Older Age and Poor Health Outcomes Within Black Communities: An Assessment of Risk During the COVID-19 Pandemic

by

Adam Banner

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

Objectives:

To assess the impact of the COVID-19 pandemic on older adults within Black communities in Canada, the study described self-reported health ratings before and during the pandemic, across age groups and assessed how old age contributed to adverse changes in health across three domains: physical health, mental health, and Quality of Life (QoL).

Methods:

The study performed a cross-sectional, secondary analysis of data from a community-based survey of English or French-speaking Canadian Black, African, and Caribbean persons between November 2022 and May 2023. Bivariate analyses informed on age differences in self-reported physical and mental health, and QoL. Furthermore, a multivariate logistic regression model was fitted for each domain to assess the effect of age and covariates on adverse outcomes measured as any decrease in self-reported health status during the pandemic.

Results:

Older adults reported the highest proportion of fair physical health and smallest proportion of other levels. Approximately 66.7% of them experienced adverse changes compared to 58.3% overall. While no older adults reported very poor or poor mental health, 41.7% experienced adverse changes in their mental health compared to 56.3% overall. 75.0% of older adults reported an adverse change in their QOL compared to 66.0% overall. However, the small sample of older adults may have contributed to the lack of statistical significance in many results.

Conclusion:

Older Black adults appeared more likely to report worse physical health and QoL outcomes and have their mental health concerns underreported during the pandemic. This may be due to age and other risk factors related to race.

(250/250 words)

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Chapter 1 Introduction:

Current Issues in the Wake of the Pandemic

The COVID-19 pandemic did not affect all Canadians equally. Older adults are at an increased risk for the harmful effects of the pandemic in multiple ways. Older adults experienced a higher risk for COVID-19 itself (Yanez et al., 2020; Tisminetzky et al., 2020); as well indirect effects of the pandemic that impacted quality of life, increased social isolation, and disrupted services upon which older age populations rely (Manca et al., 2020). The pandemic also had a differential impact according to race/ethnicity. Minority race/ethnicity emerged as an important risk factor during the pandemic since racial/ethnic minorities are burdened with disproportionate rates of multimorbidity, chronic conditions, poverty, racism, challenges with healthcare, and more (Abdillahi & Shaw, 2020; Raphael et al., 2020; Siddiqi et al., 2017; Parolin & Lee, 2022; Tisminetzky et al., 2020). In order to adequately assess the impacts of the pandemic, it is critical to consider the intersectionality of age and race (Veenstra, 2011).

Additionally, since the intersectionality of other risk factors may have impacted health outcomes, their effects should be considered as well. For example, gender differences also were apparent during the COVID-19 pandemic. Outside of diminished access to health services, women also face a heightened risk of domestic violence during the pandemic (Gausman & Langer, 2020). Additionally, a higher proportion of women are frontline healthcare workers and family caregivers; both caregiving positions have been overworked, are associated with a higher susceptibility to COVID-19, and are accompanied by potential consequences to quality of life and overall health (Gausman & Langer, 2020). Therefore, it is crucial to also include a gender-based lens when studying the COVID-19 pandemic and its impacts. Overall, the gender-based

impact of the pandemic further emphasizes the importance of considering intersectionality theory.

Much of the current literature focuses on comparing white persons to racial minorities (Navar et al., 2021; Bassett et al., 2021). While this is useful to demonstrate the degree of disparity, its descriptive power for minority groups is inherently limited since the focus is on the comparison and not on describing the burdens that ethnic minorities face. Additionally, most of this literature is based in the United States. Therefore, there is a significant gap in community-based research that examines the intersectionality of age and race as a health risk during the pandemic in Canada. Community-based health research is the most appropriate methodology to examine health equity and community-specific impacts (Srinivasan & Williams, 2014). Unfortunately, if studies apply a one-size-fits-all approach to pandemic research, the nuanced impacts and consequent needs of Canada's diverse communities will remain understudied. This study assesses how the pandemic has impacted the health status in Black communities and how older age has contributed.

Chapter 2: Literature Review

Literature Search Strategy:

The fundamental frameworks underpinning the study are related to the Social Determinants of Health (SDoH) and intersectionality. The SDoH are sociodemographic descriptors that are associated with health outcomes (Metzler, 2007). The World Health Organization (WHO) defines the SDoH as "the conditions in which people are born, grow, live, work and age, and also includes the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices. Social determinants of health are mostly responsible for health inequities" (Shimizu, 2023). According to the WHO, SDoH explain 30-55% of health outcomes, therefore, it is imperative to consider health from a social lens (Datto, 2023). Examples of SDoH include: income, education, employment status, working conditions, food security, race/ethnicity, early childhood development, poverty, social inclusion and discrimination, access to health services, age, disabilities, etc. (Raphael et al., 2020). These factors can be complexly interwoven and must be carefully considered to improve health equity.

The Canadian Council on Social Determinants of Health outlines 36 frameworks on SDoH of which 7 are most relevant in the Canadian context (CCSDH, 2015). Informed by the council's review of frameworks, the present study has identified the WHO Commission on Social Determinants of Health's conceptual framework to inform the study frameworks (Solar & Irwin, 2010). This framework demonstrates how structural determinants (social, economic, and political mechanisms) determine socioeconomic positions. Socioeconomic positions are stratified by key indicators such as race/ethnicity, gender, income, education, occupation, and social class. Intermediary social determinants of health mediate the impact that structural determinants and

socioeconomic positions have on health equity and wellbeing (Appendix A: Figure 1). Intermediary determinants of health consist of: material circumstances, psychological circumstances, and behavioural and biological factors. Additionally, access to the healthcare system is another factor that mediates the impact of other factors on health equity and wellbeing.

Overall, the framework demonstrates how determinants interact to create health outcomes and inequities. Using this framework, the present study aims to better understand the pandemic's impact to older adults in Black communities by examining factors that contributed to health inequities and how they intersect. As such, the literature review focuses on age and race as SDoH while also considering how other factors such as sex and gender, living arrangements, and multimorbidity further intersect to create inequitable health outcomes. The study outcome focuses on health status, measured using self-perceived physical health, mental health, and Quality of Life. To reflect the study concepts, the literature search strategy consisted of two separate searches. The literature search also utilized snowball referencing where key articles referenced in the included articles were also included in the literature search. In order to gather sufficient context surrounding the COVID-19 pandemic, the searches were broad. Especially considering the need to capture data that is nuanced and relevant to Black communities and/or older adults, all studies that could contribute to context or nuance in the topic were included.

The first search was a larger overview of current knowledge surrounding older age and race/ethnicity during the COVID-19 pandemic. PubMed was searched using the following syntax:

("Black"[Title] OR "BIPOC"[Title] OR "BPOC"[Title] OR "People of colour"[Title] OR "People of color"[Title] OR "ethnic*"[Title] OR "minorit*"[Title] OR "racial*"[Title]) AND ("Aging"[Title] OR "Old age"[Title] OR "Older age"[Title] OR "Older adults"[Title] OR "Older

persons”[Title] OR “Old persons” [Title] OR “Aging persons”[Title] OR “Aged persons”[Title] OR “Gerontology”[Title] OR “Geriatrics”[Title] OR “Nursing home”[Title] OR “Old age home”[Title] OR “Old age care”[Title] OR “Hospice”[Title] OR “Palliative”[Title] OR “Aged”[Mesh] OR “Geriatrics"[Mesh] OR "Health Services for the Aged”[Mesh]) AND ("COVID-19"[Title] OR "COVID"[Title] OR "Coronavirus"[Title] OR "Corona-virus"[Title] OR "Corona-virus"[Title] OR "SARSCoV2"[Title] OR "SARS-CoV2"[Title] OR "SARSCoV-2"[Title] OR "SARS-CoV-2"[Title] OR "severe acute respiratory syndrome"[Title] OR “Pandemic”[Title])

244 articles found under the search were imported on April 18, 2023 for screening and abstract review (Appendix B: Figure 2). After screening and abstract review, 119 studies were excluded. The remaining 125 articles were included for full review and extraction of relevant data in a single step. Articles focusing solely on incarcerated populations, and articles from outside of North America, Europe, or Australia were excluded. The review included articles relevant to the COVID-19 pandemic, provides race/ethnicity-based data and/or impacts to older age populations.

The second search was smaller, more targeted search of literature discussing the SDoH and Intersectionality. PubMed was searched using the following syntax: (“Social determinants of health”[Title/abstract] OR “SDOH”[Title/abstract]) AND “intersectionality”[Title/abstract]). 98 articles were imported as of April 18, 2023 for screening and abstract review of which 65 were excluded (Appendix B: Figure 3). The 33 remaining articles were included for full review and extraction of relevant data. Selected articles were relevant to SDoH and intersectionality in Canada prior to and during the pandemic.

2.1 Age

2.1.1 Age as a Social Determinants of Health (SDoH)

Age is a non-modifiable part of one's identity and can strongly influence health outcomes in a number of ways. Age has varying levels of impacts on health given an individual and their life experiences. However, there are many physical health problems associated with aging: Arthritis, hypertension, diabetes, chronic coronary syndrome, dementia, and heart failure are some of the most common chronic conditions faced by older adults in Ontario (Koné et al., 2015). Some chronic conditions, such as sarcopenia, can lead to frailty, falls, disability, dependency, and even a reduced Quality of Life (QoL) in older adults (Landi et al., 2015). Physical health concerns associated with the "wear and tear" of aging are often accompanied by increased difficulty in activities of daily living (ADLs) and Instrumental Activities of Daily Living (IADLs) (Edwards, 2002). Proper implementation of support in the form of mobility aids, technology, and better accessibility standards can help in the performance of ADLs and IADLs.

Multimorbidity (i.e., the presence of two or more conditions) and clinical complexity are also highly associated with older age, and present among 66.4% of those aged 65-74 and 80.9-83.2% of those aged 75 or more (Koné Pefoyo et al., 2015). There are significant healthcare costs associated with the physical and cognitive dimensions of aging and age-related disease; and owing to the presence of an aging population and inadequate restructuring of healthcare service, the cost of healthcare services for older adults is expected to worsen with time (Prince et al., 2016; Brenner et al., 2020). Given the association of age with disability, the trajectory of unmet needs will continue to increase unless active aging frameworks and policies are adopted (Edwards, 2002).

Cognitive decline and dementia are also associated with older age (Wong et al., 2016). According to the definitions used by the WHO, cognitive decline is defined as the age-associated decay of cognitive function, whereas dementia refers to a level of decline at which an individual's ADLs, IADLs, and social functioning become impaired. Alzheimer's disease and related dementias are the most common forms of dementia worldwide (Montine et al., 2014). In 2010, 35.6 million people live with dementia worldwide; this number is expected to double by 2030 (Prince et al., 2013). A 2012 estimate by the Alzheimer Society of Canada indicated that 757,000 Canadians currently live with cognitive impairment. Family members are the main caregivers for persons with dementia living in the community, and provide an average of 38 hours of care per week (Canadian Institute for Health Information (CIHI), 2023). As a result, many caregivers report significant care costs (Aranda et al., 2021) and strain or distress (Aranda et al., 2021; CIHI, 2023). Increasing the amount of resources and support available for those with dementia and their families is critical to address the growing amount of unmet care needs (Aranda et al., 2021).

