

Disparities in Subjective Cognitive Impairment by Sexual Orientation and Gender in a National Population Based Study of U.S. Adults, 2013–2018

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Abstract

Objectives: This is the first national population-based study to examine cognitive impairment disparities among sexual minority mid-life and older adults. **Methods:** Using the National Health Interview Survey (2013–2018), we compared weighted prevalence of subjective cognitive impairment by sexual orientation and gender, among those aged 45 plus, applying logistic regressions adjusting for age, income, education, race/ethnicity, and survey years. **Results:** Sexual minorities (24.5%) were more likely to have subjective cognitive impairment than heterosexuals (19.1%). Sexual minority women had higher odds of greater severity, frequency, and extent of subjective cognitive impairment. Sexual minorities were also more likely to report activity limitations resulting from cognitive impairment and were no more likely to attribute limitations to dementia or senility. **Discussion:** Cognitive health disparities are of particular concern in this historically and socially marginalized population. The investigation of explanatory factors is needed, and targeted interventions and policies are warranted to address cognitive challenges faced by sexual minorities.

Keywords

subjective cognitive impairment, dementia, disparities, lesbian, gay, bisexual, sexual minorities

Introduction

Cognitive impairment is a growing public health issue given the dramatic aging of the U.S. population and the concomitant increase in prevalence and incidence of cognitive impairment (Centers for Disease Control and Prevention [CDC], 2011a; Hale et al., 2020). Subjective cognitive impairment or decline are defined as “self-reported confusion or memory loss that is getting worse” (Alzheimer’s Association & CDC, 2018; CDC, 2019b). While few population-based studies report subjective cognitive impairment in the general U.S. population, one in nine community-dwelling adults aged 45 years and older are estimated to experience subjective cognitive decline (CDC, 2019b). Among those 60 years and older, one in eight report subjective cognitive decline, among whom more than one-third experience functional difficulties (Adams et al., 2013).

Subjective cognitive impairment can manifest itself before the onset of clinical symptoms and thus can provide the information needed to support targeted interventions for specific populations (Molinuevo et al., 2017). While subjective cognitive impairment often is not detected through

objective cognitive assessments, as it progresses it has been found to be negatively associated with physical functioning and daily and social activities (Montejo et al., 2012). In addition, Pusswald et al. (2015) found subjective cognitive difficulties are associated with decreased quality of life. As a preclinical measure, it is often used to identify those at risk of mild cognitive impairment and dementia (Jessen et al., 2014), as individuals with subjective cognitive impairment are indeed at elevated risk of both (Wolfgruber et al., 2016). Fonscea et al. (2015) found a significant association between subjective cognitive impairment and symptoms of cognitive impairment or dementia (assessed through objective measures) in adults over the age of 61 years for an average period of 44 months and concluded that individuals who present

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with subjective cognitive impairment complaints are at high risk for cognitive decline in the future.

A meta-analysis revealed that about 40% of those with mild cognitive impairment developed dementia within 5 years (Mitchell & Shiri-Feshki, 2009). The growing body of literature on subjective cognitive impairment therefore suggests the importance of assessing such factors even in clinical settings. By including markers of subjective cognitive impairment in research we can begin to better understand how subjective cognitive impairment in combination with demographic factors may be associated with more serious cognitive impairment in the future (Fonseca et al., 2015; Molinuevo et al., 2017; Wang & Tian, 2018). Because of the association between subjective cognitive impairment and more objective measures of cognitive impairment, early detection of subjective cognitive impairment can serve as a potential catalyst for early intervention (Molinuevo et al., 2017).

The growing public health impact of dementia is immense. More than one in 10 U.S. adults aged 65 and older have dementia, including Alzheimer's disease, the most common cause of dementia (Alzheimer's Association, 2020). Globally, the number of people living with dementia is estimated to be 50 million and increasing by nearly 10 million every year with the number projected to be 82 million in 2030 and 152 million in 2050 (World Health Organization, 2020). Cognitive impairment is associated with elevated rates of dementia and the costs associated with dementia care are likely the most burdensome healthcare costs in the U.S. (Hurd et al., 2013) at an estimated \$305 billion (Alzheimer's Association, 2020). Among Medicare beneficiaries, Medicare payments for people with dementia in 2019 were more than three times higher and Medicaid payments were 23.5 times higher than those for people without dementia (Alzheimer's Association, 2020).

