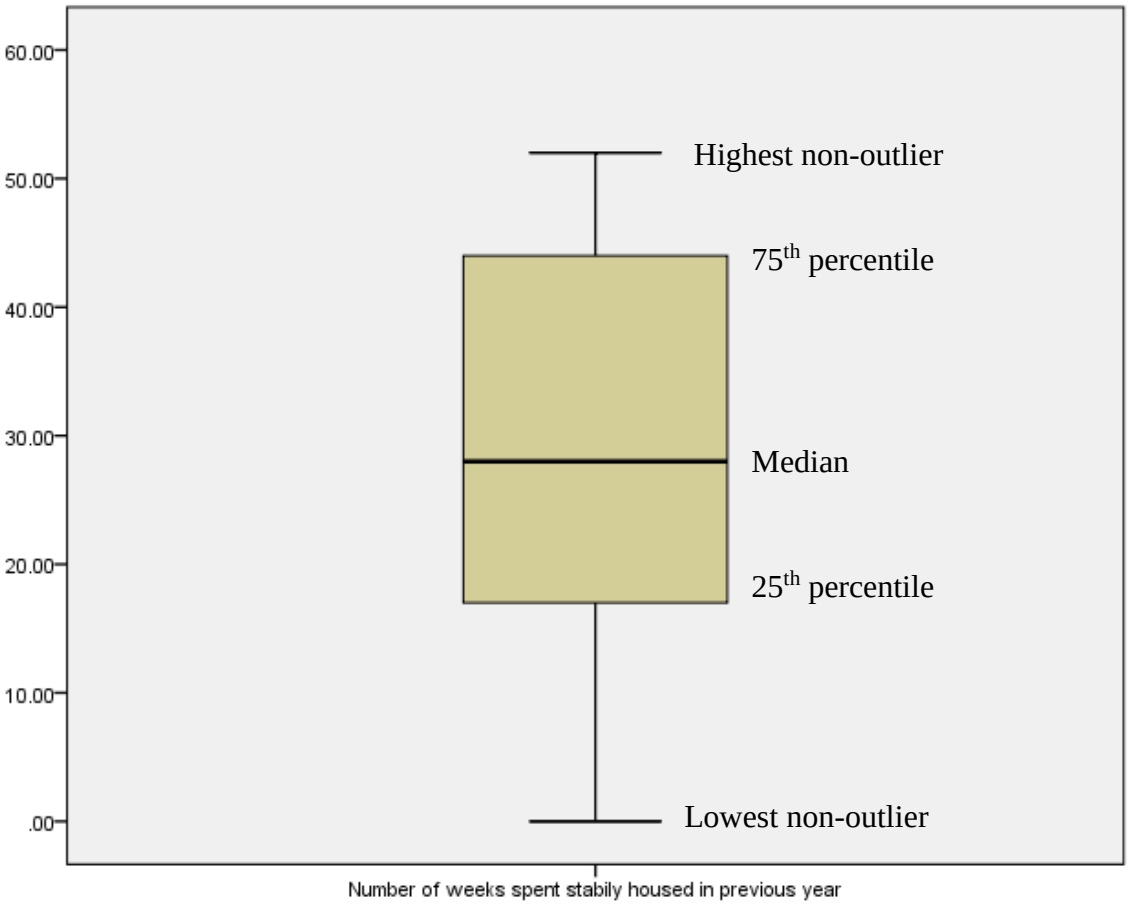

Figure C5. Box plot outlining the distribution of number of weeks spent in stable housing in previous year. No outliers have been identified.

