

Aging, sexual orientation, and neighbourhood deprivation: CLSA and CANUE data

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Abstract: Although there are increasing discussions regarding sexual minority population's aging through social work and public health perspectives, the information about this vulnerable population beyond the interpersonal level analysis still needs more growth. Hence, the current study utilized the Canadian Longitudinal Study on Aging and Canadian Urban Environmental Health Research Consortium data to explore neighbourhood deprivation levels of aging sexual minority people's living environments. Neighbourhood social and material deprivation levels were observed to determine whether there is a difference when compared to their heterosexual counterparts. Analysis of covariance was used and each analysis included age and education as covariates. Gender stratification was considered in this study. The study's results found that aging gay and bisexual men resided in more socially deprived neighbourhoods compared to their heterosexual peers. Similarly, aging lesbian and bisexual women reported that they reside in more socially deprived neighbourhood compared to their heterosexual counterparts. The study provides a critical information regarding the aging sexual minority population in Canada. Such knowledge can help design and disseminate behavioural and policy interventions in deprived neighbourhoods.

Keywords: CANUE; CLSA; sexual minority; neighbourhood deprivation

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Introduction

The World Health Organization has reported that the number of adults aged 60 and over in our global population is expected to reach 22% by 2050 and the United Nations responded to this projection by declaring the Decade of Healthy Ageing, which is from 2021 to 2030 (World Health Organization, 2021). The Canadian aging population is no exception with 2021 data showing people that are 60 and over will reach beyond 20% (Statistics Canada, 2021). Given that more aging adults are going to be in our society, discussions around unique needs of minority populations should be considered. A recent population-based study in Canada reported that approximately 2% of the respondents of the Canadian Longitudinal Study on Aging (CLSA) identified as lesbian, gay, or bisexual (LGB) (Stinchcombe et al., 2018). Also, the sexual minority population in the United States is estimated to be around 1 to 3 million and the population is projected to grow to approximately 2 to 6 million by 2030 (Fredriksen-Goldsen and Muraco, 2010). It is therefore important to explore sexual minority aging in order to inform health and social services, so that existing and future programs and policies can adequately meet the needs of sexual minority people.

While sexual orientation is one of the protected grounds through the Canadian Human Rights Act and same-gender marriages are legal in Canada (Smith, 2005), exploring the nation's history of structural discrimination can provide insights regarding the potential negative influences on aging sexual minority people. Until 1969, consensual sex between two adults of the same gender was considered a criminal act in Canada (Smith, 2005). In addition to criminalization, sexual minority people were classified as mentally ill in the Diagnostic and Statistical Manual of Mental Disorders (DSM) until 1973 (King and Richardson, 2016). Most aging sexual minority adults over the age of 60 were exposed to the stigmatization and fear that were produced by medicalization and criminalization. Such overt discrimination has led to many disadvantages for aging sexual minority adults. For example, same-gender couples could not receive tax benefits that heterosexual couples had access to until the Modernization of Benefits and Obligations Act passed in 2000 in Canada (CBC News, 2012). Employment was another domain where aging sexual minority people were disadvantaged. In addition to being admitted to psychiatric institutions and put in jail, people lost their jobs due to their sexual orientation. Recently, the Canadian federal court has granted compensation to those who were interrogated or wrongfully fired due to their sexual orientation in the military and other branches of federal government (Julian, 2018). Financial and career discrimination that was taking place in the core of the federal government shows how heterosexism is deeply rooted in Canadian history and policy. Thus, the impact of such discrimination on aging sexual minority adults in later development should be considered in formulating policy and behavioural interventions to care for this population.

Townsend (1987) divides the concept of deprivation into social and material

deprivation. Social deprivation points to social resources including interpersonal relationships within families and communities whereas material deprivation refers to available physical entities such as material goods in the house and financial stability in the community (Pampalon et al., 2012). Socioeconomic characteristics of neighbourhoods have been identified as critical factors in relation to resource availabilities and social opportunities, which can contribute to people's behaviours and health outcomes (Ribeiro et al., 2022). Material deprivation has been linked to increased health risks including psychological distress and mortality in the general aging population as aging adults that are residing in more deprived neighbourhoods report poorer health outcomes compared to their counterparts that reside in neighbourhoods with more socioeconomic strengths (Blair, Gariépy, and Schmitz, 2015; Santos, Paciência, and Ribeiro, 2022). The social environment and the interactions within it can shape an individual because positive and negative experiences can contribute to the formulation of self-image (Dohrenwend, 1998; Serpe and Stryker, 2011). The Minority Stress Model captures such interactions by considering circumstances in the environment as one of the variables related to minority stress (Meyer, 2003). Moreover, Brooks (1981) posits that restricted social status associated with a minority identity can impact social and economic resources of minority people. A scoping review that explored sexual and gender minority people's experiences in the United Kingdom and Ireland has reported that heteronormative policies in relation to housing and other social services contribute to sexual and gender minority people's comfort levels with participating in mainstream programs (Adley, O'Donnell and Scott, 2025).