The prevalence of dementia as well as cognitive impairment are often underestimated because they are often undiagnosed, underdiagnosed, or if diagnosed family members may be informed but not the person living with the disease (Alzheimer's Association, 2020). In addition, deaths from Alzheimer's disease, as a type of dementia, have increased significantly between 2000 and 2018 while deaths from other leading causes have decreased or remained the same (Alzheimer's Association, 2020). Given the aging of the population and the awareness of health, social, and economic burdens of cognitive impairment and dementia, the public health community proclaimed the *Healthy Brain Initiative* to mitigate the societal costs and impact of these progressive health conditions (CDC, 2011b; 2019a).

Existing evidence demonstrates disparities in cognitive impairment and dementia are associated with age, race/ethnicity, socioeconomic status, and comorbidity status. Higher rates of cognitive impairment and dementia are found among older age groups (Alzheimer's Association, 2020), people of color (Luo et al., 2018; Steenland et al., 2016)

including Blacks, Asians, Native Americans, and Hispanics (vs. non-Hispanic Whites), people with lower educational (Stern, 2012) and income (Jackson & Cooper, 2017) levels, and those with comorbidities (Ormel et al., 1998). Previous research documents elevated rates of comorbidities among sexual minority adults aged 50 and older as compared with their heterosexual peers (Fredriksen-Goldsen et al., 2013; Fredriksen-Goldsen et al., 2017b), suggesting possible disparities in cognitive impairment in this population yet few studies have been conducted to date.

While gender has been found to be a risk factor for cognitive impairment (Lin et al., 2015; Roberts et al., 2012), results from various studies are inconclusive. For example, Lin et al. (2015) found women to be at greater risk for the progression of cognitive impairment than men while Roberts et al. (2012) noted higher rates of mild cognitive impairment among men. Wang and Tian (2018) noted that while gender specific research was crucial to ensure early detection and intervention, few studies have examined the role of gender in subjective cognitive impairment. An extensive body of work has established important gender differences in chronic diseases among sexual minorities (e.g., Fredriksen-Goldsen et al., 2017b), yet there is a paucity of research examining the intersection of gender and sexual orientation as they relate to subjective cognitive impairment.

The first population-based study that documented cognitive disparities among sexual minorities found that the prevalence of disability among sexual minority older men and women was elevated partly due to higher rates of cognitive impairment (Fredriksen-Goldsen et al., 2017b). In a national, community-based survey, lesbian, gay, bisexual, and transgender (LGBT) older adults reported cognitive difficulties at relatively higher rates than what has been reported for heterosexuals of similar age (Fredriksen-Goldsen et al., 2018). Given the potential for cognitive difficulty in concentration, memory, problem-solving, learning, comprehension, and communication (Üstün et al., 2010), over three quarters of LGBT adults aged 50 and older reported mild cognitive difficulties and 10% severe or extreme difficulties in at least one area (Fredriksen-Goldsen et al., 2018). A recent study has estimated rates of subjective cognitive decline across nine states (Flatt et al., 2019) and found elevated rates among sexual minorities.

Sexual and gender minority adults aged 50 and older have reported high levels of adverse experiences over their lifetime, including victimization, discrimination, and lack of access to care, which has been found to be negatively associated with their physical and mental health (Fredriksen-Goldsen et al., 2017a; Prasad et al., 2020). The Institute of Medicine identified disparities in healthcare access as one of the pressing health concerns among sexual and gender minority people (Institute of Medicine, 2011). These challenges in accessing care may be even greater in anticipation of another source of stigma associated with cognitive

impairment and dementia as stigma and negative reactions to dementia are widespread and impact the care that people with dementia and their families are provided (Batsch et al., 2012; U.S. Department of Health and Human Services, 2014). To date there remains a paucity of data on cognitive impairment and dementia among sexual minorities. To our knowledge this is the first national study of subjective cognitive impairment using population-based data to examine subjective cognitive impairment among sexual minorities, and we will investigate the prevalence, severity, frequency, and extent of subjective cognitive impairment among sexual minorities compared to heterosexuals of similar age.