Self-perceived health has been identified as a powerful tool in assessing the health status of older adults (Machón et al., 2016). In general, health declines with age across all domains of physical, mental, social, and spiritual health, with the sharpest decline in physical health (Ahlawat et al., 2023). Given that life expectancy has dramatically increased in recent years, it is important to assess how older adults perceive their health status since longer life expectancy does not necessarily translate to a higher perceived health status or life quality. Those who lack cognitive or social stimulation, or experience polypharmacy, sensory impairment, poor sleep quality, nutrition (Machón et al., 2016), and lower income (Bonner et al., 2017) report poorer

overall health. This emphasizes that other clinical and social factors influence how older adults perceive their health.

A systematic review by Sivertsen et al., 2015 found a wide range of definitions and measurements of QoL. According to the WHO, QoL is centred around an individual's perception of their position in life. In the context of health, QoL can be measured via general health-related QoL or disease-specific QoL assessments (Sivertsen et al., 2015). A recent study by Ribeiro et al., 2020 revealed that QoL (as measured using a general health-related assessment) progressively decreases from 70 years of age onwards, and that additional factors such as the presence of anxiety, depression, and low socioeconomic status were associated with that decline.

Cognitive impairment, distressed mental health, and physical disease should not be considered normal or acceptable parts of aging (Edwards, 2002). Unfortunately, stigma and discrimination has contributed to the marginalization of older adults (Bacsu et al., 2023), which also contribute to victimization and social exclusion, as well as considerably worsened mental and physical health issues and care inadequacies (Edwards, 2002). As such, the intersection of age with other SDoH should be considered on an individual and population level when structuring health practice and policy.

2.1.2 Age and the Pandemic

2.1.2.1 Physical Health

Older age is considered a significant predictor of COVID-19 mortality with the chance of dying increasing incrementally with age (Conway et al., 2021). During February 12th to October 15th, 2020 in the United States, 78.2% of those who died from COVID-19 were aged ≥65 years (Gold et al., 2020). Additionally, older adults have a greater burden of chronic conditions and

multimorbidity which are also risk factors for COVID-19 (Roberts et al., 2015; Atkins et al., 2020). Individuals with chronic conditions, especially those with multimorbidity, faced difficulty accessing healthcare in Canada due to the pandemic (Frank 2022). Care continuity is critical for persons with chronic conditions since forgoing care can lead to unmet and unidentified needs, worsen symptomology, clinical presentation, and pose serious risks to health. Frailty adds an additional risk for COVID-19 mortality even when adjusted for other sociodemographic and clinical factors (Aw et al., 2020; Tehrani et al., 2021). Aside from direct COVID-19 risks, frail older adults are at risk for decreased access to care, physical activity, frailty progression, and worsened clinical outcomes (Boreskie et al., 2020).

2.1.2.2 Mental Health

In general, many individuals experienced mental health challenges due to the pandemic. In a nationally representative survey of mental health problems in Canada, it was found that the proportion of individuals with high to extremely high self-reported anxiety has quadrupled to 20% and the proportion of self-reported depression has doubled to 10% during the pandemic (Dozois, 2021). A systematic review conducted before the pandemic has demonstrated how social isolation affects the mental health of the elderly via associated sleep disturbance, depressive symptoms, and fatigue (Choi et al., 2015). Largely due to stay-at-home orders, older adults have been forced to isolate themselves thus cutting many off from contact with friends and family. Plagg et al. (2020) reported that social isolation and exclusion have been linked to serious physical and mental health concerns and even excess mortality. These findings have draw attention to the importance of assessing mental health in the wake of the pandemic (D'cruz & Banerjee, 2020). It is also important to consider that the formal diagnosis of new mental health

issues may have artificially decreased due to limited access to mental healthcare during the pandemic. A longitudinal analysis of middle to older age adults in Canada demonstrates a significant increase depressive symptoms during the pandemic compared to before (Raina et al., 2021). Some socioeconomic, demographic, and clinical factors such as low income, being female, or having chronic conditions increase the odds of depressive symptoms.

Flint and colleagues (2020) explored access to mental healthcare among older adults in Canada during the pandemic. In long-term care homes, on-site psychogeriatric support was decreased in favour of digital support, which is not effective for many older adults who lack sufficient technological literacy, family support, or who are otherwise not entirely comfortable using digital means to manage their mental health. Additionally, treatments such as outpatient electroconvulsive therapy for severe or high-risk mental illness were disrupted (Flint et al., 2020). Currently, there are known income, race, and gender-based inequities in access to mental healthcare in Canada (Bartram, 2019; O'Mahony & Donnelly, 2010). As such, incidence and prevalence of mental health symptoms and diagnoses may have been further underreported for some populations.

2.1.2.3 Quality of life (QoL)

Older adults faced impacts to mental health during the pandemic: a study by Bailey et al., 2021 found that nearly 40% of those aged ≥70 years reported a decline in their mental health, with over half also reporting a decline in QoL and an increase in loneliness. A qualitative study by McKinlay et al., 2021 reported similar results with a notable increase in fear. However, resilience and using life-experience to self-manage and mitigate impacts to mental health and QoL were observed.

Vahia and colleagues (2020) suggest that a higher level of wellbeing and psychological resilience towards anxiety, depression, and stress is observed in older age groups; however, this may not be generalizable to all older adults. Risk to the health and quality of life of older adults can be exacerbated given other factors. Lebrasseur and colleagues (2021) found that the impact of the pandemic on QoL was largely dependent on other factors such as in-person social contact, anxiety and depression, physical activity, and dementia status. Czeisler et al., 2020 further explain that older adults that reside in assisted living facilities or long-term care homes, or those with dementia may have been affected more significantly. Older adults with dementia are at a higher risk for worsened psychiatric symptoms (Number & Brodaty, 2021; Manca et al., 2020).

2.2 Race

2.2.1 Race as a Social Determinants of Health (SDoH)

Race is widely considered to be an important SDoH (Raphael et al., 2020; Abdillahi & Shaw, 2020). Historic marginalization and systemic and structural racism that continue through the present day have contributed to wide social and health disparities, including among Black Canadians (Abdillahi & Shaw, 2020). Despite a younger average age, Black Canadians have a vastly increased risk of having a chronic condition (Chiu et al., 2015; Siddiqi et al., 2017) and experience barriers in receiving care (El-Dassouki et al., 2021; Olanlesi et al., 2023; Stepanikova & Oates, 2017). Similar inequities are noted when considering mental healthcare in Black youth (Fante-Coleman & Jackson-Best, 2020). Culturally competent care is necessary to address the healthcare needs of diverse populations and can be achieved by the proper training and education of healthcare workers and by increasing the representation of minorities in roles as healthcare policymakers, administrators, and professionals (Nair & Adetayo, 2019). A lack of cultural

competency in healthcare can be life-threatening, such as the case with Joyce Echaquan, Yosif Al-Hasnawi and countless others whose deaths were of a direct result from racism (Amster, 2022). A review by William and colleagues (2019) documents historic and present racism and discrimination in healthcare worldwide that has been linked to worsened physical and mental health outcomes, as well as to diminished healthcare utilization, poorer treatment adherence, and increased delays. These outcomes can be detrimental when considering the importance of healthcare in treating chronic conditions. Since disparities continue to exist despite the fact that healthcare in Canada is universal, literature highlights the importance of community-based research and culturally competent care that allows for more targeted and feasible health promotion strategies for racial/ethnic minority populations made vulnerable.

Race/Racism as a SDoH can interact with other social factors such as educational attainment and reduce the extent to which an individual has the opportunity to access resources and services necessary for good health and wellbeing (Raphael et al., 2020). Due to social disparities and racism, Canadian-born Black persons are less likely to have completed secondary or post-secondary education (Abdillahi & Shaw, 2020). As education can strongly influence social mobility, job security, and income, Canadian-born Black persons are more likely to face unemployment, live in low income and/or crowded households, and face food insecurity (Raphael et al., 2020; Dabone et al., 2021). Conversely, Black immigrants are more likely to have a university degree (Houle, 2020). Yet, Black immigrants are still more likely to work at jobs for which they are overqualified and be counted among the working poor in Canada (Abdillahi & Shaw, 2020; Houle, 2020). This suggests that for some groups such as Black immigrants, a high level of educational attainment may still not be sufficient to overcome impact of race, racism, and other factors.

2.2.2 Race and the Pandemic

2.2.2.1 Physical Health

Minority race/ethnicity has been widely proven as a risk factor for severe COVID-19 outcomes including mortality (Olanipekun et al., 2022; Price-Haywood et al., 2020; Unruh et al., 2022). Selden and Berdahl, 2020 found that Black adults in every age groups have comparatively higher COVID-19 risks than White adults. The study also makes note that White populations have an older average age than Black populations. For this reason, a direct comparison between White and Black populations without adjusting for age can mask the real-world health risks faced by Black populations during the COVID-19 pandemic.

Excess mortality has increased in racial/ethnic minority populations from both COVID-19 and non-COVID-19 outcomes (Cronin & Evans, 2021). Black men represent a disproportionately high proportion of both COVID-19 and non-COVID-19 excess deaths and life-years lost. The excess mortality is likely related to social disparities. Chronic conditions and multimorbidity rates can also contribute excess mortality since Black populations have a higher risk of hypertension even when controlling for poverty (Arasteh, 2020). A US-based study by Arasteh, 2020 also found that Black populations have 1 ICU bed per 900 adults ≥60 years of age compared to 1 ICU bed per 452 in White populations. This can likely explain the issues that minority populations faced with accessibility and underutilization of healthcare services during the pandemic (Lowe et al., 2021). In multiple respects, the COVID-19 pandemic did not have an equal impact on all race/ethnicities.

Frank (2022) concluded that Black persons in Canada were more not likely to face healthcare disruption, and the article did not report on impacts to health due to disruption which may have been more severe in Black communities. However, since the statistical models

adjusted for many socioeconomic characteristics, health characteristics such as disability, and immigration status, the statistical contribution of Black race may have been diminished by over-adjusting in the model. Additionally, the study did not utilize a community-based approach to sampling and may have failed to adequately represent Black populations. This further emphasizes the importance of more targeted, community-based research when exploring health equity.

2.2.2.2 Mental Health

Racial/ethnic minorities were far more likely to experience discrimination during the COVID-19 pandemic (Strassle et al., 2022); however, due to the closure of places of worship, communities have lost a pillar in the promotion of mental health and coping (DeSouza et al., 2020). Predominantly Black Churches have had a significant role in helping Black populations cope with racism and trauma and the loss of this key resource, and the widespread impact to mental healthcare during the pandemic may have severe implications. Yet, studies comparing the mental health of Black and White populations during the pandemic have observed comparatively lower rates of depression and anxiety during the pandemic in the former (Owens & Saw, 2021; Riehm et al., 2021). Cultural differences in mental health perceptions, stigma surrounding mental health, differences in reporting mental health, and increased levels of psychological resilience within Black communities have likely contributed to the comparatively lower rates of depression and anxiety despite facing more challenges during the pandemic (Owens & Saw, 2021; Riehm et al., 2021). However, psychological distress may still have increased within Black communities. Berghs and colleagues (2021) reported an increase in psychological distress and wellbeing among Black populations and issues related to discrimination and unmet healthcare needs that

led to psychological distress. This further emphasizes the need for community-based research that focuses on health outcomes within Black populations.

2.2.2.3 Quality of life (QoL)

Owing to the increase in distress caused by the pandemic, it is critical to assess QoL and wellbeing (Bao et al., 2020); however, relatively few studies have done this. Berghs and colleagues (2021) used a mixed-methods approach to assess health-related QoL and mental health trends in Black individuals living with sickle cell disease in the UK during the COVID-19 pandemic and reported that QoL decreased during the pandemic. This article did not compare outcomes between races/ethnicities, instead it focused on reporting results relevant to a Black population in the UK.