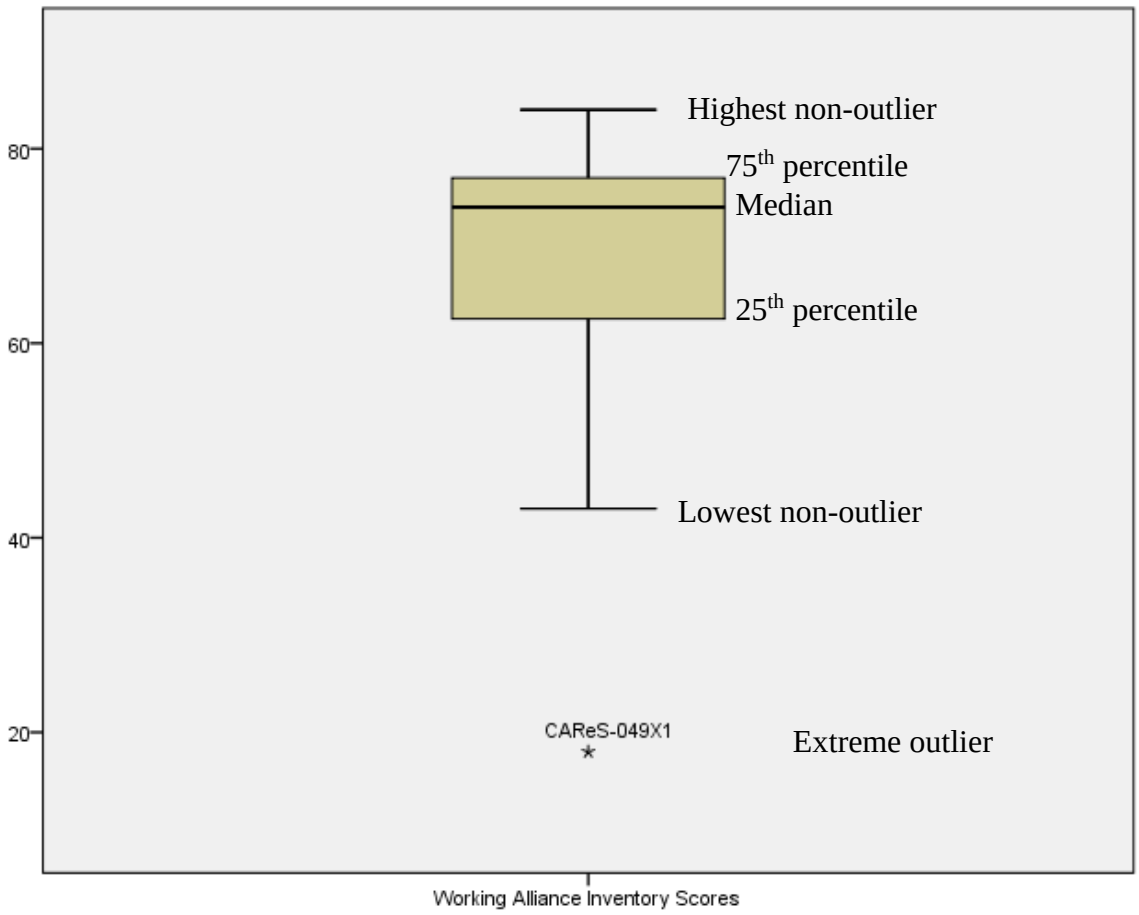

Figure C6. Box plot outlining the distribution of Working Alliance Inventory scores, before alteration of outliers. An extreme outlier has been identified. Higher scores indicate stronger therapeutic relationship.

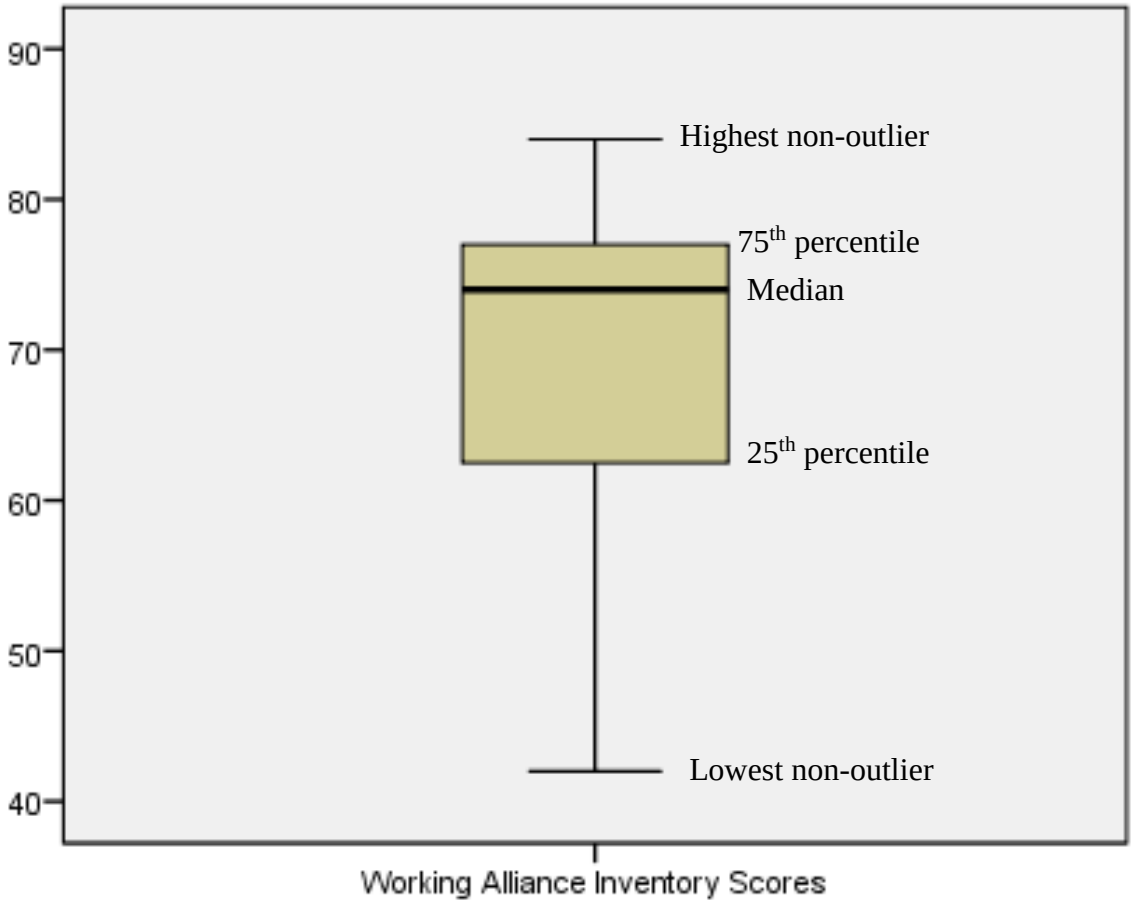

Figure C7. Box plot outlining the distribution of Working Alliance Inventory scores, after alteration of outliers. No outliers have been identified. Higher scores indicate stronger therapeutic relationship.