Methods

Data

The annual National Health Interview Survey (NHIS) is the largest in-person household health survey of the non-institutionalized U.S. population (National Center for Health Statistics, 2019), where sexual orientation began being assessed in 2013. We aggregated the Family Core and the Sample Adult files of NHIS from 2013 to 2018. The Family Core has information for all family members, and the Sample Adult Core has additional information for one randomly selected adult from each family aged 18 years and older. Our sample consisted of individuals aged 45 years and older in the Sample Adult file ($N = 112,689$), where respondents' sexual orientation was assessed. We included adults aged 45 years and older in this study based on current knowledge that the likelihood of disability, chronic conditions, and other diseases increase, and immunity can begin to decline as early as mid-life (i.e., 45–65) (Satariano, 2006). For example, Alzheimer's dementia may begin over 20 years before symptoms arise (Gordon et al., 2018).

Measures

Subjective Cognitive Impairment was assessed using a self-report measure, with a single item, "Do you have difficulty remembering or concentrating?" Despite limitations inherent in single-item subjective assessments such as vulnerability to errors and underreporting, it has been found that a single-item measure generates prevalence estimates consistent with other studies (e.g., Herbert et al., 2003) that had used multi-item measures of dementia (Bernstein & Remsburg, 2007). Responses were dichotomized into no difficulty (coded 0) and some or more difficulty (coded 1). Those who reported some or more difficulty, were further assessed in terms of *severity* indicating some cognitive difficulty (coded 0) versus a lot of cognitive difficulty or inability (coded 1); *frequency* indicating sometimes (coded 0) versus often or all the time (coded 1); and *extent* indicating difficulty remembering a few things (coded 0) versus a lot of things or almost everything (coded 1).

Self-reported Cognitive Impairment Limitations was assessed by whether respondents were limited in any way because of difficulty remembering or because they experienced periods of confusion. Yes was coded 1 (vs. 0 for no).

Self-reported Senility/Dementia Limitations: Respondents who had reported limitations in physical functioning, social activities, and indoor leisure activities were also asked what health conditions were associated with the limitation they were experiencing. Those who had selected senility and/or dementia as a single category in the NHIS were coded 1 (vs. 0 for those who had not).

Sexual Orientation and Other Background Characteristics: *Sexual orientation* was measured via a question that asked respondents "which of the following best represents how you think of yourself?" For men, the response categories were gay; straight, that is, not gay; bisexual; or something else. For women, the response categories were lesbian or gay; straight, that is, not lesbian or gay; bisexual; or something else. Sexual orientation was coded into heterosexuals (unweighted $n = 105,731$) versus sexual minorities, including gay, lesbian, bisexual, and something else (unweighted $n = 2421$). Other background characteristics included dichotomous indicators of the following: family *income* at or below 200% of the federal poverty guidelines; *education* of high school or less; *people of color* including Hispanic, Black, American Indian or Alaskan native, Asian, other, and multiple races; and *age in years* ranging from 45 to 85 (= 85 and older).

Statistical Analysis

We estimated population-based prevalence and 95% confidence intervals by sexual orientation for the total sample and for women and men separately based on literature illuminating differing risks of cognitive impairment by gender (Hebert et al., 2013; Lin et al., 2015) as well as research findings that have documented differences among sexual minorities in chronic conditions and comorbidities by gender (Fredriksen-Goldsen et al., 2017b). Pooled survey weights were applied, and StataSE 14.2 was used (StataCorp, 2015). Background characteristics were compared between sexual minority women and men aged 45 years and older and their heterosexual counterparts applying t tests or χ^2 tests as appropriate. We then compared weighted prevalence of subjective cognitive impairment and self-reported limitations by sexual orientation, conducting a series of logistic regressions, after adjusting for age, income, education, race/ethnicity, and survey year.

Results

Background Characteristics

Table 1 presents weighted estimates and corresponding statistical comparisons of background characteristics for women

Table 1. Weighted Estimates of Background Characteristics Among Women and Men by Sexual Orientation, Aged 45 Years and Older: National Health Interview Survey, 2013–2018 (N = 108,152).