In the aging sexual minority population, studies have indicated that social and material deprivation is related to mental and physical health issues (Fredriksen-Goldsen and Muraco, 2010; Wilson, Kortes-Miller, and Stinchcombe, 2018). Furthermore, a literature review of sexual and gender minority people in Canada indicated that the prolonged negative experiences that many older sexual minority adults have faced because of sexual orientation during earlier stages of their development, including institutional discrimination such as wage discrimination, may contribute to their socioeconomic status in later adulthood (Kia et al., 2020). This poses a risk of exposure to stigma and abuse (Kia et al., 2020). Hatzenbuehler and colleagues (2024) further expanded the impact of environmental factors by emphasizing the role of structural stigma, such as institutional policies and societal conditions, on people's capacities to regulate stressors related to stigma and their health outcomes. In the general sexual and gender minority population, a narrative review of quantitative studies has revealed that structural stigma elevates the risk of poorer health outcomes (Hatzenbuehler et al., 2024). Therefore, it is important to understand aging sexual minority adults' experiences regarding environmental deprivation in order to consider social and health interventions that can lead to healthy aging.

Wacquant (2007) posits that exercising stigmatization through neighbourhood

alienations perpetuate economic and social disadvantages of marginalized groups. Although individual-level deprivation has been examined in previous studies, neighbourhood-level deprivation has not been explored extensively for sexual minority research. Community-level resources can provide inclusive spaces for sexual minority people, which would increase community connectedness (Ceatha et al., 2019; Shilo, Antebi, and Mor, 2014; Yang, Chu, and Salmon, 2018). For aging sexual minority people in particular, receiving services that provide affirmative environments can benefit their well-being (Fredriksen-Goldsen et al., 2018; Wilson et al., 2018). Some studies that have examined the relationship between neighbourhoods and sexual minority people focused on youths' experiences in queer spaces and reported that youth of color often experience stigma when accessing services and programs related to sexual and gender minority people (Felner, Dudley, and Ramirez-Valles, 2018; Rosenberg, 2017). In addition, studies that investigated non-queer spaces in neighbourhoods were limited to urban spaces (Duncan, Hatzembuehler, and Johnson, 2014; Goh, 2018). Therefore, investigating neighbourhood deprivation levels through a data source that includes information from urban and non-urban residents would illuminate the need for resource allocation to better support the aging sexual minority population.

Based on the wage discrimination and lack of social resources related to sexual minority status outlined in previous studies (Ahmed, Andersson, and Hammarstedt, 2012; Laurent and Mihoubi, 2012; Lyons, 2016; Masini and Barrett, 2008; Shankle et al., 2003; Uhrig, 2015), the current study's hypothesis was that aging sexual minority adults would live in more socially and materially deprived neighbourhoods when compared to their heterosexual counterparts.

Methods

In order to examine neighbourhood social and material deprivations of aging sexual minority adults, two sets of secondary data sources were used: Canadian Urban Environmental Health Research Consortium (CANUE) and Canadian Longitudinal Study on Aging (CLSA). The CLSA is a project that is tracking over 50,000 aging adults in Canada until 2033. The survey includes a host of information regarding physical and mental health indicators as well as social factors such as social support and networks (Raina et al., 2019). The current study used CLSA's baseline data that was collected between 2011 and 2015. The CANUE data utilizes geographic information based on Canadian census in order to determine neighbourhood factors through a deprivation index. CLSA participants' postal codes were linked to CANUE data to conduct our analyses. People that did not report their sexual orientation, education levels, and people that did not have information regarding the neighbourhood deprivation scores were excluded for the analyses. A total of 48,891

aging adults, ranged from 44 to 89 ($M=62.88$, $SE=0.05$) were included (see Table 1). While aging adults are typically defined as adults that are over the age of 60 (World Health Organization, 2021), our study include adults that are over the age of 44 in order to maximize the sample of sexual minority people from the CLSA survey.

Table 1
Demographic Information

	Heterosexual ($n=47,888$)	Gay/Lesbian ($n=761$)	Bisexual ($n=242$)
Age	62.95	58.96	62.88
Sex			
Women	24,500	256	117
Men	23,388	505	125
Education			
Postsecondary degree/diploma	35,508	624	175
No postsecondary degree/diploma	12,380	137	67

Age is reported through mean; Sex and Education are reported through frequency

Measures

Demographic information

Respondents self-reported their age and their birth year. Each respondent also self-reported their sexual orientation. Respondents were asked to choose between five choices: heterosexual, homosexual, bisexual, don't know, and refused. If the respondent chose 'don't know' or 'refused' as their sexual orientation (121 individuals) they were not included in the analysis. Information regarding education was also collected by the CLSA. For our analysis, education levels were recoded into two levels: completed post-secondary diploma/degree; no post-secondary diploma/degree. People that did not report their education level were removed from our analyses (120 individuals).