2.3 Intersectionality

Intersectionality is the idea that an individual's identities and social factors intersect and shape a person's lived experiences (Sabik, 2021). A person is not only defined by one social identity, rather their experiences are shaped by their combination and over the course of their lifetime. For example, a Black woman's health will be influenced by both her gender and race/ethnicity (Chinn et al., 2021). Women are more likely to have pain be underrated or undetected (Samulowitz et al., 2018), and Black people are less likely to be prescribed necessary pain medication (Olanlesi et al., 2023; Stepanikova & Oates, 2016). Therefore, it is critical to adopt an intersectional lens when evaluating health disparities in order to uncover social issues that negatively impact health (Harari & Lee, 2021; Sabik, 2021). According to Bowleg, (2012) by incorporating an intersectional framework in health equity research, it becomes possible to

inform more nuanced population-level and individual-level health intervention strategies, shape more appropriate health policy, and analyze the missed needs of the groups made most vulnerable. As an example, Veenstra (2011) demonstrated that models including intersecting social factors can reveal either an additive or multiplicative effects to the explanatory power of a model. A review by Farrell and colleagues (2022) considered the intersection of structural racism and ageism in healthcare in the context of the COVID-19 pandemic and found that existing inequalities experienced by marginalized communities were worsened.

It has been suggested that due to structural racism, older adults from ethnic/racial minority communities have been further marginalized and may have been more significantly impacted by the pandemic (Garcia et al., 2020). Thus, it is critical to assess the impact of the pandemic in marginalized older adults. The study calls attention to the need for health research that considers the intersection of age and race especially in the aftermath of the COVID-19 pandemic. Therefore, the present study aims to examine age and race as the primary intersection; while additionally considering how other risk factors (such as gender, living arrangements, and chronic conditions and multimorbidity status) intersect with age and race in the impact on health status.

2.3.1 Intersectionality of Age and Race During the Pandemic

2.3.1.1 Physical Health

Literature extensively reports that both older age and minority race/ethnicity are associated with COVID-19 infection, hospitalization, and mortality (Conway et al., 2021; Rozenfeld et al., 2020; Hollis et al., 2021; Izzy et al., 2020; Bassett et al., 2020; Azar et al., 2021). It has been hypothesized that social inequities and marginalization associated with older

age and minority race/ethnicity may have created combined risks for adverse outcomes during the pandemic (Walubita et al., 2021; Chatters et al., 2020). Some evidence has suggested that older ethnic minority adults had significant physical health risks. Weech-Maldonado et al., 2021 found that nursing homes with higher proportions of minority residents had disproportionately high rates of death due to COVID-19. Similar results were reported by Li et al., 2021 where it was found that nursing homes with high proportions racial/ethnic minority residents had higher COVID-19 incidence and fatality rates. Minority race/ethnicity was a robust predictor for mortality and hospitalization among those with Alzheimer's disease and related dementias, thus demonstrating the racialized risks associated with aging (Qin et al., 2023). It is also critical to consider that frail older adults, those with dementia, multimorbidity, or disability may have been impacted differently especially between races/ethnicities. Xu and Arling, 2023 observed that among those who were non-frail, racial/ethnic minorities were less likely to put-off care than Whites; however, among frail individuals, minorities were more likely to put-off care than Whites.

A review by Garcia et al., 2020 identifies structural racism and racial/ethnic inequalities in COVID-19 risks in older adults including risk of exposure and healthcare access and quality. The review explains that the combined risks of minority race/ethnicity and older age are significant, and data that reports the impact of COVID-19 on racial/ethnic minority older adults is needed to increase health equity in the future. Cai et al., 2021 reports that nursing homes with a higher proportion of Black or Hispanic residents experienced higher rates of COVID-19 cases and deaths. These findings, in consideration with health research recommendations proposed by Garcia et al., 2020, draw attention to the importance of assessing physical health outcomes in older racial/ethnic minority adults in the wake of the pandemic.

2.3.1.2 Mental Health

Li & Luo (2023) report that older age Black and Hispanic populations reported higher depressive symptoms due to increased disruption to family activities. However, the article also notes increased psychological resilience in older age minority populations compared to White older age populations. Consequently, the increased resilience largely offset the increased depressive symptoms. Conversely, Hamler and colleagues (2022) report lower psychological distress in Black than White middle-aged and older adults. The study identified increased resilience as one explanation for the "race paradox" in mental health. Additionally, African American older adults are more likely to internalize stigma and hold less positive views on needing to seek mental health treatment (Conner et al., 2010). This may contribute to the underreporting of mental health concerns during the pandemic among racial/ethnic minority older adults.

2.3.1.3 Quality of life (QoL)

There is a significant gap in literature examining the QoL of older racial/ethnic minority adults during the pandemic. Regarding factors that may be important to QoL of older racial/ethnic minority adults, it has been suggested in a qualitative study by Paudyal et al., 2022 that wellbeing, a concept related to QoL, can be promoted by recognizing culturally important practices and family structures. This study emphasizes the importance of looking at QoL through a social lens. It is important to consider that the pandemic has influenced policy changes in Canada such as limiting visitations in hospitals and long-term care homes, and in creating travel/transport restrictions. Considering how these policy restrictions may have affected certain

cultural practices and family structures more so than others, it is important to investigate how this has impacted the QoL of older ethnic minority adults.

Chapter 3: Conceptual Framework and Methodology

The WHO Commission on Social Determinants of Health's framework largely informs the conceptual framework of this study (Solar & Irwin, 2010). Structural (social, political, and economic) mechanisms define socioeconomic positions that are largely stratified by race/ethnicity, gender, income, education, occupation, and social class. The structural mechanisms and socioeconomic positions they define are referred to as structural determinants of health. Structural determinants interact with intermediary determinants of health (such as material circumstances, psychosocial circumstances, and biological and behavioural factors) and the healthcare system to determine equity in health and wellbeing outcomes (Appendix A: Figure 1). The present study primarily examines how age, an intermediary determinant, creates differences in health and wellbeing outcomes among minorities in race/ethnicity, a structural determinant. Furthermore, the study considers the intersectionality of other important determinants identified in the framework such as: sex, living arrangements, multimorbidity and chronic conditions, education, income, being Canadian-born, pre-existing mental illness, and dementia status.

The literature search has emphasized the importance of considering the intersectionality of risk factors that contribute to adverse health outcomes during the pandemic. Factors that contribute to health outcomes can either be more social or clinical in nature, but should be carefully considered as they are complexly interwoven and can influence a person's lived experiences. Therefore, it is important to reflect the interconnected nature of health determinants in statistical analysis of a health equity study (Veenstra, 2011). The SDoH and Intersectionality search consisted of reviews that explored how healthcare research can be conducted through the lens of the SDoH and intersectionality. Kelly et al. (2022) is one such article that emphasizes the

importance of using an intersectional framework when studying health inequities. When studying health (in)equity, it is critical to contextualize findings by discussing the "root cause of the causes" (Davison et al., 2015). This process is the only way in which intersectionality theory can be applied to understand deeply imbedded societal inequities that are reflected in health. Therefore, a deep analysis of societal inequities will contribute to contextualizing the results of the study. The older age and race/ethnicity search consisted of many studies which reported health disparities by comparing the physical health of Black and White persons, or emphasizing that older age is a physical health risk. Fewer studies examined the intersectionality of old age and race in Canada.

Community-based research in health involves collaboration between researchers and community members. This process involves the community as equal members in all aspects of the research including developing the research question(s), planning community engagement strategies, validating the appropriateness of the methods and findings, and the dissemination of the findings (Minkler, 2005). Unfortunately, community-based research was rarely used to investigate the impacts of the COVID-19 pandemic in communities made vulnerable.

The present study utilizes a cross-sectional analysis of secondary data from a community-based survey. Using quantitative research is an appropriate way to quantify the extent to which the health of older age populations within black communities has been affected. Especially in the context of an exploratory study, a cross-sectional study's ability to record multiple exposures and outcomes can help report more nuanced results and direct further investigation (Celantano et al., 2019). Investigating a health equity topic and when involving populations that have been made vulnerable, it is critical to take a community-based approach (Srinivasan & Williams, 2014).

This allows for better community engagement and for the study to best reflect the specific health needs of a community.

Research Objective 1:

We described physical health, mental health, and QoL in different age groups within Black communities. The hypothesis was that older age groups may express higher proportions of "poor or very poor" perceived physical health and QoL during the pandemic and a lower proportion of poor or very poor mental health outcomes.

Research Objective 2:

We assessed the contribution of age in determining adverse change in physical health, mental health, and QoL during the pandemic within Black communities while controlling for other factors including education, income, being Canadian-born, pre-existing mental illness, and dementia status. As reflected in the intersectionality of SDoH framework, these factors may confound or modify of the association with age and should be considered.

Age constitutes the main exposure for each outcome of interest, and according to the SDoH and intersectionality frameworks, the contribution of other factors and how they may modify or confound the effect of age was also assessed. Additionally, the intersection of age and sex, living arrangements, or chronic conditions and multimorbidity status was also described.

First, it was hypothesized that older age will be associated with adverse changes in physical health. The second hypothesis was that older age may decrease the risk of adverse mental health changes during the pandemic which may be explained by increased resilience and possible underreporting of mental health. The final hypothesis was that older age may increase the risk for adverse changes in QoL during the pandemic. Additionally, there may be a higher

proportion of older adults who experienced adverse health outcomes during the pandemic given sex, living arrangements, and chronic condition status. Figure 1 specifies the variables and relationships that will be considered in assessing each outcome:

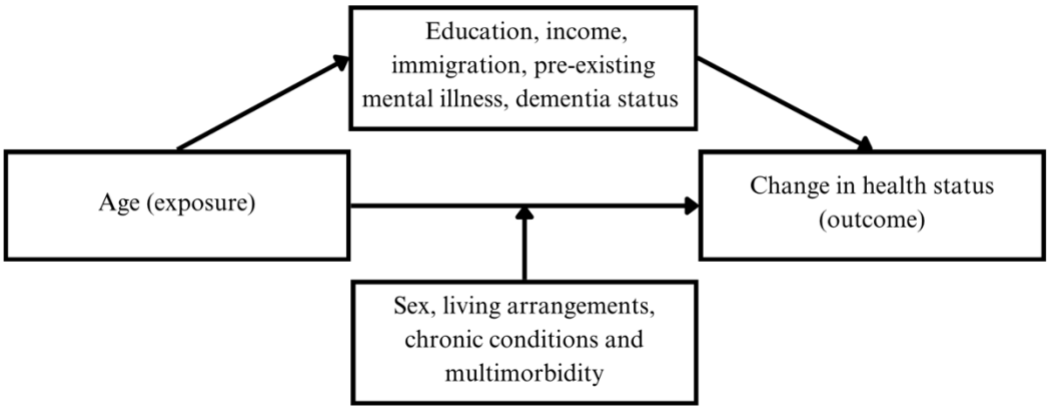

Figure 1: Relationship between health status and age, and the effect of other factors

Chapter 4: Methods

4.1 Ethics

General ethics approval has been obtained from the Lakehead University Research Ethics Board for the original study. As this study involves secondary analysis of anonymized data, ethics approval is not required according to the Tri-Council Policy Statement 2022 Article 2.4B (TCPS2, 2022). Instead, an exemption from the Lakehead University Research Ethics Board was obtained.