Table C2
The Influence of Outliers on Working Alliance Inventory Score Descriptives

Statistic	Outliers Included	Outliers Removed	Outliers Altered
N	51	50	51
Mean	69.02	70.04	69.49
Median	74.00	74.00	74.00
Mode	75	75	75
SD	13.04	10.93	11.51
Skewness	-1.55	-0.82	-0.84
Kurtosis	3.45	-0.113	-0.14

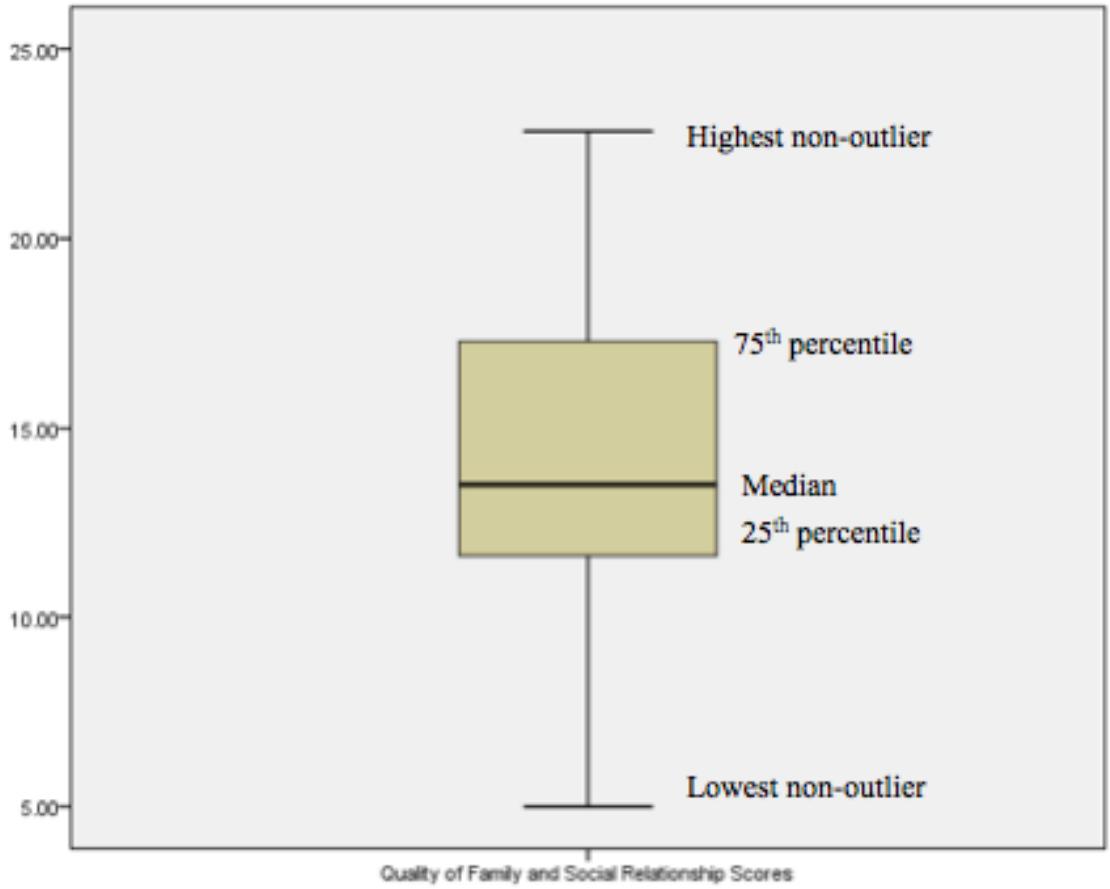

Figure C8. Box plot outlining the distribution of Quality of Family and Social Relationship scores. No outliers have been identified. A higher score indicates a higher quality of family and social relationships.