Neighbourhood deprivation

The CANUE data contains the Pampalon Deprivation Index (CanMap Postal Code

Suite, 2015; Pampalon et al., 2012) in order to observe neighbourhood deprivation levels. The neighbourhood deprivation had two categories: material and social. Higher scores mean higher neighbourhood deprivation and lower scores mean lower neighbourhood deprivation. For material deprivation, neighbourhood levels regarding average personal income; employment rate; and percentage of persons without a high school diploma were considered. For neighbourhood social deprivation three components including the neighbourhoods' percentage of persons living alone, percentage of single-parent families, and percentage of people separated, divorced, or widowed were combined to determine the score. The combination of three components for each category of neighbourhood deprivation 'produced a value (factor score) indicating the level of deprivation in every small area unit' (Pampalon et al., 2012, pp. S18). 2,197 respondents were not included in the analyses due to missing neighbourhood deprivation scores. Based on previous studies that highlighted the lack of social and material resources in sexual minority adults (Ahmed, Andersson, and Hammarstedt, 2012; Baumle and Poston, 2011), the study hypothesized that aging sexual minority adults would live in more socially and materially deprived neighbourhoods compared to their heterosexual counterparts.

Data analysis

For the first part of the study, analysis of covariance (ANCOVA) was used to examine the difference in social and material deprivation levels amongst the aging populations by sexual orientation while controlling for age and education. Gender stratification was considered for each analysis in order to provide more detailed insights regarding different subgroups within the sexual minority population. For the second part of the study, independent t-tests were conducted to examine the difference in social and material deprivation levels amongst the aging sexual minority people by comparing gender groups. Each analysis was conducted using IBM SPSS Statistics 29.

Results

For aging women, the ANCOVA for social deprivation was significant, $F(2,24868)=33.157, p<0.001$, though the effect size was small ($\eta^2=0.003$). The follow up mean comparisons revealed that aging lesbian and bisexual women are living in more socially deprived environments compared to their heterosexual counterparts (see Table 2). ANCOVA was not significant for material deprivation $F(2,24868)=1.465, p=0.231$, indicating that there are no significant mean differences between sexual orientation groups.

For aging men, the ANCOVA for social deprivation was significant,

$F(2,24013)=157.214$, $p<0.001$, though again the effect size was small ($\eta^2=0.013$). The follow up mean comparisons revealed that aging gay and bisexual men live in more socially deprived environments compared to their heterosexual counterparts. For material deprivation the ANCOVA result was also significant, $F(2,24013)=13.124$, $p<0.001$, and the effect size was small ($\eta^2=0.001$). The follow up mean comparisons indicated that aging gay men live in less materially deprived environments compared to their bisexual and heterosexual counterparts (see Table 2).

Table 2

Neighbourhood social and material deprivation means by sexual orientation groups

	Heterosexual	Gay/Lesbian	Bisexual
<i>Women</i>			
Social Deprivation	0.005	0.017	0.024
Material Deprivation	-0.009	-0.010	-0.016
<i>Men</i>			
Social Deprivation	0.001	0.030	0.022
Material Deprivation	-0.010	-0.019	-0.004

Gender differences amongst aging sexual minority adults revealed that gay men live in less materially deprived neighbourhoods compared to their lesbian counterparts: $t(759)=-2.621$, $p=0.009$. However, gay men live in more socially deprived neighbourhoods compared to their lesbian counterparts: $t(759)=3.996$, $p<0.001$. For bisexual adults, our analysis shows that bisexual men live in more materially deprived neighbourhoods compared to bisexual women: $t(240)=2.042$, $p=0.042$. There was no statistically significant differences between bisexual men and women regarding neighbourhood social deprivation levels: $t(240)=-0.322$, $p=0.748$.

Discussion

The current study explored neighbourhood social and material deprivations in aging sexual minority populations by comparing their deprivation levels to those of their heterosexual counterparts. The results revealed that both aging sexual minority women and men live in more socially deprived neighbourhoods, as defined by percentage of households headed by a single adult (including separated, divorced, or widowed), compared to aging heterosexual adults. Aging sexual minority adults have been reported to have limited social resources such as long-term partner or children from studies that explored sexual minority aging at the individual level (Fredriksen-Goldsen and Muraco, 2010; Wilson, Kortess-Miller, and Stinchcombe, 2018). This lack of immediate family members directly translates to social deprivation for the

index that was utilized in the current study. The study's finding may be attributable to the indicators used to define social deprivation because the neighbourhood social deprivation indicator in our study was measured by the ratio of single-adult households in the neighbourhood (Pampalon, 2012). In Canada, major cities with highest sexual minority populations show high percentage of single households: City of Toronto (33.2% in 2021) and City of Vancouver (39% in 2021) (City of Vancouver, 2022; City of Toronto, 2022). Many sexual minority people reside in or near urban areas to have access to inclusive environments and sexual minority community (Nash and Gorman-Murray, 2014). Therefore, labeling neighbourhoods like inner city areas with high concentration of single-adult households as socially deprived neighbourhoods may be inaccurate, and the possibility that these indicators are based on heteronormative ideas about socially connected neighbourhoods warrants exploration.

