Abbie Raza
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lIntroduction

The COVID-19 pandemic has caused extensive social and economic upheaval, affecting the lives of Canadians and introducing various sources of stress. These stressors range from disability and unemployment to widespread lockdowns, resulting in unprecedented social isolation (Hensher, 2020). In addition to the severe increase in mortality from communicable diseases, the long-lasting socioeconomic uncertainty during the COVID-19 pandemic continues to reveal its effects on public health. Initial findings suggest a potential exacerbation of depression, anxiety (Henderson *et al.,* 2021), and an increase in drug overdoses within the United States and Canada (Imtiaz *et al.*, 2021). Many pandemic-related stressors have led to significant increases in substance use among Canadians since March 2020 (Canadian Centre on Substance Use and Addiction, 2022). Substance use entails the recurrent consumption of alcohol or illicit substances and the improper use of over-the-counter or prescription medications. The use of these substances, whether illicit or not, has become a pressing concern for public health and sociology, representing a significant risk factor for various health issues and premature mortality (Henderson *et al.,* 2021) (Rehm & Probst, 2018).

Similar to other social phenomena, substance use often has underlying causes. Socioeconomic status (SES) is a significant driver of substance use patterns (Nicholson, 2020). SES encompasses combined economic and sociological measures, including factors such as a person's employment, economic access to resources, and relative social position (Baker, 2014). Components of SES encompass but are not limited to, an individual's education, income, and employment status. For this project, housing will be a crucial component of SES that will be examined further because a disproportionate percentage of people suffering from substance use disorder (SUD) are also experiencing homelessness to varying degrees (Henderson *et al.,* 2021).

This project investigates the following questions: To what extent does housing impact access to healthcare and the rise in current trends of illicit drug use within Edmonton's inner city, and how have general trends in illicit substance use changed for the COVID-19 Global Pandemic?

Goals for this project will be to understand how substance use is linked with specific social factors and assess the extent of these relationships at the intersection of the COVID-19 pandemic, opioid epidemic, and housing crisis. Additionally, the project aims to bridge the gap between theoretical frameworks and applied research to address the needs of vulnerable populations disproportionately affected by the pandemic.

To achieve these goals, survey data provided by the Canadian Research Initiative in Substance Misuse (CRISM) and Inner City Health and Wellness Program (ICHWP), collected by Dr. Elaine Hyshka and her team at the University of Alberta, will be used. Briefly, the dataset consists of a sample size of approximately 500 participants, most of whom were recruited from Edmonton's inner city. The survey predominantly covers sociodemographic factors like housing, income, substance use, and access to safe supplies. For methods, bivariate models and various descriptive statistics will be used to examine the distinct effects of housing and homelessness in accessing healthcare services for people who use drugs (PWUD). The main theoretical framework guiding this research project will be fundamental cause theory (FCT).

Part I: Fundamental Cause Theory & Deaths of Despair

Fundamental Cause Theory (FCT) was first coined by Phelan and Link (1995), who theorized that specific disparities in population health outcomes are driven by social inequality in accessing flexible resources, particularly wealth, income, education, and racial privilege. Certain social factors can function as fundamental causes of health because they are connected to a wide range of resources that can be leveraged to enhance health within an ever-evolving healthcare

system (Phelan & Link, 1995; 2013). The initial purpose of FCT was to highlight the emergence and endurance of socioeconomic health disparities. Individuals with higher SES could utilize knowledge, wealth, influence, prestige, and advantageous social networks to mitigate risks and implement protective measures against disease (Phelan & Link, 1995; 2013). Conversely, individuals from low SES backgrounds continue to lack the resources to protect and enhance their health.

For this project, the focus will primarily be on SES as a fundamental cause and especially on its impact on current trends of illicit substance use among people experiencing homelessness in Edmonton's inner city. Under FCT, conditions like SES must meet four distinct criteria to be considered a fundamental cause of disease. One, the cause has to be responsible for multiple disease outcomes. Two, the cause affects the outcomes of disease through a variety of risk factors. Third, accessibility to resources that could potentially reduce the burden or sequelae of disease is greatly minimized. Four, the mechanisms through which the link between the fundamental cause of disease and health is recreated over time through specific intervening mechanisms, regardless of simultaneous advancements in healthcare (Phelan & Link, 1995; 2013). SES is considered a fundamental cause of disease because it satisfies all the criteria listed above within the FCT framework (Phelan & Link, 1995; 2013) (Phelan *et al*., 2010).