	All		Women		Men	
	Heterosexual	Sexual Minority	Heterosexual	Sexual Minority	Heterosexual	Sexual Minority
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Age in years	61.5 (61.4, 61.6)	57.7*** (57.2, 58.2)	62.0 (61.8, 62.1)	57.4*** (56.7, 58.0)	61.0 (60.8, 61.1)	58.0*** (57.3, 58.7)
Income ≤200% FPG	25.7 (25.1, 26.3)	25.7 (23.3, 28.2)	28.0 (27.3, 28.8)	27.4 (23.9, 31.2)	23.2 (22.5, 23.9)	24.1 (21.1, 27.5)
Education ≤ High school	27.6 (27.1, 28.2)	18.6*** (16.5, 20.8)	28.1 (27.5, 28.7)	18.9*** (16.2, 22.0)	27.1 (26.4, 27.8)	18.2*** (15.4, 21.5)
People of color	28.3 (27.3, 29.2)	26.3 (23.7, 29.0)	28.9 (27.9, 29.9)	26.2 (22.7, 30.1)	27.6 (26.6, 28.6)	26.3 (22.9, 30.0)

Note. In parentheses are 95% confidence intervals. Bivariate statistical tests, t-tests or χ^2 tests as appropriate, were conducted to examine the association between background characteristics and sexual orientation. People of color include Hispanic, Black, American Indian or Alaskan native, Asian, other, and multiple race. FPG = Federal Poverty Guidelines.

* $p < .05$. ** $p < .01$. *** $p < .001$.

and men aged 45 years and older by sexual orientation. Sexual minority adults were significantly younger (57.7 vs. 61.5) than their heterosexual counterparts. The rates of living with income at or below 200% of the federal poverty guidelines did not differ by sexual orientation (25.7% for both) despite significantly higher education among sexual minorities (81.4% vs. 72.4% having some college or more education). Over one-quarter were people of color among both heterosexuals (28.3%) and sexual minorities (26.3%) with no statistical difference. These differences and non-differences by sexual orientation emerged invariably across women and men.

Subjective Cognitive Impairment

Table 2 presents the weighted prevalence and corresponding statistical comparisons of subjective cognitive impairment and activity limitations by sexual orientation. Subjective cognitive impairment was more prevalent among the sexual minority adults (24.5%) than among their heterosexual counterparts (19.1%), with significantly higher odds than heterosexuals (AOR = 1.5), after adjusting for age, income, education, race/ethnicity, and survey year.

Sexual minorities with subjective cognitive impairment were also more likely to experience greater severity (21.3 vs. 12.8%), higher frequency (38.3 vs. 27.4%), and greater extent (28.7 vs. 19.6%) than heterosexuals. These differences were maintained when adjusting for covariates. Sexual minority adults had higher odds than heterosexuals for greater severity, frequency, and extent (AOR = 2.0, 1.6, and 1.8) of cognitive impairment after adjusting for age, income, education, race/ethnicity, and survey year.

Findings by gender indicated that these differences were more pronounced among women than men. Sexual minority women and men were more likely than heterosexual women and men to experience subjective cognitive impairment, after

controlling for the covariates (AOR = 1.5 and 1.6). However, while sexual minority women had higher odds than heterosexual women for cognitive impairment with greater severity, frequency, and extent (AOR = 2.5, 1.9, and 2.2), there was no difference among men by sexual orientation in the severity, frequency, and extent of subjective cognitive impairment.

Self-Reported Cognitive Impairment Limitations

As shown in Table 2, 7.3% of sexual minority adults, aged 45 years and older, reported being limited in any way due to cognitive impairment, which was significantly higher than that of heterosexual adults (5.4%) even after adjusting for the covariates (AOR = 1.7). Similar patterns were observed when analyzed by gender. The odds of having cognitive impairment limitations were higher among sexual minority women than heterosexual women (AOR = 1.7) and among sexual minority men than heterosexual men (AOR = 1.8).

Self-Reported Senility/Dementia Limitations

As shown in Table 2, the prevalence rate of reporting activity limitations due to senility or dementia was significantly lower for sexual minority mid-life and older adults (2.2%) than for heterosexual counterparts (5.0%), but this difference did not remain significant after controlling for the covariates. The lack of significant differences also remained when women and men were examined separately, after adjusting for the covariates.