It is important that the study uses approaches that reflect best practices and recommended strategies when working with Black populations or other marginalized groups. Efforts were made to reflect the Engagement, Governance, Access, and Protection (EGAP) principles proposed by the Black Health Equity Working Group (2021). The EGAP framework aims to guide responsible collection and use of race-based data in health sciences. As such, the community-based research providing the data has involved Black community members in every step of this research to ensure engagement, governance, and to represent the priorities and needs of the community, as well as ensure appropriate access to the data.

4.2 Study Design

The study utilized a cross-sectional design. A cross-sectional design is appropriate given the ability to record many variables from which data patterns and relationships can be described (Celentano et al., 2019). Though a cross-sectional design is not able to infer causality, it is a useful, cost-effective, and feasible step in exploring gaps in health equity in the wake of the COVID-19 pandemic.

4.3 Study Population and Data Source

The study is a secondary analysis of data from a larger community-based study of Canadian Black, African, and Caribbean persons. The target population included all Black adults (≥18 years of age) living in the Greater Toronto Area, Ontario during the COVID-19 pandemic. According to 2016 census data, the Greater Toronto Area has the largest Black population in Canada, therefore a community-based survey in the GTA was used to represent a sample of the larger target population. The data was actively collected at community events to boost engagement and community outreach, as well as through social media advertising. Participants completed a survey online or in person in either English or French, and responses were collected from November 2022 to May 2023.

The primary study utilized a community-based approach. The majority of the researchers for the study identify as Black and were able to provide content as well as context expertise for the topic of Black health. Additionally, the study collaborated with Black community leaders throughout the data collection process. For example, meetings with stakeholders took place to discuss how to best engage and boost the participation of Black participants, to validate the questionnaire, and to disseminate findings as to benefit Black communities.

4.4 Measures

All study variables are based on self-reported data from the survey. Based on previous literature, potential covariates include both social and clinical factors such as: chronic condition and multimorbidity status, pre-existing mental illness, gender, income, education, and immigration status (Numbers & Brodaty, 2021; Russel et al., 2023; Lewis et al., 2022; Bambra et al., 2021; Green et al., 2021; McNeely et al., 2020; Fredricks et al., 2020). These factors have

been previously associated with poor health outcomes during the COVID-19 pandemic and are considered covariates in the present study.

4.4.1 Main Exposure and Covariates

4.4.1.1 Age

Participants were asked "What is your age (in years)?" Responses were recorded as a continuous variable. For the present study, age was treated as a categorical variable and groups were defined to compare younger individuals to older. The cut-offs for age groups were determined based on relevant age groups in the context of health and disease: 18-33, 34-48, 49-64, 65-78, and 79+ (Geifman et al., 2013).

4.4.1.2 Sex

Participants were asked to specify their biological sex. Answer options included: Male or female.

4.4.1.3 Education

Participants were asked to specify their educational attainment. Education was categorized as high school or less; diploma, degree, or trade school; or graduate-level or higher.

4.4.1.4 Income

Participants were asked "What is your total household income?" Income was categorized as less than $20,000; $20,000 to $49,999; 50,000 to $99,999; or $100,000 or more.

4.4.1.5 Living Arrangements

Participants were asked “Which of the following best describes your living situation” Living arrangements were categorized as living alone or living with others.

4.4.1.6 Being Canadian-Born

Participants were asked “Were you born in Canada?” Answer options included yes or no.

4.4.1.7 Chronic Conditions

Participants were asked “Were you ever diagnosed with any of the following long-term conditions? (Select all that apply).” Options included: Diabetes, High Blood Pressure, Coronary Heart Disease; Congestive Heart Failure; Arrhythmia; Osteoarthritis or other arthritis; Rheumatoid Arthritis; Osteoporosis; Stroke; COPD; Asthma; Renal Disease; Iritable Bowel Syndrome; Cancer; HIV/AIDS; Hepatitis; Autism; Mood Disorder; Depression/Anxiety; Other Mental Health Problems (please specify). For each choice, participants can indicate the time frame of disease diagnosis: as Yes (before the COVID-19 pandemic started in 2020); or Yes (after 2020).

For the present study, a binary variable was created and called “Chronic Conditions.” The response to any chronic conditions from the list of conditions above or specified in “other” was classified as 1 or more chronic conditions. If no chronic conditions were indicated, this was classified as no chronic conditions.

4.4.1.8 Mental Illness

For the present study, a binary (yes or no) variable was created to indicate the presence of any mental illness from the list above (such as anxiety/depression) or as specified in "other", classified as "yes." The absence of any mental illness was classified as "no."

4.4.2 Outcomes

4.4.2.1. Self-Reported Physical Health

Participants were asked "How would you describe your overall health before the pandemic?" and, "Define your overall health during the pandemic?" using a Likert scale from 1-5 where 1 is very poor; 2 is poor; 3 is fair; 4 is good; 5 is excellent. This self-reported assessment was used to measure physical health status.

A binary (yes or no) outcome variable was created to assess "Adverse Change in Physical Health." Adverse changes in physical health were defined by a decrease in self-rated overall health during the pandemic (e.g., from "good" before the pandemic to "poor" during the pandemic, or "poor" before the pandemic to "very poor" during the pandemic, etc.).

4.4.2.2 Self-Reported Mental Health

Participants were asked "How would you describe your mental health before the pandemic?" and, "Define your mental health during the pandemic?" using a Likert scale from 1-5 where 1 is very poor; 2 is poor; 3 is fair; 4 is good; 5 is excellent. This self-reported assessment was used to measure mental health status.

A binary (yes or no) outcome variable was created to assess "Adverse Change in Mental Health." Adverse changes in mental health were defined by a decrease in self-rated mental health

during the pandemic (e.g., from “good” before the pandemic to “poor” during the pandemic, or “poor” before the pandemic to “very poor” during the pandemic, etc.).

4.4.2.3 Self-Reported Quality of Life (QoL)

Participants were asked “How would you describe your quality of life before the pandemic?” and “Define your quality of life during the pandemic?” using a Likert scale from 1-5 where 1 is very poor; 2 is poor; 3 is fair; 4 is good; 5 is excellent. This self-reported assessment was used to measure QoL status.

A binary (yes or no) outcome variable was created to assess “Adverse Change in QoL.” Adverse changes in QoL were defined by any decrease in self-rated QoL during the pandemic (e.g., from “good” before the pandemic to “poor” during the pandemic, or “poor” before the pandemic to “very poor” during the pandemic, etc.).

4.5 Analysis

4.5.1 Descriptive Analysis

All statistical analyses were conducted using SAS software. A preliminary data validation step was first completed to ensure data accuracy. This step included data cleaning and verifying that participants answered survey questions appropriately (e.g., for living arrangements: writing “I live alone” in the “other, please list” category). Univariate analysis was conducted to describe the overall characteristics of the sample for each variable (including the frequency of missing answers). Beside conceptual relevance, the observed frequencies informed how variables should be categorized, sample sizing issues for variables, and choosing an appropriate reference group. Additionally, this also informed on potential errors in the data inputting and coding step if, for

example, an unusual number of responses were missing. Bivariate analysis was conducted by making cross-tables for each variable across all age groups. This provided a description of the study sample by age. Chi-square testing was conducted to report any significant differences ($p < .05$) between age groups for each variable.

4.5.2 Research Objective 1

Bivariate analyses using chi-square tests informed on the differences in self-reported physical health, mental health, and QoL by age group.

4.5.3 Research Objective 2:

Initial models assessed the crude impact of age on each of the outcomes of interest. For adjusted multivariate models, one covariate was added at a time to the model with age, and each covariate's contribution to the outcome and to the effect of age was assessed. If a covariate was not statistically significantly associated with the outcome ($p>=0.05$) or if it did not change the beta estimate of age by at least 20%, it was removed. Since the overall sample size of older adults is small ($n = 12$), significance at alpha = 0.10 was also assessed. Given the exploratory nature of the study, it may be more harmful to suggest a false negative than a false positive (Serdar et al., 2021; Miller & Ulrich, 2019). In other words, since there is limited research on the study topic, it may be more harmful to miss the health impacts faced by older Black adults during the pandemic than to falsely suggest a link.

To somewhat assess intersectionality, the proportion of older adults who experienced adverse health outcomes during the pandemic was stratified by sex, living arrangements, and chronic condition status. These proportions were compared to adults <65 years of age.

Chapter 5: Results

5.1 Study Demographics

5.1.1 Overall Study Characteristics

This study included 303 adults (age ≥18 years of age) who self-identified as African, Caribbean, or Black. Table 1 shows the characteristics of the study population.

The mean age was 39.31 years (SD 12.7), with the oldest individual being 74 years of age. There were 12 persons 65 years of age or older representing 4.0% of the study sample. Most of the study sample was female (61.1%), not Canadian-born (77.5%), and lived with others during the pandemic (74.7%). The majority had no chronic conditions (77.9%), 22.2% had one or more chronic condition. Most of the sample did not report any mental illness (93.4%).

5.1.2 Characteristics of older adults

While there was no significant difference in sex, living arrangements, or mental illness, there were significant differences by age groups for chronic conditions, being Canadian-born, household income, and education (Table 1).

There were more older adults who had one or more chronic condition compared to the younger age groups. Older adults had the highest proportions of people not born in Canada, were more frequent in the two lowest income groups, and in lowest level of education. Older adults had the lowest proportion of people in the highest two income groups, as well as those with a diploma, degree, or trade school education level.

Table 1: Characteristics of the study population

Characteristics	Total: n (%)	Aged 18-33	Aged 34-48	Aged 49-64	Aged ≥65
Total study sample	303	100 (33.0%)[a]	139 (45.9%)[a]	52 (17.2%) [a]	12 (4.0%) [a]
Sex					
Male	116 (38.9%)	40 (41.7%)	53 (38.4%)	18 (34.6%)	5 (41.7%)
Female	182 (61.1%)	56 (58.3%)	85 (61.6%)	34 (65.4%)	7 (58.3%)
Living Arrangements					
With others	216 (74.7%)	75 (77.3%)	95 (73.1%)	37 (74.0%)	9 (75.0%)
Alone	73 (25.3%)	22 (22.7%)	35 (26.9%)	13 (26.0%)	3 (25.0%)
Chronic Conditions*					
No condition	232 (77.9%)	90 (90.9%)	107 (78.7%)	30 (57.7%)	5 (45.5%)
1 or more conditions	66 (22.2%)	9 (9.1%)	29 (21.3%)	22 (42.3%)	6 (54.6%)
Canadian Born*					
Yes	65 (22.5%)	43 (43.4%)	22 (16.7%)	0 (0%)	0 (0%)
No	224 (77.5%)	56 (56.6%)	110 (83.3%)	47 (100.0%)	11 (100.0%)
Mental Illness					
Yes	20 (6.6%)	4 (4.0%)	10 (7.2%)	5 (9.6%)	1 (8.3%)
No	283 (93.4%)	96 (96.0%)	129 (92.8%)	47 (90.4%)	11 (91.7%)
Household Income*					
Less than $20,000	64 (23.2%)	30 (34.9%)	17 (13.1%)	13 (26.5%)	4 (36.4%)
$20,000 to $49,999	97 (35.1%)	28 (32.6%)	46 (35.4%)	18 (36.7%)	5 (45.5%)
$50,000 to $99,999	72 (26.1%)	18 (20.9%)	41 (31.5%)	11 (22.5%)	2 (18.2%)
$100,000 or more	43 (15.6%)	10 (11.6%)	26 (20.0%)	7 (14.3%)	0 (0%)
Education*					
Highschool or less	49 (16.2%)	27 (27.0%)	10 (7.2%)	7 (13.5%)	5 (41.7%)
Diploma, degree, or trade school	107 (35.3%)	42 (42.0%)	41 (29.5%)	22 (42.3%)	2 (16.7%)
Graduate-level or higher	147 (48.5%)	31 (31.0%)	88 (63.3%)	23 (44.2%)	5 (41.67%)

***Differences between age groups significant at $p < 0.05$

[a] Row percentage

5.2 Objective 1: Describing Health During the COVID-19 Pandemic

5.2.1 Physical Health

Overall, most people in the sample reported their physical health status as good or excellent (46.5%). Meanwhile, 17.7% of the sample reported very poor or poor health.