The classification of deaths of despair encompasses a wide range of mortality causes, reflecting accidental deaths from poor mental health, often associated with economic stagnation. Deaths of despair include suicide, drug overdoses, or liver failure (Clouston & Link, 2021). Deaths of despair, such as morbidities in the context of the opioid epidemic and illicit polysubstance use, are on the rise in populations where they were previously less common (Clouston & Link, 2021) (Addorisio *et al*., 2021). Many who live in precarious conditions due to

unstable housing or homelessness often report having problems with mental health in addition to or as a cause for illicit substance use (Addorisio *et al*., 2021). Coupled with this, and as a pre-condition for SES as a fundamental cause is the concurrence of other comorbidities such as Human Immunodeficiency Virus (HIV) and Hepatitis C (Jenkins *et al*., 2021), which often stem from unsafe drug administration due to lack of access to clean supplies and environment (Addorisio *et al.*, 2021) (Jenkins *et al*.,2021).

In this context, FCT sheds light on at least three potential pathways connecting lower SES with an elevated risk of deaths of despair (Clouston & Link, 2021). First, a prolonged experience of low SES may leave individuals and their families without the means to access the necessary resources for addressing mental health issues, thereby increasing the likelihood that poor mental health can lead to deaths of despair (Clouston & Link, 2021). Second, persistent lower SES may shape individual life histories and cultural environments in a way that normalizes risky behaviors within their context. This normalization can lead individuals to view these behaviours as typical. Third, individuals with higher SES backgrounds may be more proactive in avoiding conditions that can lead to deaths of despair. For instance, individuals with higher SES tend to experience fewer chronic pain conditions in midlife due to better working conditions and engagement in low-stress physical activities. Higher SES individuals are better equipped to steer clear of risks that make them less inclined to turn to substance use that temporarily alleviates pain or stress (Nicholson, 2020). Positives of higher SES, such as access to higher education, outweigh the downside of lower educational attainment at both the individual and population levels, reinforcing SES as a fundamental cause. It makes sense to think that SES play a significant role in the increased substance use among people from lower socioeconomic

backgrounds. However, the exact cause or directionality between SES as a fundamental cause and SUD remains unclear (Nicholson, 2020).

In essence, socioeconomic status (SES) can influence individuals' health through pathways connected to mental well-being and access to resources needed to treat or, better yet, prevent morbidities and early mortality. As a result, while there have been substantial evolutions in healthcare technology, these advances have done little to reduce healthcare disparities because the fundamental causes of said healthcare disparities have yet to be addressed.

Part II: Housing as a Fundamental Cause

Housing is a physical manifestation of one's socioeconomic status and is crucial in explaining health disparities' social origins (Clouston & Link, 2021) (Nicholson, 2020). Lack of housing, or homelessness, can be viewed as a continuum of unstable housing, from people sleeping in tents, parks, and temporary shelters to living in poor housing and couch surfing (Addorisio *et al.,* 2022). Understanding that homelessness is a complex social issue outside of simply owning or renting property, it is also essential to consider that the majority of people experiencing homelessness within Alberta are also vulnerable to a host of other issues outside of SUD, including increased likelihood of criminalization (Gehring *et al.,* 2022) and other mental illnesses (Addorisio *et al.,* 2022). Without access to stable housing, finding resources for treating illnesses like SUD becomes incredibly difficult. For instance, a study by Huntley (2015) compared substance abuse severity among unhoused and housed adults in the Baltimore area and found that homelessness and mental health status are significant predictors of substance abuse in adults. In addition to homelessness, the mental health condition of adults is a strong predictor of the intensity of substance abuse (Huntley, 2015). In this case, intervening mechanisms due to SES affect disease outcomes.