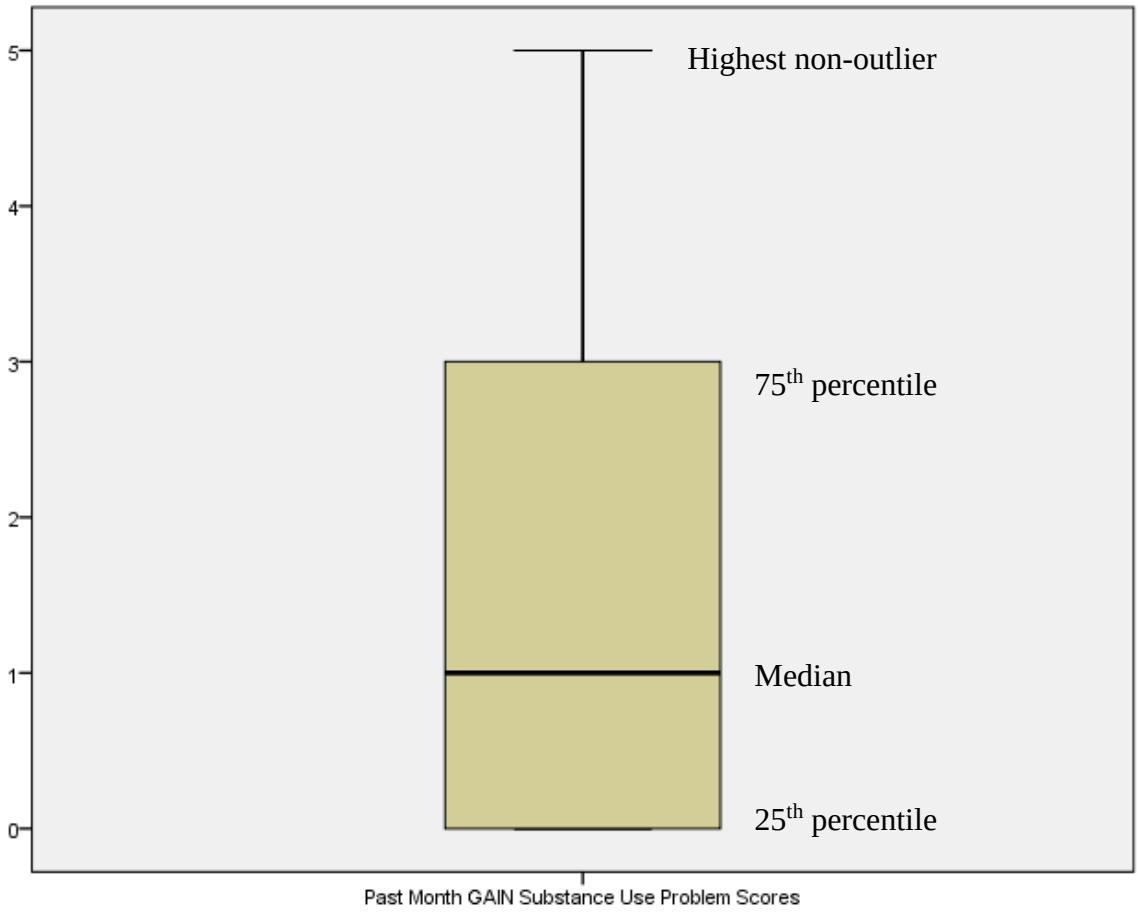

Figure C9. Box plot outlining the distribution of past month GAIN Substance Use Problem scores. No outliers have been identified. A higher score indicates greater severity of substance use.

Appendix D
Continuous Variable Descriptives and Histograms

Table D1
Continuous Variable Descriptives

Variable	Statistic						
	N	*M*	*Mdn*	Mode	*SD*	Skewness	Kurtosis
Age[a]	65	41.26	44.0	51	14.40	0.14	-1.04
Number of Times Homeless	65	2.88	2.00	1	2.41	1.52	1.57
Age When First Homeless[a]	64	28.06	24.5	30	13.45	0.72	-0.62
Housing Stability[a]	65	28.43	28.00	52	16.58	-0.04	-1.09
Therapeutic Relationship[a]	51	69.49	74.00	75	11.51	-0.84	-0.14
Quality of Relationships[a]	63	14.19	13.5	12.75	3.78	0.096	-0.302
Substance Use Severity[a]	65	1.89	1.00	0	1.94	0.57	-1.20

[a]considered normally distributed.

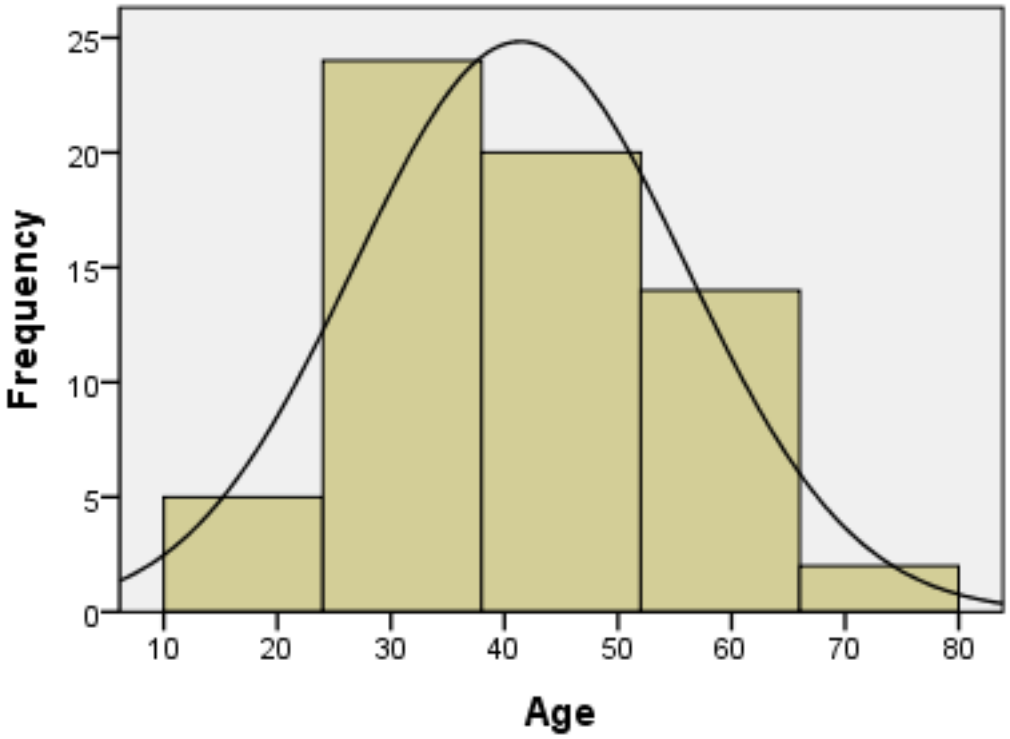

Figure D1. Histogram displaying frequency of participant age.