In addition to social deprivation, the current study's results showed that aging gay men live in less materially deprived neighbourhoods compared to their bisexual and heterosexual counterparts. Gay neighbourhoods, often located in central part of urban areas, offer businesses and job opportunities that are inclusive and reduces the likelihood of negative experience such as discrimination based on their sexual orientation (Smart and Klein, 2013). The finding regarding aging gay men residing in less materially deprived neighbourhoods was unexpected since it has been reported that sexual minority men face disadvantages in the labor market compared to heterosexual men and they also have experienced limited career advancement opportunities due to their sexual orientation during their earlier development (Denier and Waite, 2017; Nangia and Arora, 2021). Such results may suggest that gay men choose to move to less materially deprived neighbourhoods in order to be in environments that are more inclusive of sexual minority people (Smart and Klein, 2013). However, future qualitative research is needed to verify this for working class sexual minority men.

Our examination of gender differences in aging sexual minority people shows that gay men reside in less materially deprived neighbourhoods compared to lesbian individuals. This aligns with a previous study that explored the hardship that aging minority women experience during their career, which stems from income inequity based on their gender and stigmatization based on their sexual orientation (Ploeg et al, 2013). On the other hand, aging lesbian individuals are living in less socially deprived neighbourhoods compared to gay men. Previous studies have reported that sexual minority women have more social resources compared to sexual minority men (Fredriksen-Goldsen and Muraco, 2010; Masini and Barrett, 2008). Hence, our findings can provide insights related to how neighbourhood characteristics could also serve as a contributing factor for aging sexual minority people's social resources. Our study also found that bisexual men are living in more materially deprived neighbourhoods compared to bisexual women, which is the opposite of what was revealed through our results related to the comparison between aging gay and lesbian adults. While there are studies that have explored the differences

in sexual orientation groups with bisexual adults, information regarding gender comparisons within the bisexual population is not largely available due to the lack of attention on bisexual people in sexual minority research (Ross et al., 2016; Ross et al., 2018). Previous studies have revealed that bisexual individuals have higher levels of psychological distress compared to other sexual orientation groups (Ross et al., 2016; Ross et al., 2018). However, research insights related to aging bisexual people's lived experiences and economic activities would need to develop further in order to provide more information regarding the difference between aging bisexual men and women's neighbourhood material deprivation levels that the current study has found.

Even though the current study reflects interesting findings, the study has some limitations regarding sexual orientation categories. Sexual orientation was divided into three groups in the CLSA survey: heterosexual, homosexual, and bisexual. Thus, individuals that do not identify as one of these three categories, such as pansexual and asexual people, may have been excluded from the analyses. Over 100 respondents were removed based on their responses to the sexual orientation question because they either chose 'don't know' or did not respond to the question. More discussions to incorporate a broader set of sexual orientation options in population-based studies need to be facilitated in order to increase visibility for groups that do not identify as heterosexual, homosexual, or bisexual.

Conclusions

Although the direct impact of structural discrimination on sexual minority aging was not explored for this study, important findings related to neighbourhood deprivations were generated to further support sexual minority aging. Increased efforts to provide adequate services for the aging sexual minority population by creating more programs for aging individuals in LGBTQ+ service organisations as well as training social and health care professionals in sexual minority aging would reduce barriers (Loeb, Wardell, and Johnson, 2021; Wilson, Kortes-Miller, and Stinchcombe, 2018). This is critical because aging sexual minority adults feel less isolated when they receive positive service experiences (Yang, Chu, and Salmon, 2018). In particular, mental health services need to consider targeting aging sexual minority people residing in deprived neighbourhoods since previous research indicated that aging lesbians and bisexual men are more vulnerable to depression in materially deprived neighbourhoods (Yang et al., 2023). By increasing the efforts of organizations that are serving aging adults within different neighbourhoods in Canada with training modules that are related to LGBTQ+ aging, further expansion of spaces and activities that sexual minority adults can access would increase the level of social engagement (Yang et al., 2025). The combination of these efforts will

ensure healthy aging process for aging sexual minority people while providing opportunities to promote inclusiveness in different settings.

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