The trend is also consistent within the Albertan context, where Alberta has the highest unhoused population per capita in Canada (Addorisio *et al.,* 2022) while also experiencing some of the highest rates of opioid-related deaths, emergency room visits, and hospitalizations in Canada (Milaney *et al.,* 2021). A study by Milaney *et al*. (2021) surveyed 813 residents in Calgary, Red Deer, and Medicine Hat, where most residents reported being unstably housed. Results of the study found that individuals experiencing unstable housing were twice as likely to seek hospital care. Participants were more inclined to utilize hospital services if they reported unstable housing, experienced overdoses, or frequently neglected tasks due to drug use. This study's main model was the Housing First model, which is founded on the principle that housing, rather than requiring compliance or sobriety, serves as the foundation for enhancing one's health and overall well-being. Once housing is established, individuals can effectively tackle other facets of their lives, including physical health, mental health, substance use, employment, and education. The study also clarifies that housing should "not [be treated as] a panacea" (Milaney *et al.,* 2021, p.8) but should be used in conjunction with other harm-reduction initiatives.

Furthermore, Addorisio *et al*. (2021) used a cross-sectional survey with 150 participants in Edmonton experiencing absolute homelessness to assess the unique unmet needs like counseling, skills training services, and harm reduction. From this study, the authors concluded that the participants experiencing homelessness had complex needs that were failing to be met, which often led to high rates of morbidity and lower life expectancy. Many participants reported not knowing where to receive healthcare or being apprehensive about receiving healthcare due to prior treatment from healthcare staff. The authors found consistent trends in hospitalizations and emergency room visits, a similar trend by Milaney *et al*. (2021). The conclusion of this study found that the first step to recovery and access to health care resources for participants

experiencing absolute homelessness was first to get them "indoors and into contact with primary and mental health care providers and housing staff" (Addorisio *et al*.,2021, p. 393). In other words, housing and other harm reduction techniques are crucial to serving the unmet and complex needs of participants and possibly others experiencing homelessness.

Magwood *et al*. (2019) reported similar findings in a systematic review, where individuals experiencing homelessness and those with SUD encounter significant social exclusion, numerous physical and mental health issues, and increased rates of premature illness and mortality. Given that homelessness and precarious housing are factors still linked to public injection, infection risks, and restricted healthcare access, it underscores the significance of providing easily accessible services near homeless communities. Additionally, it emphasizes the need for incorporating housing support services for individuals who are homeless and concurrently dealing with substance use disorders without pretenses of abstinence or other barriers to access.

While reflecting on previous studies on housing and substance use, it can be concluded that housing, as a condition of SES, is a fundamental cause in its own right. Unstable housing can lead to multiple disease outcomes, including both communicable and non-communicable diseases. Homelessness also introduces a variety of risk factors that can affect the outcome of disease, including the fact that many individuals experiencing homelessness are also restricted from accessing primary health care to acquire complex and often unique needs required for recovery and stability, which is usually due to increased marginalization and social exclusion or lack of knowledge on where to seek help. Homelessness also provides multiple mechanisms for disease that can be produced over time.

Part III: Housing as Harm Reduction During the COVID-19 Pandemic

As previously stated, SES is a fundamental cause of healthcare disparities. As such, it is unsurprising that individuals experiencing homelessness are confronted with heightened rates of illicit substance use (Magwood *et al.,* 2019). During times of significant social and economic uncertainty like the pandemic, rates of substance use become increasingly exacerbated. While individuals may resort to substance use as a means of coping with inadequate living conditions, stress, and trauma associated with homelessness, it is also likely that the absence of stable housing impedes access to and adherence to treatment recommendations for SUD. For this reason, harm reduction becomes essential in mitigating and preventing morbidities caused by SUD and deaths of despair (Henderson *et al.*, 2021) (Galarneau *et al.,* 2023). Harm reduction is a framework designed to mitigate the negative consequences of substance use and the associated social exclusion. Within harm reduction, specific interventions encompass responding to opioid overdoses with naloxone, establishing supervised consumption sites, and implementing clinics for safe supply and temporary shelters (Magwood *et al.,* 2019) (Vakharia & Little, 2017).