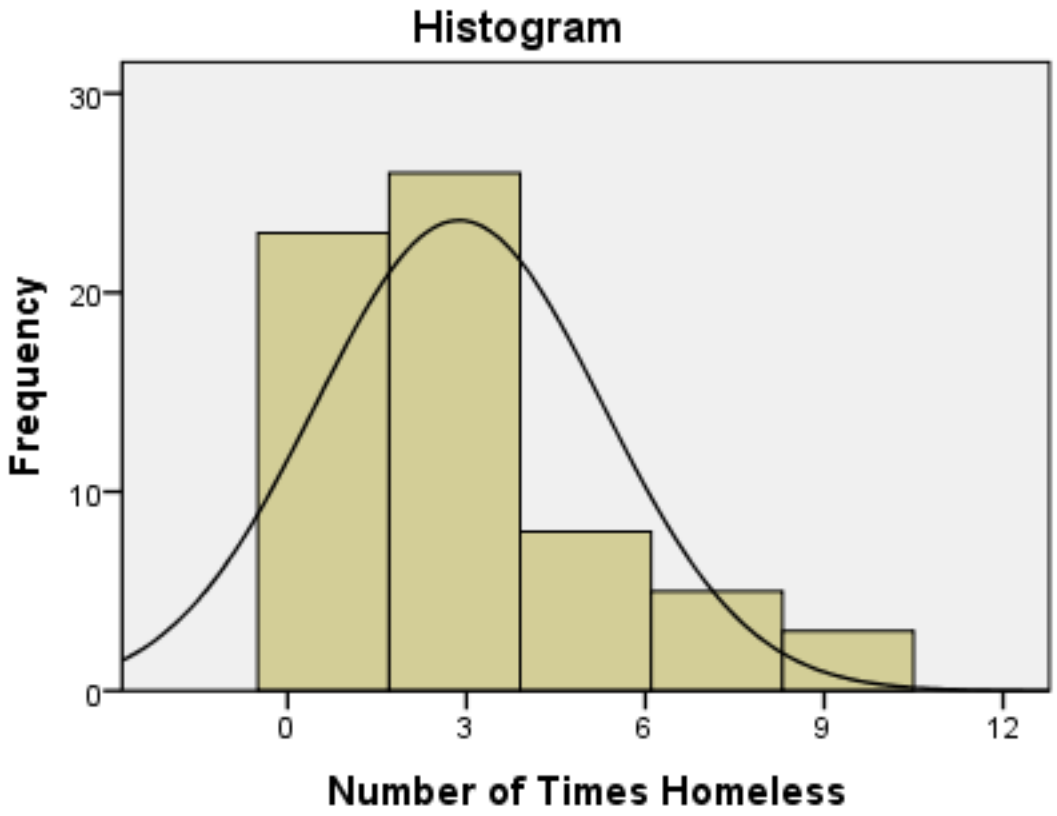

Figure D2. Histogram displaying frequency of number of times homeless, after alteration of outliers.

Figure D3. Histogram displaying frequency of age when first homeless.

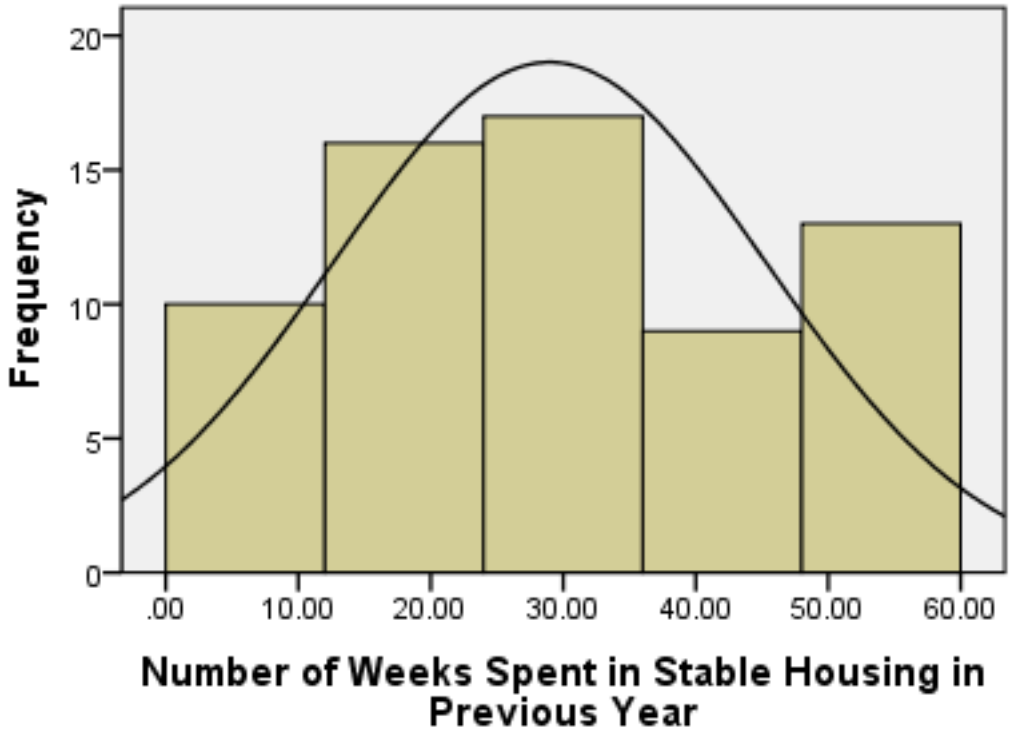

Figure D4. Histogram displaying frequency of number of weeks spent in stable housing in previous year.