Self-reported health status did not differ significantly between the age groups (Figure 2). As seen in Figure 4, approximately 8.3% of older adults reported a very poor or poor QoL status QoL, 66.7% reported a fair physical health status, and 25.0% reported a good or excellent physical health status.

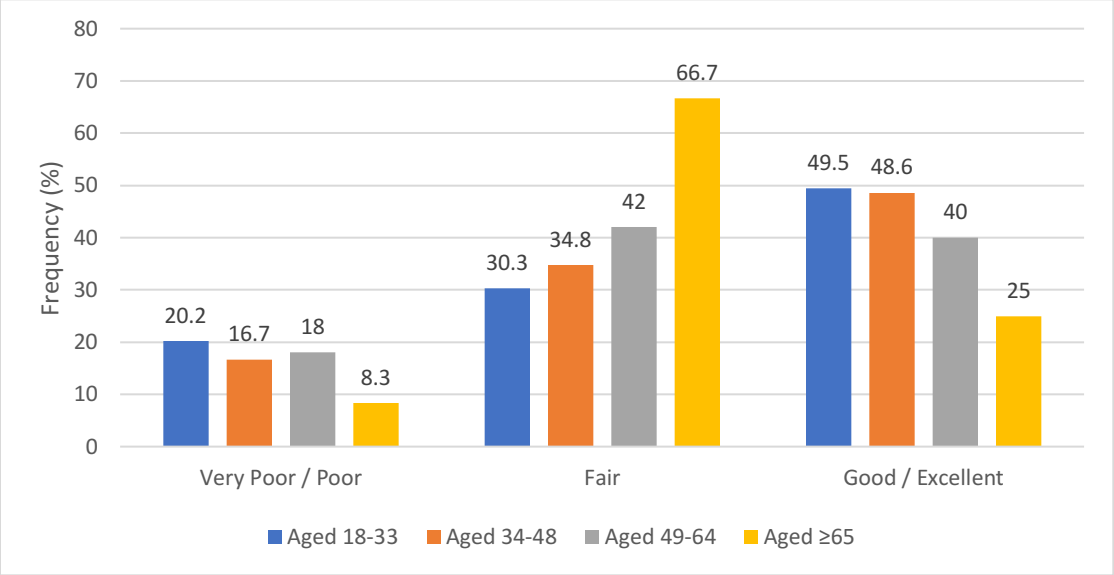

Figure 2: Self-reported physical health during the pandemic by age category

5.2.2 Mental Health

Overall, most people in the sample reported their mental health status as good or excellent (41.5%). Only 22.7% of the sample reported very poor or poor health.

The association between age groups and reported mental health status was significant (p-value < 0.05). No individuals ≥65 years of age reported very poor or poor mental health statuses; they equally reported either fair mental health (50.0%) or good or excellent mental health (Figure 3). Comparatively, older adults reported the highest proportion of fair self-reported mental health. Those aged ≥65 exhibited the lowest proportion of very poor and poor outcomes with no individuals reporting these outcomes. Individuals aged ≥65 demonstrated the second highest proportion of good or excellent health outcomes. Individuals aged 18-33 years exhibited the highest proportion of very poor or poor mental health outcomes.

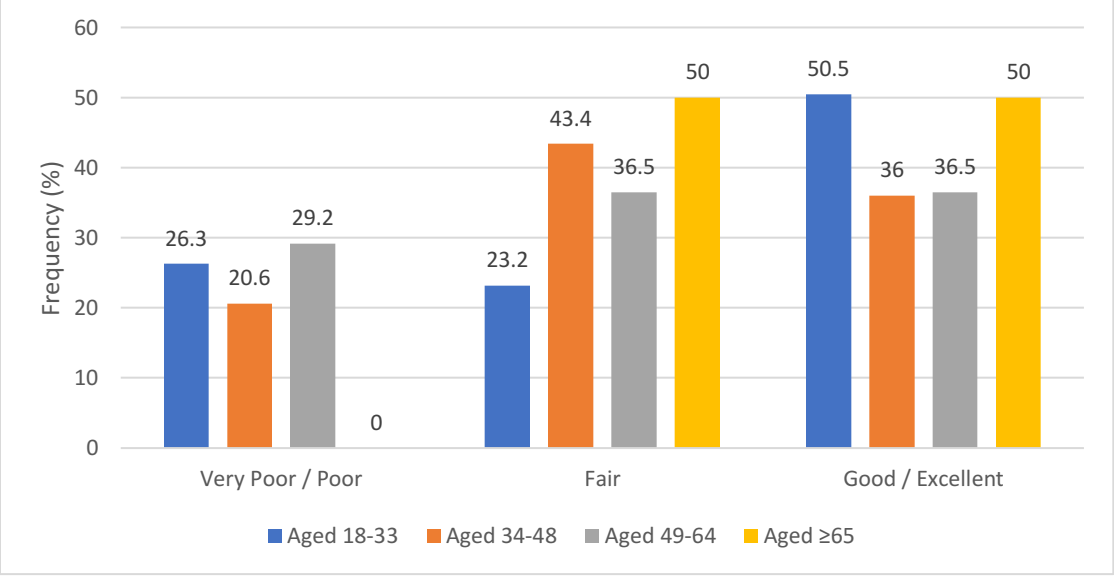

Figure 3: Self-reported mental health during the pandemic by age category

5.2.3 QoL

Overall, most people in the sample reported their QoL status as fair (43.0%), while 27.0% reported very poor or poor health.

Self-reported QOL did not differ significantly between the ages. As seen in Figure 4, approximately 16.7% of older adults reported a very poor or poor QoL status QoL, 50% reported a fair QoL, and 33.3% reported a good or excellent QoL.

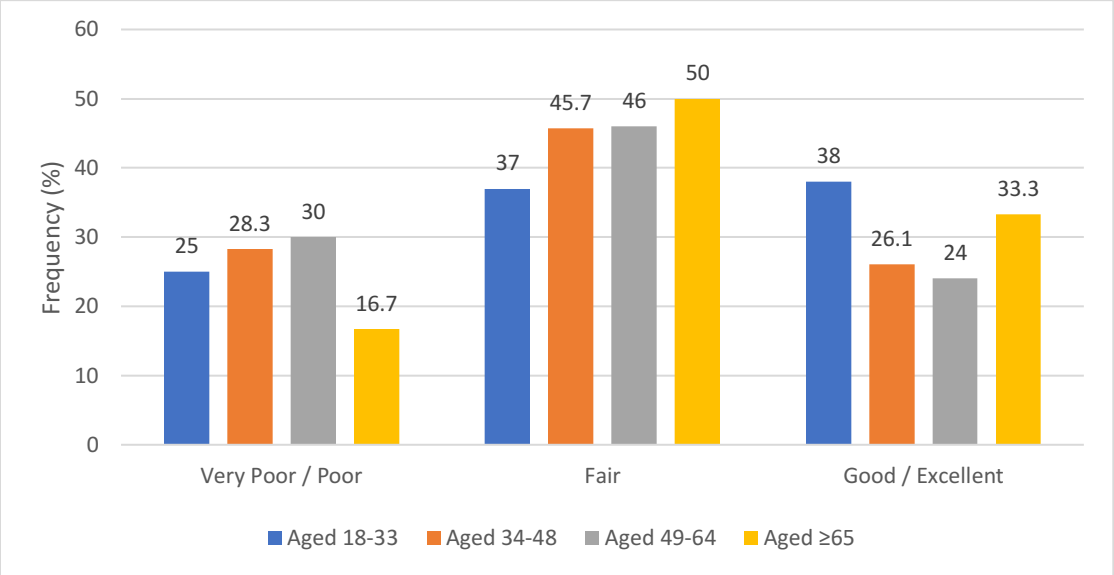

Figure 4: Self-reported QoL during the pandemic by age category

5.3 Objective 2: The Role of Age in Contributing to Adverse Health Outcomes During the COVID-19 Pandemic

5.3.1 Adverse Changes in Physical Health

Overall, 58.3% of the sample demonstrated an adverse change in self-reported physical health (Figure 5). 66.7% of older adults reported adverse changes in physical health. There was no statistically significant difference in rates of adverse changes between age groups.

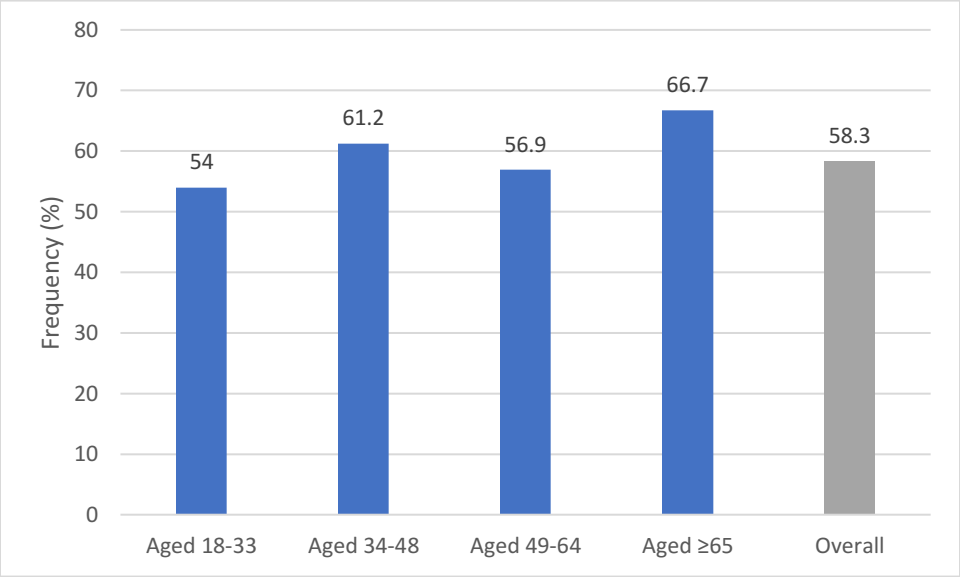

Figure 5: Adverse changes in physical health during the pandemic

Table 2 shows the results of the adjusted logistic regression model for adverse change in physical health status. Having an annual household income under $20,000 was associated with a 2.4 increase in those odds compared to those with an annual household income between $50,000-$99,999. No other clinical or social covariates were significant. After controlling for covariates, old age did not significantly increase the odds for adverse changes in self-reported physical health status.