With the advent of public health measures during the COVID-19 pandemic, PWUD experiencing homelessness reported a decrease in access to safe consumption sites (SCS), social support, and healthcare staff due to limited hours of operation, building closures, and social distancing protocols (Galarneau *et al.,* 2021). Due to this, PWUD detailed taking risks they usually would not, such as using alternative drugs or using alone. More importantly, with mass closures of social support centres and funding for SCS during the pandemic, PWUD also reported heightened barriers to housing and steady income, necessities for safeguarding against substance-related morbidity and deaths of despair (Galarneau *et al.,* 2021). This trend is particularly alarming since housing and income are essential to accessing healthcare, especially

during public health emergencies. Furthermore, restrictions to housing and safe supply situate many PWUDs in a vulnerable position of not only at risk of overdoses but also at a heightened risk of contracting COVID (Galarneau *et al.,* 2023). Many studies have recommended expanding access to harm reduction methods during public health crises, which continue to adhere to prior COVID-19 public health recommendations while not putting vulnerable populations at more risk (Galarneau *et al.,* 2023) (Addorisio *et al*., 2021). These recommendations could include initiatives like temporary shelters, safer delivery methods including vending machines, and greater access to mental health care networks during periods of high anxiety and uncertainty marked by the pandemic (Galarneau *et al.,* 2021).

To address the unique issues of PWUD experiencing homelessness in Edmonton, specifically between February and March of 2022, Boyle Street Community Services operated an overdose prevention site (OPS) intending to alleviate COVID-19 transmission and other health risks for people experiencing homelessness (Galarneau *et al.,* 2023). People used the shelter-based OPS to use illicit substances (orally, intranasally, or by injection), receive medical attention, acquire sterile drug use equipment, and connect to extra health and social support without leaving the shelter (Galarneau *et al.,* 2023). Most visits to the OPS included a consumption event, with the most common substances being Fentanyl, Heroin, and Methamphetamine. The shelter-based OPS also had a few advantages over previous service models in other provinces like Ontario and Saskatchewan, including the ability for users to consume legal or illegal drugs, accessibility to a larger population of people who were not subject to isolation orders, and the provision of a stable, secure space inside the shelter. However, when asked for feedback, many of the visitors to the OPS commented on the absence of inhalation services as a significant service need, which is in line with other research showing a

strong propensity among users of illegal drugs to seek supervised inhalation services (Galarneau *et al.,* 2023). A significant portion of the population of PWUD who are homeless were left out due to the lack of supervised inhalation services, even though this OPS may have served a greater spectrum of service users than other shelters. Nevertheless, the inclusion of a temporary shelter offered much needed relief to visitors of the OPS.

Thus, having temporary and permanent housing is essential in preventing further morbidities and mortality among people experiencing homelessness, especially for those with SUD amidst the pandemic. Housing becomes an emergent need during public health emergencies in conjunction with other specific needs for PWUD, including alternative public health measures that protect against both COVID-19 but also substance use-related complications.

Conclusion

In conclusion, housing as a component of SES, can be considered a fundamental cause of disease, particularly for SUD and related comorbidities. Using the FCT framework, the lack of housing can create significant barriers to healthcare needs for PWUD experiencing homelessness because it puts them at greater risk for mental illness, prolonged exposure to infections, opioid-related overdoses, hospitalizations, and emergency room visits. Access to housing also allows PWUDs to focus on other facets of their life like physical and mental health, education, and employment. Many PWUD experiencing homelessness have unmet needs, which is especially true during the COVID-19 pandemic, including access to safe supply and housing. From the literature review, it is clear that housing needs to be addressed in addition to other harm reduction methods to alleviate the burden of disease in Edmonton's inner city. The goal of this project will be to build upon the current literature specifically for residents of inner-city Edmonton, an area of research that is still growing.

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Our findings support the growing evidence base highlight- ing the importance of housing and recovery-oriented models such as Housing First [12]. Housing First models are rooted in the belief that housing, not compliance or sobriety, is the foundation for improved health and well- being and once housing has been secured, a person can successfully address other areas in their life such as physical health, mental health, substance use, employment, and

education [12]. Housing First models adhere to the following five principles: (1) individuals have access to permanent housing with no requirements or conditions, (2) emphasize individual choice and self-determination; (3) focus on recovery within a harm reduction approach; (4) recognize the uniqueness of each individual and their needs once housing is secured; and (5) support individu-als to integrate into their community with social supports [12]. Housing First had also been shown to reduce hospitalizations and emergency department visits, thereby decreasing the economic costs associated with homeless- ness [12].