Discussion

This is to our knowledge the first national population-based study to document disparities in subjective cognitive impairment by sexual orientation among adults aged 45 and older in the U.S. In this study, sexual minority mid-life and

Table 2. Comparisons of Estimated Prevalence Rates of Subjective Cognitive Impairment Among Women and Men by Sexual Orientation, Aged 45 Years and Older: National Health Interview Survey, 2013–2018 (N = 108,152).

	All			Women			Men		
	Heterosexual, %	Sexual Minority, %	AOR	Heterosexual, %	Sexual Minority, %	AOR	Heterosexual, %	Sexual Minority, %	AOR
Subjective cognitive impairment	19.1 (18.6, 19.6)	24.5*** (21.6, 27.8)	1.5*** (1.3, 1.8)	21.3 (20.7, 21.9)	27.7** (23.3, 32.7)	1.5** (1.2, 2.0)	16.6 (16.0, 17.2)	21.8** (18.1, 26.0)	1.6*** (1.2, 2.1)
Severity	12.8 (12.0, 13.6)	21.3*** (15.3, 28.9)	2.0*** (1.3, 3.1)	12.3 (11.4, 13.3)	24.3*** (16.3, 34.6)	2.5*** (1.5, 4.1)	13.5 (12.2, 14.8)	18.0 (10.2, 29.8)	1.5 (0.8, 3.1)
Frequency	27.4 (26.2, 28.6)	38.3*** (31.2, 46.0)	1.6*** (1.1, 2.2)	26.6 (25.2, 28.1)	41.2*** (31.5, 51.7)	1.9*** (1.2, 3.0)	28.5 (26.7, 30.3)	35.2 (26.0, 45.6)	1.3 (0.9, 2.1)
Extent	19.6 (18.6, 20.7)	28.7*** (22.0, 36.5)	1.8*** (1.2, 2.6)	18.9 (17.6, 20.2)	31.7** (22.4, 42.6)	2.1** (1.3, 3.7)	20.7 (19.1, 22.3)	25.5 (15.9, 38.1)	1.4 (0.8, 2.6)
Cognitive impairment limitations	5.4 (5.2, 5.6)	7.3** (6.1, 8.7)	1.7*** (1.4, 2.1)	5.8 (5.6, 6.1)	7.5 (5.7, 9.8)	1.7*** (1.3, 2.4)	5.0 (4.7, 5.2)	7.1** (5.5, 9.1)	1.8*** (1.3, 2.4)
Senility/dementia limitations	5.0 (4.6, 5.3)	2.2* (1.1, 4.1)	0.9 (0.5, 1.9)	5.4 (4.9, 6.0)	1.9** (0.9, 4.0)	0.7 (0.3, 1.7)	4.3 (3.8, 4.8)	2.5 (0.9, 6.6)	1.2 (0.4, 3.5)

Note. In parentheses are 95% confidence intervals. The asterisks in the Sexual minority columns indicate the results of bivariate statistical tests. t-test or χ^2 tests as appropriate, and those in the AOR column indicate the results of logistic regression analysis after adjusting for age, income, education, race/ethnicity, and survey years. Heterosexual mid-life and older adults were the reference group. AOR = adjusted odds ratio.

* p < .05, ** p < .01, *** p < .001.

older women and men were found to have higher risk for subjective cognitive impairment and related functional limitations compared to heterosexuals of similar age. About a quarter (24.5%) of sexual minority mid-life and older adults reported subjective cognitive impairment and more than 7% reported related activity limitations in everyday life, which was significantly higher than for heterosexuals. Sexual minorities were also significantly more likely to experience their cognitive impairment as more severe and frequent, and the extent spanning more broadly across aspects of their life compared to heterosexuals.

Self-reported subjective cognitive impairment itself is associated with an increase in the likelihood of the onset of dementia (Jessen et al., 2014) with increased potential for the loss of independence and poor quality of life (Hill et al., 2015, 2017). Furthermore, cognitive impairment has tremendous health, social, and economic impacts on not only mid-life and older adults but also their caregiving family and friends (CDC, 2019b).