Table 2: Adjusted logistic regression model of adverse changes in physical health (n = 243)

Characteristics	Adverse Change n (%)	OR (95% CI)	P-value
Age (years)			0.4399
Aged 18-33	54 (54.0%)	(reference)	
Aged 34-48	85 (61.2%)	1.7 (0.8-2.3)	0.1455
Aged 49-64	29 (56.9%)	1.1 (0.5-2.6)	0.8215
Aged ≥65	8 (66.7%)	1.7 (0.4-7.4)	0.4670
Sex			0.1114
Male	60 (52.2%)	(reference)	
Female	112 (61.5%)	1.6 (0.9-2.7)	0.1114
Living Arrangements			0.9027
With others	125 (58.1%)	(reference)	
Alone	44 (60.3%)	1.0 (0.5-1.8)	0.9027
Chronic Conditions			0.4881
No condition	132 (57.1%)	(reference)	
1 or more conditions	40 (60.6%)	0.8 (0.4-1.6)	0.4881
Canadian Born			0.1502
Yes	42 (64.6%)	1.7 (0.8-3.7)	0.1502
No	125 (56.1%)	(reference)	
Mental Illness			0.6957
Yes	14 (70.0%)	1.3 (0.4-4.7)	0.6957
No	162 (57.5%)	(reference)	
Household Income			0.2227
Less than $20,000	44 (69.8%)	2.4 (1.1-5.6)	0.0367
$20,000 to $49,999	55 (65.7%)	1.5 (0.8-2.9)	0.2535
$50,000 to $99,999	40 (55.6%)	(reference)	
$100,000 or more	26 (60.5%)	1.4 (0.6-3.3)	0.3947
Education			0.6755
Highschool or less	25 (51.0%)	0.7 (0.3-1.7)	0.4497
Diploma, degree, or trade school	67 (63.2%)	1.1 (0.6-2.0)	0.8707
Graduate-level or higher	84 (57.1%)	(reference)	

5.3.2 Adverse Change in Mental Health

Overall, 56.3% of the sample demonstrated an adverse change in self-reported mental health (Figure 6). 41.7% of older adults reported adverse changes in mental health. There was no statistically significant difference in rates of adverse changes between age groups.

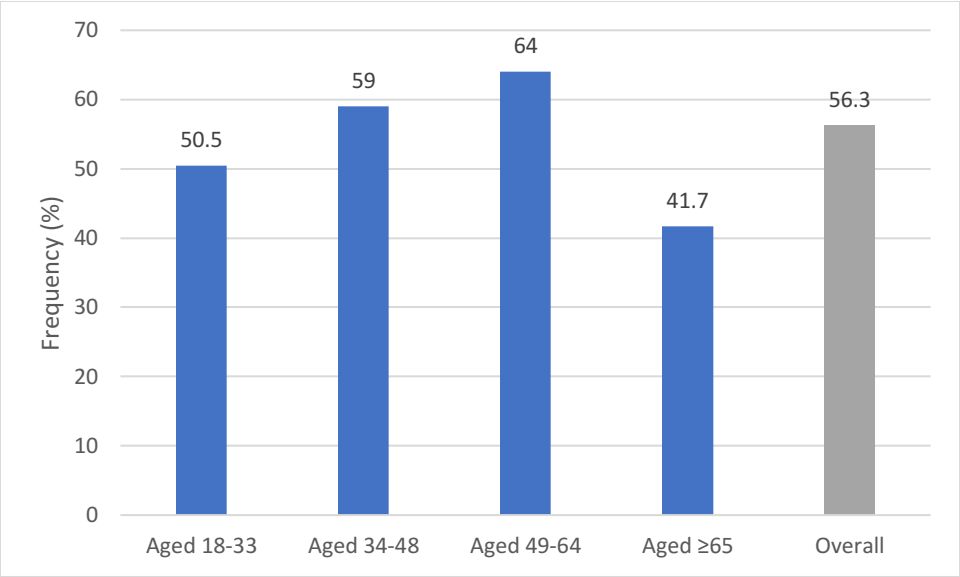

Figure 6: Adverse changes in mental health during the pandemic

Table 3 shows the results of the adjusted logistic regression model for adverse change in mental health status. Having an annual household income of $20,000 to $49,000 was associated with 1.8 increase in the odds for adverse changes in mental health. This is significant at alpha = 0.10 and not 0.05. Having an educational attainment at the diploma, degree, or trade school level was associated with a 2.3 increase in the odds for adverse changes. This was significant at 0.05. No other clinical or social covariates were statistically significant. After controlling for covariates, old age did not significantly increase the odds for adverse changes in self-reported mental health status.

Table 3: Adjusted logistic regression model for adverse changes in mental health (n = 263)

Characteristics	Adverse Change n (%)	OR (95% CI)	P-value
Age (years)			0.6839
Aged 18-33	50 (50.5%)	(reference)	
Aged 34-48	82 (59.0%)	1.0 (0.5-2.0)	0.9680
Aged 49-64	32 (64.0%)	0.9 (0.4-2.2)	0.8166
Aged ≥65	5 (41.7%)	0.4 (0.1-1.8)	0.2412
Sex			0.3800
Male	59 (51.3%)	(reference)	
Female	106 (58.9%)	1.3 (0.7-2.3)	0.3800
Living Arrangements			0.2156
With others	123 (57.8%)	(reference)	
Alone	40 (54.8%)	0.7 (0.4-1.3)	0.2156
Chronic Conditions			0.2541
No condition	128 (55.9%)	(reference)	
1 condition	39 (59.1%)	1.6 (0.7-3.5)	0.2541
Canadian Born			0.2742
Yes	35 (53.9%)	0.7 (0.3-1.4)	0.2742
No	122 (55.0%)	(reference)	
Mental Illness			0.5457
Yes	11 (55.0%)	0.7 (0.2-2.4)	0.5457
No	158 (56.4%)	(reference)	
Household Income			0.1127
Less than $20,000	33 (53.2%)	0.8 (0.3-1.7)	0.5333
$20,000 to $49,999	64 (66.7%)	1.8 (0.9-3.8)	0.0938
$50,000 to $99,999	40 (55.6%)	(reference)	
$100,000 or more	22 (51.2%)	0.9 (0.3-2.1)	0.8513
Education			0.0047
Highschool or less	18 (36.7%)	0.6 (0.2-1.5)	0.2642
Diploma, degree, or trade school	70 (66.7%)	2.3 (1.2-4.4)	0.0119
Graduate-level or higher	81 (55.5%)	(reference)	

5.3.3 Quality of Life

Overall, 66.0% of the sample demonstrated an adverse change in QoL (Figure 7). There was a statistically significant difference in proportion of adverse change in QoL between age groups (p-value < 0.10). Both individuals aged ≥65 years and aged 49-64 years had the highest proportion of adverse changes in QoL at 75%, respectively (figure 6). Comparatively, individuals aged 18-33 years had the lowest proportion of adverse changes in QoL.

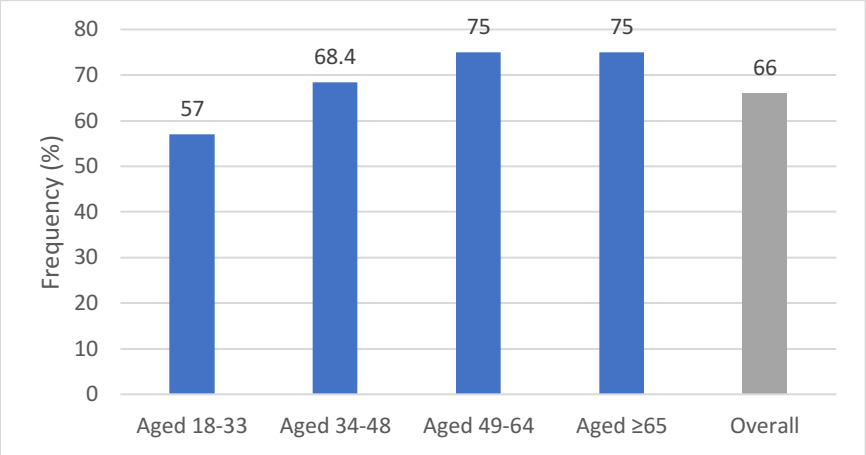

Figure 7: Adverse changes in QoL during the pandemic

Table 4 shows the results of the adjusted logistic regression model for adverse change in QoL status. Overall, sex was a significant contributor to the model, where females had a 2.4 increase in odds for adverse changes in self-reported QoL. No other clinical or social covariates were statistically significant. After controlling for covariates, old age did not significantly increase the odds for adverse changes in self-reported QoL status.

Table 4: Adjusted logistic regression model for adverse change in QoL (n = 303)

Characteristics	Adverse Change n (%)	OR (95% CI)	P-value
Age (years)			0.5187
Aged 18-33	57 (57.0%)	(reference)	
Aged 34-48	95 (68.4%)	1.1 (0.5-2.2)	0.8350
Aged 49-64	39 (75.0%)	1.5 (0.6-3.9)	0.3891
Aged ≥65	9 (75.0%)	3.3 (0.6-18.4)	0.1808
Sex			0.0034
Male	68 (58.6%)	(reference)	
Female	128 (70.3%)	2.4 (1.3-4.3)	0.0034
Living Arrangements			0.6266
With others	144 (66.7%)	(reference)	
Alone	47 (64.4%)	0.9 (0.4-1.6)	0.6266
Chronic Conditions			0.5124
No condition	154 (66.4%)	(reference)	
1 condition	44 (66.7%)	0.8 (0.3-1.7)	0.5124
Canadian Born			0.2324
Yes	151 (67.4%)	0.6 (0.3-1.3)	0.2324
No	37 (56.9%)	(reference)	
Mental Illness			0.8598
Yes	13 (65.0%)	0.9 (0.2-3.3)	0.8598
No	187 (66.1%)	(reference)	
Household Income			0.1294
Less than $20,000	39 (60.9%)	0.6 (0.3-1.4)	0.2532
$20,000 to $49,999	62 (63.9%)	0.7 (0.3-1.4)	0.2878
$50,000 to $99,999	51 (70.8%)	(reference)	
$100,000 or more	33 (76.7%)	1.8 (0.7-4.9)	0.2176
Education			0.7044
Highschool or less	29 (59.2%)	0.7 (0.3-1.7)	0.4034
Diploma, degree, or trade school	68 (63.6%)	0.9 (0.5-1.8)	0.7884
Graduate-level or higher	103 (70.1%)	(reference)	

5.4 Interaction/Intersectionality

Table 5 shows the proportion of older adults, compared to younger adults (i.e., under 65 years) who experienced adverse changes, stratified by sex, living arrangements, and chronic conditions. None of these variables was significantly associated with the experience of any adverse changes in either age group.

Table 5: Comparison of adverse change among older and younger adults, stratified by sex, living arrangements, and chronic conditions

		Adverse Change in Physical Health n (%)	**Adverse Change in Mental Health n (%)**	**Adverse Change in QoL n (%)**
Age ≥65	**Sex**			
	Male	2 (40.0%)	1 (20.0%)	3 (60.0%)
	Female	6 (85.7%)	4 (57.1%)	6 (85.7%)
Age <65	**Sex**			
	Male	58 (52.7%)	58 (52.7%)	65 (58.6%)
	Female	106 (60.6%)	102 (59.0%)	122 (69.7%)
Age ≥65	**Living Arrangements**			
	With others	6 (66.7%)	4 (44.4%)	7 (77.8%)
	Alone	2 (66.7%)	1 (33.3%)	2 (66.7%)
Age <65	**Living Arrangements**			
	With others	119 (57.8%)	119 (58.3%)	137 (66.2%)
	Alone	42 (60.0%)	39 (55.7%)	45 (64.3%)
Age ≥65	**Chronic Conditions**			
	No condition	3 (60.0%)	2 (40%)	4 (80.0%)
	1 + condition	4 (80.0%)	3 (60%)	5 (83.3%)
Age <65	**Chronic Conditions**			
	No condition	129 (57.1%)	126 (56.3%)	150 (66.1%)
	1+ condition	36 (60.0%)	36 (60.0%)	39 (65.0%)

Chapter 6: Discussion

6.1 Assessing the Health of Older Black Adults During the COVID-19 Pandemic

6.1.1 Brief Summary of Results

The present study emphasizes the unique way in which old age could have affected health outcomes during the pandemic. For self-reported physical health and QoL outcomes, the difference between age groups was not statistically significant. For mental health, no older adults reported very poor or poor mental health statuses; instead, they equally reported either fair, or good or excellent mental health. Older adults reported which was significantly higher mental health ratings than younger age groups (p-value < 0.05). Since old age should not be necessarily considered "protective" against mental health adversity, this finding instead implies a possible underreporting of mental health concerns among older adults.