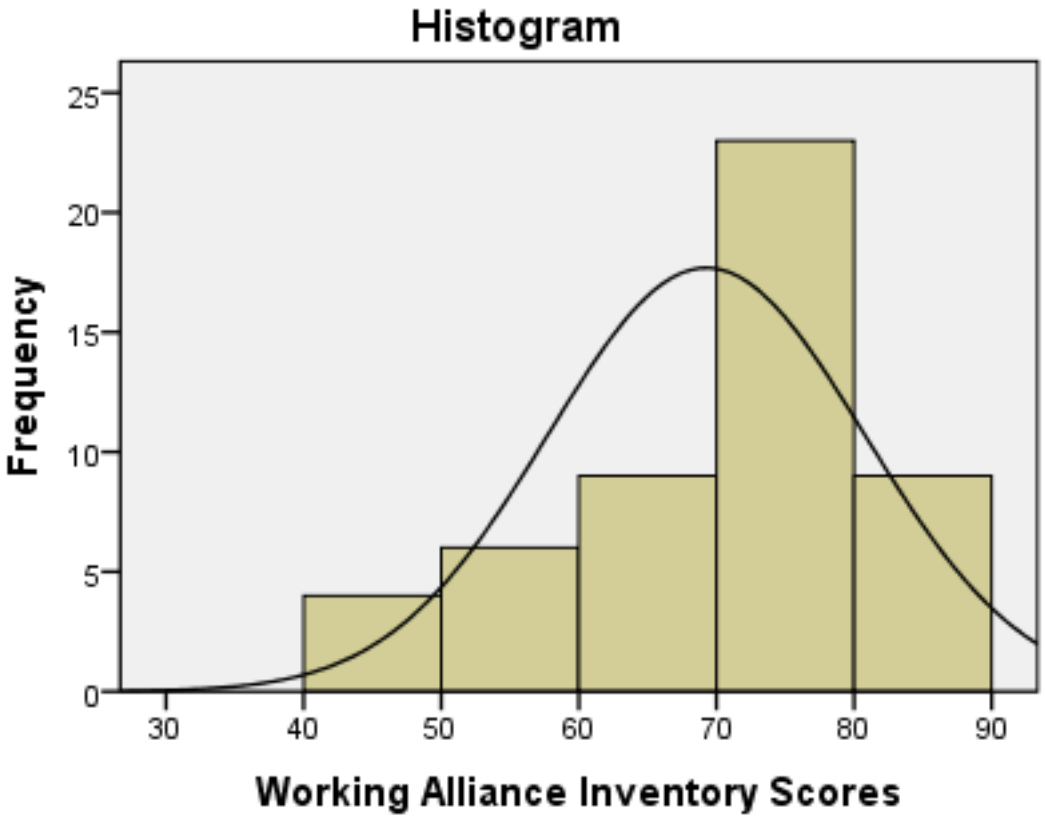

Figure D5. Histogram displaying frequency of Working Alliance Inventory scores, after alternation of outliers. Working Alliance Inventory scores represent therapeutic relationship. Higher scores indicate stronger therapeutic relationship.

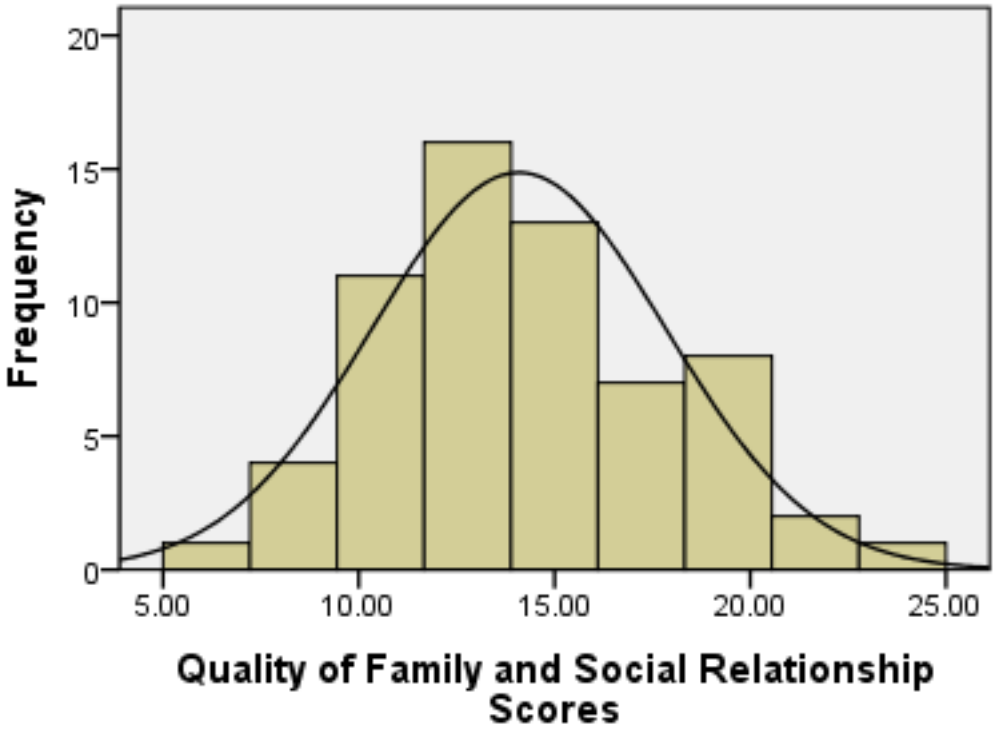

Figure D6. Histogram displaying frequency of Quality of Family and Social Relationship scores. Scores represent contact and subjective feelings toward relationships with family and friends. A higher score indicates a higher quality of family and social relationships.