This is alarming because it adds cognitive impairment to the other health disparate conditions previously documented among sexual minority populations, including weakened immune system, low back or neck pain, cardiovascular and heart disease, disability, mental distress, and poorer general health (Fredriksen-Goldsen et al., 2013; Fredriksen-Goldsen et al., 2017b). While the prevalence of cognitive impairment increases with age, its manifestations vary across different populations (Fredriksen-Goldsen & Kim, 2017). Many factors may account for the higher rates among sexual minorities, among which increased prevalence of chronic conditions exists. Cognitive decline is associated with an increase in the number of chronic conditions (CDC, 2019b), and among sexual minorities the elevated risks of comorbidities are well documented (Fredriksen-Goldsen et al., 2017b).

Further empirical studies are warranted to test other possible sexual minority-specific explanatory factors. For example, disparities in subjective cognitive impairment likely reflect the substantial toll of marginalization and stigma experienced by sexual minorities over their lifetime. Previous research has documented that the progression of cognitive impairment is positively associated with environmental and psychosocial stressors such as chronic discrimination (Wainaina et al., 2014), and the presence of anxiety and depression (Palmer et al., 2011), which are all documented risk factors for sexual minorities. In earlier studies, experiences of lifetime discrimination and victimization and day-to-day discrimination are significant predictors of poor health (Fredriksen-Goldsen et al., 2017a) and comorbidities (Prasad et al., 2020). Prolonged exposure to chronic stress resulting in accumulated allostatic load may increase one's propensity for the early onset of chronic conditions, including cognitive impairment and dementia (Juster et al., 2010).

Associated with increased stress there are also behavioral health considerations including excessive drinking,

smoking, and sleep problems. Sexual minority mid-life and older adults have been found to have higher rates of excessive drinking than heterosexuals of similar age; higher rates of smoking among sexual minority men; and elevated rates of sleep problems among sexual minority women (Fredriksen-Goldsen et al., 2017b), which have all been documented to increase the risk of cognitive impairment and dementia (Anstey et al., 2007; Rehm et al., 2019; Xu et al., 2020).

In addition to these adverse psychosocial and behavioral factors, there are other factors that may help explain why sexual minority women, in particular, are at heightened risk, as they have been shown to have elevated risk of disability (Fredriksen-Goldsen et al., 2012) and other chronic conditions associated with cognitive impairment and dementia such as cardiovascular disease (Fredriksen-Goldsen et al., 2017b). Previous studies have shown that women compared to men are, in general, at greater risk of cognitive impairment (Lin et al., 2015). It is noteworthy that the disparities observed in this article were not only in the prevalence of subjective cognitive impairment, but also in its severity, frequency, and extent among lesbian, bisexual, and other sexual minority women. This finding suggests that sexual minority women compared to men may experience greater disparities as well as faster progression of cognitive impairment. Further research is needed to identify the specific risk factors associated with these heightened disparities and the progression of cognitive impairment and its association with disability and comorbidities among women, in particular.

Social isolation, itself, is not only a risk factor for cognitive impairment and dementia (Cacioppo & Hawkey, 2009), but further prevents needed support and care from being provided, only to accelerate the progression of cognitive decline. Receiving medical care and non-medical caregiving support is associated with slowing the progression of Alzheimer's disease (Bellelli et al., 2005). Thus, in sexual minority communities, early detection of cognitive impairment is imperative in order to identify and access appropriate health care and support resources and to ensure timely diagnosis and comprehensive care planning (Fredriksen-Goldsen et al., 2018).

Interestingly, this study found that sexual minority women and men were no different from heterosexuals in reporting medically diagnosed senility or dementia as accounting for their activity limitations. This finding should be interpreted with a caution. Since sexual minorities with cognitive difficulty, particularly women, reported their subjective cognitive impairment experiences as more severe and frequent, and impacting more aspects of their lives than heterosexuals, these findings may reflect potential disparities in healthcare access. Research has shown that lesbian and bisexual women are at elevated risk of financial barriers to health care (Fredriksen-Goldsen et al., 2013). In future research it will be important to further evaluate the extent to which there are

heightened barriers to healthcare access among sexual minorities living with cognitive impairment and dementia.

While sexual minorities often face stigma due to their sexual identities, cognitive impairment, and dementia, too, carries substantial stigma (Alzheimer's Association, 2018). Public health efforts to reduce stigma related to cognitive impairment and dementia as well as that related to sexual minority identities, including in healthcare settings, may lower healthcare barriers and ameliorate disparities in cognitive impairment and its care. Systematic interventions to reduce barriers and stigma and to eliminate explicit and implicit bias among providers are needed to address the experiences and needs of sexual minorities living with subjective cognitive impairment or dementia.