More than half of older adults demonstrated adverse changes in physical health, however, age differences were not significant. Three quarters of older adults reported adverse changes in QoL, which significantly higher than adverse changes among younger adults. After adjusting for covariates in the regression models, age was not a statistically significant contributor.

6.1.2 Navigating the Assessment of Health Outcomes

The literature comparing perceptions of health in older versus younger Black adults is limited. In general, older adults have been observed to perceive and rate their health status differently as compared to other age groups. For example, Uppal and Barayandema (2018) found that Canadian seniors report lower satisfaction with their health than younger adults, and that satisfaction with health decreases with age. Conversely, Ocampo (2010) reports that, with age, older adults may self-report their health more highly than younger adults because they have

become more accustomed to the effects of aging, and the survival effect which contributes to higher optimism regarding health. Therefore, since older adults may have different perceptions of health and QoL, directly comparing proportions of self-reported health on a likert scale between age groups may not reflect the full picture of the health of older adults during the pandemic. For this reason, the present study also considered adverse changes in health for each age group, and the extent to which old age and covariates are important contributors to adverse changes.

Consisting of only 4% of the sample, the present study involved a very small number of older adults (≥65 years of age) (n = 12). According to Statistics Canada, Older adults represent 7.4% of the Black population in Canada which implies the study represented somewhat similar age distribution, considering the likelihood to participate in the survey. However, such a small sample size limited the study's ability to prove statistical significance, if any, for the findings related to older adults. Additionally due to the small size, it was not possible to adequately assess how age intersects with other variables such as sex, living arrangements, and chronic conditions or multimorbidity.

6.2 Old Age as a Risk Factor During the Pandemic

6.2.1 Physical Health

Despite sample size limitations in the present study, literature widely suggests that older adults, especially those from marginalized communities, experienced a worsened physical health status during the pandemic. Previous literature has already implicated the role of Black race/ethnicity in both COVID-19 and non-COVID-19 physical health risks (Selden & Berdahl, 2020; Price-Haywood et al., 2020; Unruh et al., 2022). Risk among Black communities is largely

associated with social inequities, health inequities and race/racism. Literature has also extensively explored the risks factors to physical health that older adults have faced during the pandemic. This includes age-related risk factors for COVID-19 such as chronic conditions and multimorbidity (Roberts et al., 2015; Atkins et al., 2020); and indirect risk factors, such as frailty and social risk factors, that limited access to necessary healthcare and physical activity which ultimately worsened health (Boreskie et al., 2020). Additionally, literature emphasizes the combined risk that older Black adults faced during the COVID-19 pandemic, including the association of minority race/ethnicity and COVID-19 infection, hospitalization, and mortality (Conway et al., 2021; Rozenfeld et al., 2020; Hollis et al., 2021; Izzy et al., 2020; Bassett et al., 2020; Azar et al., 2021). According to Garcia and colleagues (2020), structural racism as well as social and health inequalities among older ethnic/racial minority adults has influenced risk of COVID-19 exposure, and healthcare access and quality.

In the present study, differences in self-reported health status between the age groups were not statistically significant. These results do not entirely agree with the study hypothesis or the literature which states that older adults would report a higher proportion of poor and very poor physical health outcomes. As previously stated, this result may be due to older adults perceiving and reporting their health differently than other age groups.

Approximately 66.7% of older adults experienced adverse changes, but the difference compared to younger adults was not statistically significant. After adjusting for covariates, older adults did not have significantly higher odds for adverse changes in physical health. Though this may be attributable to sample size, the lack of statistical significance may also be the result of social inequities experienced in Black communities in general, regardless of age. In other words, the challenges associated with Black race/ethnicity may be stronger than the impact of age.

Therefore, social inequities and disadvantage faced by Black communities may mask the inequality and disadvantage associated with older age. Further research with larger sample sizes should be conducted to further understand ageing and age-related risks to physical health among Black communities in Canada in the context of other competing risk factors.

6.2.2 Mental Health

Current literature suggests that among the general population, older adults were at risk for mental health challenges during the pandemic due to decreased in-person psychogeriatric support and increased social isolation (Flint et al., 2020). Raina and colleagues (2021) suggest there was an increase in depressive symptoms among middle and older adults during the pandemic, with higher odds in the former. However, Cosco and colleagues (2022) note that Canadian older adults reported lower rates in adverse changes to mental health than younger Canadians during the pandemic. This was largely attributed to older adults being prone to underreport mental health concerns and being less likely to seek mental health services or be referred to psychological therapy. Despite underreporting, the same study still reported that almost 30% of older adults experienced adverse changes in mental health during the pandemic. Additionally, compared to white populations, Owens & Saw (2021) reported that Black populations reported lower mental health concerns during the pandemic due to increased levels of psychological resilience within Black communities, differences in reporting mental health, and stigma surrounding mental health among Black communities. Yet, studies still reported an increase in psychological distress among Black populations due to unmet needs that worsened during the pandemic (Berghs et al., 2021). Older adults and Black communities each faced threats to their mental health during the pandemic, yet, factors such as stigma and poor access to mental health

services have contributed to severe underreporting of mental health concerns among these populations. Despite the threats to the mental health of older Black adults, they still report lower levels of psychological distress than White middle-aged and older adults (Hamler et al., 2022). This emphasizes the combined risk that older Black adults have in underreporting mental health during crises such as the COVID-19 pandemic.

In the present study, no older adults reported very poor or poor mental health statuses and equally reported fair mental health or good or excellent mental health. Overall, older adults reported better mental health outcomes than their younger counterparts and the differences in mental health between age groups were statistically significant. The results are consistent with the study hypothesis and literature that states older adults would report a lower proportion of poor and very poor mental health outcomes. Proportions and odds for adverse changes in mental health were not significantly different between age groups.

A larger study would be needed to robustly confirm the findings from the present study though they appear to agree with most literature that older adults do not report poor mental health or even adverse changes. However, the present study and current literature must be interpreted with care. Considering the age and race-related challenges that older Black adults faced during the pandemic, especially in terms of disproportionate health outcomes and isolation, it would be reckless to suggest that old age is protective against poor mental health or adverse changes in mental health during challenging times such as the COVID-19 pandemic. Because of both generational and cultural perceptions of and stigmas surrounding mental health, the self-reporting of mental health concerns among older Black adults may have been severely underreported (Owens & Saw, 2021; Hamler et al., 2022). Therefore, culturally and generationally appropriate mental health resources should continue to be implemented in Black

communities. The process of understanding and navigating cultural and generational understandings, perceptions, and stigmas of mental health necessitates the involvement of community leaders and stakeholders in the research process. Implementing a community-based participatory process in mental health research for older Black adults would help uphold the engagement, self-governance, access, and protection frameworks outlined by the Black Health Equity Working Group (2021).

6.2.3 Quality of Life

Current literature reports that nearly 40% of older adults (≥70 years of age) in the general population faced a decline in QoL (Bailey et al., 2021). Additionally, Lebrasseur and colleagues (2021) found QoL during the pandemic was largely dependent on other factors such as in-person social contact, mental health, levels of physical activity, and dementia status. Overall, there was limited research reporting on the QoL of Black populations of any age during the pandemic. Berghs and colleagues (2021) reported that Black populations with sickle-cell disease experienced a decreased QoL during the pandemic. This study also emphasizes the role of factors other than race or age in adverse QoL outcomes. It is suggested that overall wellbeing of older racial/ethnic minority adults can be promoted by recognizing the importance of culturally important practices and family structures which may have been limited by restrictions imposed by pandemic policy such as travel/transport restrictions and limitations in the quantity of individuals that may accompany or visit those in clinical settings (Paudyal et al., 2022).

In the present study, there was no statistically significant difference in self-reported QoL ratings between age groups. However, 75% of older adults reported an adverse change in QoL during the pandemic. This was significantly higher than the rates of adverse changes among

younger adults. This result agrees with the study hypothesis and literature which states that older adults faced a decreased QoL during the pandemic.

The study results emphasize that age groups perceive and report their health and QoL differently, and directly comparing health outcomes between age groups can mask true risk. Instead, by examining adverse changes from before to after, a "baseline" can be established for each age group for which to compare risks. The lack of statistical significance in the regression model is likely attributable to sample size. Future research on older black adults must also consider the small portion of older adults in the Black population (7.4%).

6.3 Other Key Factors in Poor Health Outcomes

6.3.1 Sex

Compared to males, females had an increase in the odds for adverse changes in QoL. Current literature confirms sex and gender differences in the impact of the pandemic. When examining the intersectionality between older age and other factors, older women had high rates of adverse changes across physical health, mental health, and QoL., though the differences in cross-tabulation were not significant. Gausman & Langer (2020) found that women faced diminished access to healthcare services, a heightened risk of domestic violence, and since women comprise a higher proportion of healthcare workers and family caregivers, they may have been overworked and more exposed to COVID-19. Additionally, older women were found to have decreased physical activity (VoPham et al., 2022). Overall, sex and gender differences are an important consideration in assessing and understanding the health impacts of the COVID-19 pandemic

6.3.2 Educational Attainment

Having an educational attainment at the diploma, degree, or trade school level increased the odds for adverse changes in mental health compared to the graduate-level or higher. Many frontline healthcare and social care workers have an educational attainment at this level and may have faced an increase in burnout/fatigue, stress, or other mental health concerns including anxiety during the pandemic (Boucher et al., 2023). The type of employment may largely explain the increased odds for adverse changes in mental health among those with an educational attainment at the diploma, degree, or trade school level.

6.3.3 Income

The present study found that individuals with a household income under $20,000 per year were found to be at a significantly increased risk for adverse changes in physical health compared to those with a household income of $50,000-$99,999. An income of $50,000-$99,999 per year was used to represent the median household income according to data from the 2021 census and Statistics Canada. Additionally, a household income of $20,000 to $49,000 was associated with increased odds of adverse changes in mental health. Green and colleagues (2021) corroborate these findings and explain how income is a powerful SDoH where low income is associated with social risk factors, increased exposure, overcrowded housing, and lack of access to healthcare.

6.4 Strengths and Limitations/Considerations

6.4.1 Study Limitations

Study limitations include a very small sample size of older adults (n = 12). This lack of study power may have contributed to the lack of statistical significance for many of the findings regarding old age. The small sample size of older adults also meant that intersectionality using regression modeling could not be explored. Additionally, older adults with dementia or residing in long-term care were not represented. Other data and sampling limitations include that frailty was not assessed for the sample, though chronic conditions could serve as a proxy and were assessed by the study. However, the study provides some interesting findings and revealing trends about the role of old age on health status.