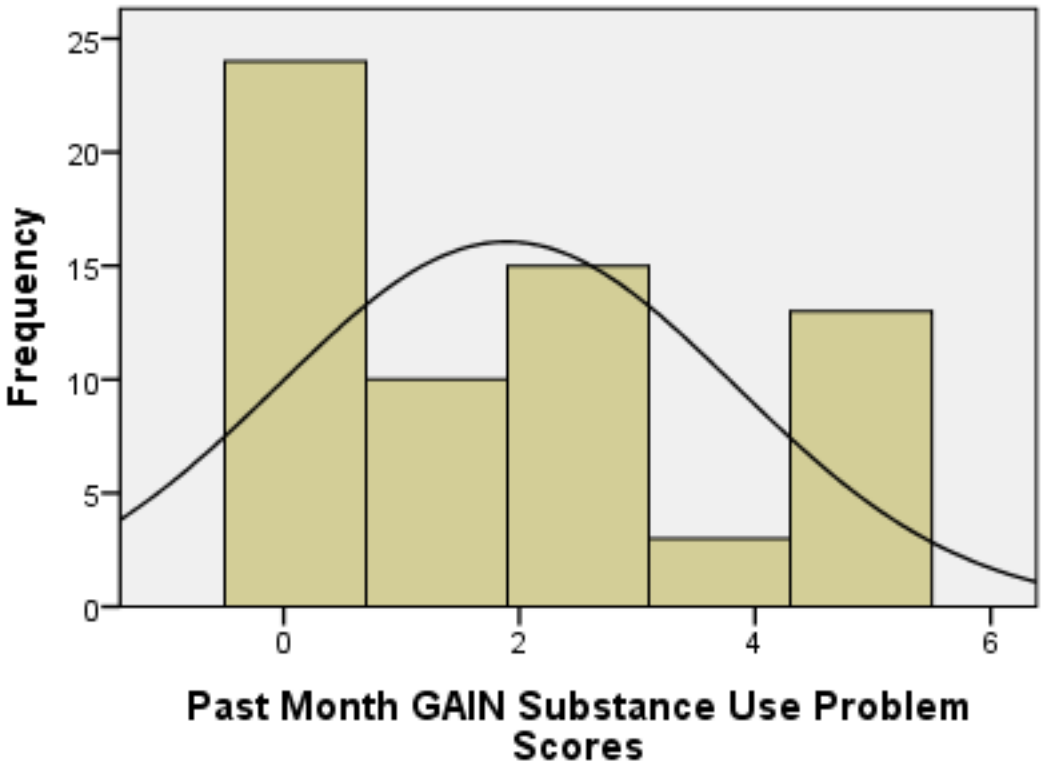

Figure D7. Histogram displaying frequency of past month GAIN Substance Use Problem scores. A higher score indicates greater severity of substance use.

Appendix E
Continued Sample Characteristics

Table E1
Continued Sample Characteristics

Characteristic	Frequency	Percent
Currently Employed		
No	60	92.3
Yes	5	7.7
Mental Health Diagnoses		
Substance/Addiction issues	36	55.4
Mood disorder	31	47.7
Anxiety disorder	22	33.8
Disorder of childhood/adolescence	16	24.6
Schizophrenia	11	16.9
Post-traumatic stress disorder	9	13.8
Personality disorder	6	9.2
Other/Unknown	2	3
Has Had Past Substance/Addiction Issues		
Yes	52	80
No	12	18.5
Past Substance/Addiction Issues		
Tobacco	32	49.2
Alcohol	30	46.2
Prescription drugs	25	38.5
Cocaine	23	35.4
Marijuana	23	35.4
Caffeine	13	20
Heroin	12	18.5
Hallucinogens	10	15.4
Other	10	15.4

Appendix F
Non-Statistically Significant Relationships Between Study Variables and Demographic Statistics

Table F1
Pearson r Correlation Coefficient between Normally Distributed Continuous Descriptive and Independent/Dependent Variables

Descriptive Variables	Statistic	Independent/Dependent Variables			
		Housing Stability	Therapeutic Relationship with Worker	Quality of Social and Family Relationships	Substance Use Severity
Age	Pearson	0.009	-0.124	0.179	-0.082
	Sig. (2 Tailed)	0.945	0.385	0.160	0.514
	N	65	51	63	65
Age When First Homeless	Pearson	0.022	-0.026	0.121	0.008
	Sig. (2 Tailed)	0.862	0.856	0.349	0.953
	N	64	51	62	64

Table F2
Spearman Rho Correlation Coefficient between Skewed and Ordinal Descriptive and Independent/Dependent Variables

Descriptive Variables	Statistic	Independent/Dependent Variables			
		Housing Stability	Therapeutic Relationship with Worker	Quality of Social and Family Relationships	Substance Use Severity
Number of Times Homeless	Spearman Rho	-0.109	-0.001	-0.107	-0.147
	Sig. (2 Tailed)	0.389	0.996	0.405	0.244
	N	65	51	63	65
Level of Education	Spearman Rho	-0.147	-0.088	-0.082	-0.056
	Sig. (2 Tailed)	0.244	0.539	0.523	0.655
	N	65	51	63	65

Table F3

Mann-Whitney U Test comparing Independent Categorical Variable Access to Health Care and Skewed Descriptive Variable Number of Times Homeless

Variable	Access to Health Care: No Regular Doctor Mean Rank	Access to Health Care: Regular Doctor Mean Rank	Mann-Whitney U	*Z*	Sig
Number of Times Homeless	39.88	30.56	291	-.801	0.072