In order to ensure adequate representation in quantitative research, larger sample sizes, possibly with an oversampling of older adults, are needed. In a study with a representative age distribution, the sample size must be large enough to make robust conclusions about the health of older adults. Additionally, older Black adults may benefit from qualitative research approaches which can be used to explore the unique challenges and needs of this marginalized population. Campbell and colleagues (2021) suggest, particularly with communities of colour, that qualitative research methods can be used to better understand the experiences of marginalized groups in a nuanced manner.

Limitations are owed in part to the cross-sectional study design since exposure and outcome variables are assessed simultaneously, and consequently, the study design is unable to definitively assess causality (Solem, 2015; Gordis, 2019). Another issue related to the study design is Neyman bias where individuals who have died or experienced severe disability cannot be included in the study (Levin, 2006). Therefore, true risk of poor health outcomes during the

pandemic may be underestimated by the present study. Additionally, the study reports adverse changes in health as any decrement in self-reported health during the pandemic, even if this change is only from a single level (eg. from good to fair). This means that more severe changes in health (eg. from good to very poor) were categorized in the same manner as smaller adverse changes. This could potentially result in measurement/misclassification bias.

Self-reporting bias can also potentially affect the study results in two ways. Firstly, recall bias may cause less healthy participants to be more likely to recall poor health outcomes compared to healthier participants (Althubaiti, 2016). For example, a participant who have experienced poor physical health outcomes such as worsened Type 2 Diabetes symptomology due to postponed care may be more likely to recall this negative pandemic outcome. Secondly, measurement error is also a possibility given the subjective nature of self-rated health status (very poor, poor, fair, good, excellent). These ratings are relative and not absolute, for example, a participant's perception of "good" may be different than that of another participant. It is also possible for an incorrect disease diagnosis or participant misreporting to cause misclassification of some participants. Thirdly, social desirability bias may have influenced participants to report results that will be viewed more favourably (Teh et al., 2023). For example, since many individuals experienced challenges in various domains of health and quality of life due to the pandemic, participants may be reluctant to report that they did not personally experience significant challenges during the pandemic

Another study limitation is that it is not feasible to consider all components of the Commission on Social Determinants of Health conceptual framework upon which the study is based (Solar & Irwin, 2010). The study does not assess all possible determinants that lead to health inequities such as social and public policies, governance, macroeconomics, or cultural and

societal values, though it assesses many important factors in the framework and their interaction. The study also does not reflect the cyclical nature of the framework where the outcome, equity in health and wellbeing, can end up influencing socioeconomic position and social, political, and economic context.

6.4.2 Study Strengths

Since older adults may perceive and report their health differently than other age groups, levels on a Likert scale may not be directly comparable between age groups. As such, the study also tracked adverse changes in health outcomes to help contextualize the health of older Black adults during the pandemic.

Additionally, the cross-sectional design is appropriate for a preliminary, descriptive study since multiple variables can be recorded and analyzed (Levin, 2006). Multivariate regression analysis allows for the assessment of multiple variables in the same model (Alexopoulos, 2010). Therefore, the statistical modeling can very closely reflect the conceptual framework of factors that contribute to adverse changes in health status during the pandemic. This allows for more a robust analysis of risk factors, covariates, effect modifiers, and confounders. The study also provides a prompt measurement of the impacts of the COVID-19 pandemic on older adults within Black communities. The shorter recall period helps reduce potential recall bias that could otherwise reduce the validity of the results (Althubaiti, 2016). Another strength is that the study reports a fuller picture of the pandemic's effect on health status by exploring three domains of health: physical health, mental health, and QoL. The study also fills a large gap in the literature surrounding pandemic impacts on populations made vulnerable in Canada. The results of the study highlight the impacts of the pandemic on Black adults and identify the additional risk that

old age has within Black communities. These results can inform further research investigation and public health efforts that are more targeted towards older Black adults.

Chapter 7: Conclusion

This study examined the physical health, mental health, and QoL of Black older adults (≥65 years of age) during the COVID-19 pandemic in Canada. Older adults reported higher mental health ratings than younger adults. Along with those aged 49-64 years, older adults reported the highest proportion of adverse changes in QoL.

Overall, likely due to generational and cultural factors such as stigma and different perceptions/understandings of mental health, older Black adults were more likely to have their mental health concerns underreported. Additionally, older Black adults reported worse QoL outcomes during the pandemic. Due to a small sample of older adults, the findings of the present study are not entirely robust. However, the trends are in line with current literature.

A substantial proportion of older Black adults reported adverse changes across the domains of physical health, mental health, and QoL. Therefore, culturally and generationally appropriate health resources should continue to be implemented in Black communities to restore impacts from the pandemic and improve the overall health of the population, and to protect populations from further marginalization during public health crises. Future health research involving Black populations, especially marginalized groups within Black communities such as older adults, should implement a community-based participatory process to uphold the frameworks of equitable health research.

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Appendix

Appendix A: Conceptual Frameworks:

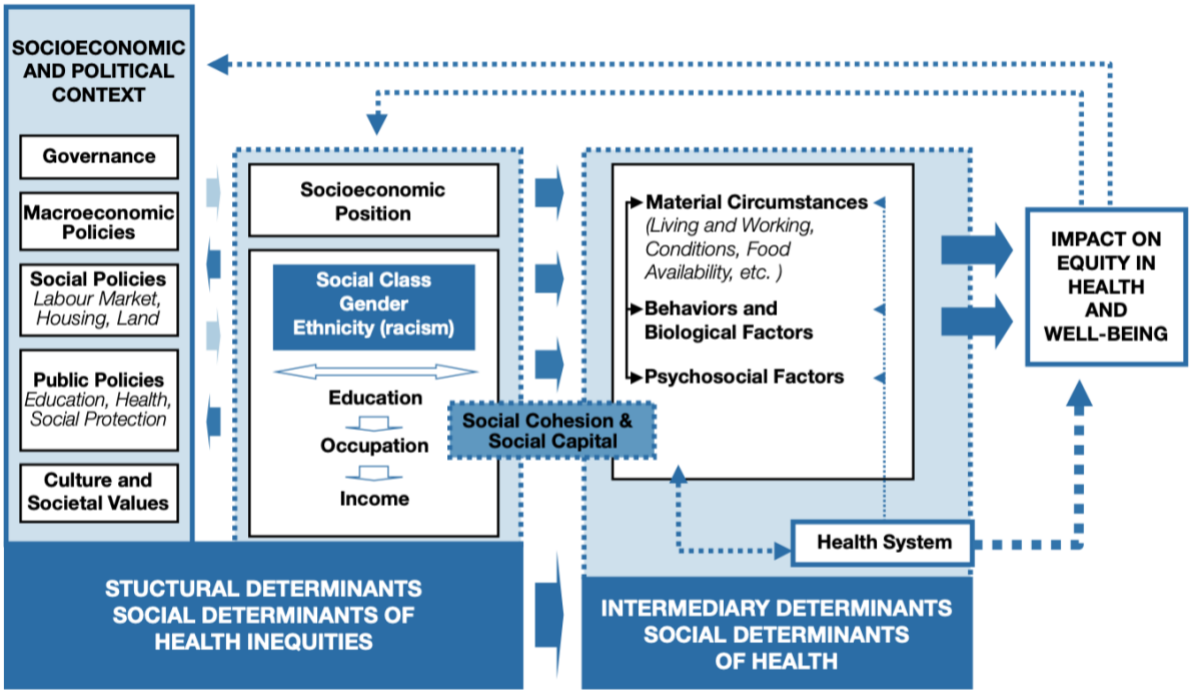

Figure 1: Final form of the Commission on Social Determinants of Health Conceptual Framework (Solar & Irwin, 2010)

Appendix B: PRISMA Flowcharts for Literature Search

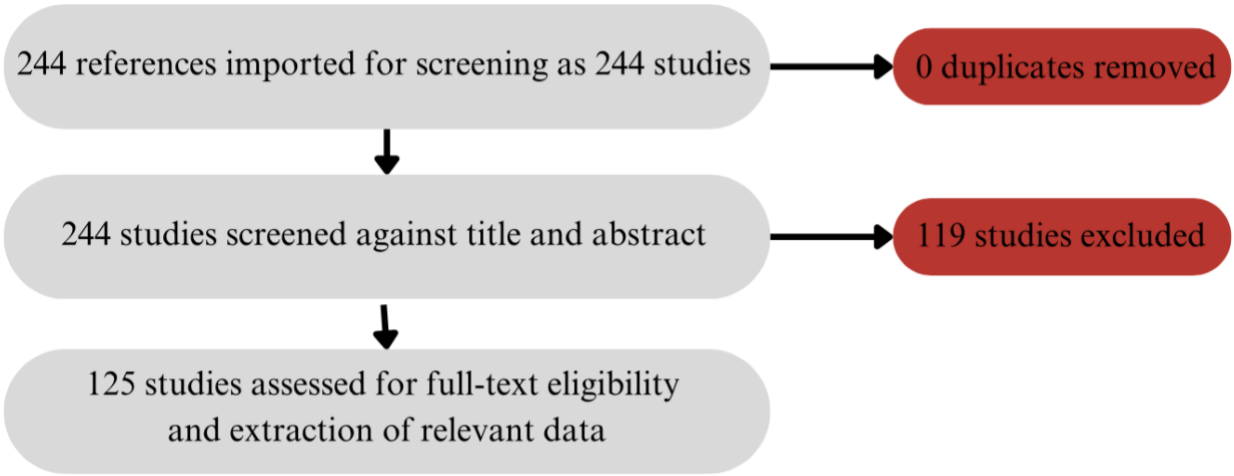

Figure 2: PRISMA Flowchart for Older Age and Race/Ethnicity and COVID-19 Pandemic Literature Search

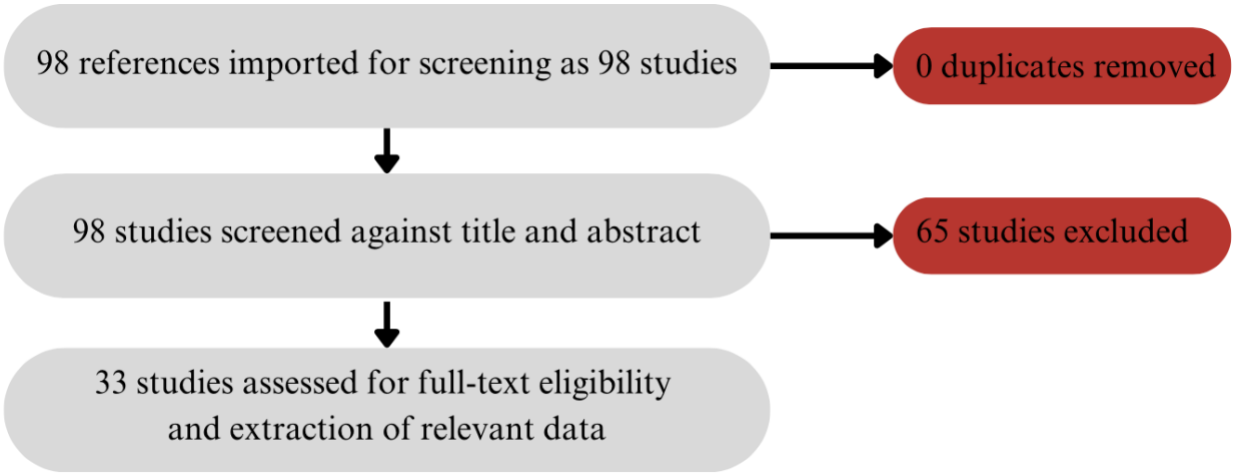

Figure 3: PRISMA Flowchart for SDoH and Intersectionality Literature Search