Table F4
Independent Sample T-Tests Comparing Categorical Descriptive Variables and Continuous Independent and Dependent Variables

Variable	Male Mean (*SD*)	Female Mean (*SD*)	*T*	*DF*	Sig
Quality of Family and Social Relations	14.11(3.82)	14.34(3.79)	-0.22	61	0.825
Therapeutic Relationship with Worker	68.06(11.85)	72.93(10.17)	-1.392	49	0.170
Housing Stability	29.57(17.04)	26.21(15.79)	0.772	63	0.443
Variable	Current Addiction Mean (*SD*)	No Current Addiction Mean (*SD*)	*T*	*DF*	Sig
Quality of Family and Social Relations	13.92(3.76)	15.28(3.98)	1.11	60	0.271
Therapeutic Relationship with Worker	69.18(11.33)	75.17(9.87)	1.23	48	0.225
Housing Stability	28.33(16.39)	29,18(18.56)	0.162	62	0.872
Age When First Homeless	27.02(12.61)	31.67(16.35)	1.084	61	0.283
Variable	European Mean (*SD*)	Non-European (Aboriginal, Visible Minority, Mixed) Mean (*SD*)	*T*	*DF*	Sig
Substance Use Severity	2(1.915)	1.56(2.032)	0.782	63	0.437
Quality of Family and Social Relations	13.71(3.21)	15.58(4.97)	-1.404	19.43	0.176
Therapeutic Relationship with Worker	70.65(10.59)	66.43(13.59)	1.173	49	0.246
Housing Stability	27.56(16.75)	31.09(16.29)	-0.736	63	0.465
Variable	Separated/Divorced/Widowed Mean (*SD*)	Single/Never Married Mean (*SD*)	*T*	*DF*	Sig
Substance Use Severity	1.8(2.09)	2.05(1.90)	-0.464	60	0.644

Quality of Family and Social Relations	15.07(3.80)	13.50(3.57)	1.544	58	0.128
Therapeutic Relationship with Worker	67.07(11.15)	70.21(11.79)	-0.871	46	0.388
Housing Stability	24.25(17.87)	29.93(15.04)	-1.308	60	0.196

Table F5

Chi Square Between Categorical Independent Variable Access to Health Care and Categorical Descriptive Variables

Variable	Access to Care: No Regular Medical Doctor	Access to Care: Regular Medical Doctor	X^2	Sig
Male	11(25.6%)	32(74.4%)	0.00[a]	1.00
Female	6(27.3%)	16(72.7%)		
Variable	Access to Care: No Regular Medical Doctor	Access to Care: Regular Medical Doctor	X^2	Sig
Current Addiction	12(23.5%)	39(76.5%)	0.542[b]	0.461
No Current Addiction	5(38.5%)	8(61.5%)		
Variable	Access to Care: No Regular Medical Doctor	Access to Care: Regular Medical Doctor	X^2	Sig
European	11(22.4%	38(77.6%)	0.743[b]	0.389
Non-European (Aboriginal, other visible minority, mixed)	17(26.2%)	48(73.8%)		
Variable	Access to Care: No Regular Medical Doctor	Access to Care: Regular Medical Doctor	X^2	Sig
Separated/Divorced/Widowed	4(20.0%)	16(80.0%)	0.520[a]	0.471
Single/Never Married	16(25.8%)	46(74.2%)		
Variable	Access to	Access to	X^2	Sig

	Care: No Regular Medical Doctor	Care: Regular Medical Doctor		
Grade School	9(34.6%)	17(65.4%)		
High School	7(25.9%)	20(74.1%)	2.938[c]	0.230
Community College/University	17(26.2%)	48(73.8%)		

[a]Pearson Chi-Square was used.
[b] Yates' Continuity Correction was used as 1 cell (25.0%) had an expected count less than 5.
[c]Pearson Chi-Square was used; 1 cell (16.7%) had an expected count less than 5.

Table F6
Analysis of Variance Comparing Categorical Descriptive Variable Level of Education and Continuous Independent and Dependent Variables

Variable	Sum of Squares	*DF*	Mean Square	*F*	Sig
Substance Use Severity					
Between Groups	.951	2	0.476	0.123	0.884
Within Groups	239.295	62	3.860		
Total	240.246	64			
Quality of Family & Social Relationships					
Between Groups	10.167	2	5.083	0.348	0.707
Within Groups	876.343	60	14.606		
Total	886.510	62			
Therapeutic Relationship with Worker					
Between Groups	49.885	2	24.943	0.182	0.834
Within Groups	6568.860	48	136.851		
Total	6618.745	50			
Housing Stability					
Between Groups	373.544	2	186.772	0.672	0.514
Within Groups	17 220.461	62	277.749		
Total	17 594.005	64			

Curriculum Vitae

Sommer Froats

Post-secondary Education and Degrees:	University of Western Ontario London, Ontario, Canada 2007-2011 BScN
Honours and Awards:	Clinical Nurse Specialist Interest Group Student Award, Registered Nurses' Association of Ontario 2012 Internal Research Fund Studentship Award for: 'Youth Matters in London: Mental Health, Addiction and Homelessness,' Lawson Health Research Institute 2011 Dean's Honour List, University of Western Ontario 2008-2011
Related Work Experience	Registered Nurse Regional Sexual Assault and Domestic Violence Treatment Centre, St. Joseph's Health Care London 2015-present Research Coordinator Mental Health Nursing Research Alliance, Lawson Health Research Institute 2013-2015 Teaching Assistant University of Western Ontario 2011-2012