Cognitive impairment and the comorbidities of other chronic conditions may pose a critical challenge in obtaining, managing, and maintaining medical care, and may render informal assistance indispensable (Ormel et al., 1998). Yet, existing research documents that sexual minority mid-life and older adults are less likely to be married and less likely to have children or other immediate families available for care and support, and more likely to have friends and extended kin as caregivers (Fredriksen-Goldsen et al., 2018). In addition, sexual minority men are more likely to live alone (Kim et al., 2017). Thus, they often lack informal caregiving support when experiencing more advanced cognitive impairment or dementia with increased limitations in their activities and abilities (Fredriksen-Goldsen et al., 2020). Yet, increased risk for cognitive impairment and comorbidities necessitates a stable support network for care. Friend caregivers provide much needed care yet are often not recognized and have limited legal decision-making and consent, which can result in ambiguity in their roles with such progressive disease as dementia (Fredriksen-Goldsen et al., 2011). Culturally tailored interventions and policies are needed to address the unique risk factors (including trauma, stigma, and identity management), the distinct support structures, and the need for community engagement in resource mobilization to ensure targeted and inclusive care (Fredriksen-Goldsen et al., 2020).

The findings from this study have important implications for both clinical practice among mid-life and older adults in general and mid-life and older sexual minorities in particular, in addition to providing timely insights for social policy. As our understanding of subjective cognitive impairment expands, it reinforces the importance of clinical screening for subjective cognitive impairment. The importance of screening for subjective cognitive impairment is not only associated with memory concerns but also other comorbid conditions. For example, subjective cognitive impairment has been associated with depression (Rodriguez et al., 2021), coronary health disease, or stroke (CDC, 2019b). Additionally, data from the CDC (2019b) indicates that of those with subjective cognitive impairment, nearly 30% live alone placing them at increased risk for other negative health and social consequences. Because less than half of adults with

subjective cognitive impairment report symptoms to their healthcare provider (CDC, 2019b), routine screening takes on greater importance. Increasing our knowledge concerning the risks for subjective cognitive impairment may help with targeted screening and/or interventions.

Our findings also have implications for public policy. Brain health and the prevention, identification, and potential treatment for subjective cognitive impairment and related cognitive impairment are a public health issue. Assuring that state and local health departments understand the impact of subjective cognitive impairment on individuals and families is a critical first step. It is also imperative to work with local and federal policy makers to include cognitive or brain health in initiatives and public health surveys such as the Behavioral Risk Factor Surveillance System. An equally crucial step is to work with dementia advocacy groups, healthcare providers, including physicians, nurses, social workers, and other healthcare professionals, and LGBT community-based organizations to ensure that they are educated about these disparities in cognitive impairment and the importance of brain health among sexual and gender minority older adults.

Although this study is likely the first to estimate prevalence and disparities of cognitive impairment among sexual minorities using data from a national probability-based sample, there are limitations that must be considered. The NHIS collects data only from those who are not institutionalized; thus, the prevalence of subjective cognitive impairment may be underestimated. The measures of subjective cognitive impairment may have limitations inherent in self-reported single-item assessments, including increased vulnerability to errors and underreporting bias, although they are known to provide accurate subjective assessments (Luo et al., 2018) that are highly correlated with objective assessments. In addition, the NHIS measures gender as binary thus does not take into consideration those that identify as intersex or as gender non-binary or gender diverse.

The findings of this study generate important questions for future research. Existing research has documented differences in chronic conditions, health behaviors, and healthcare access among sexual minorities, and such factors have been identified as significant predictors of cognitive impairment and dementia. Therefore, it will be important to investigate these factors and their relationship with cognitive impairment among different subgroups of sexual minorities, such as racial and ethnic minorities. It will also be important to understand how unique social support structures, social networks, and social isolation of this population operate in recognition, diagnosis, treatment, and progression of cognitive impairment. Future studies will also need to investigate psychological distress and depression in the context of cognitive impairment and dementia since sexual minorities are at greater risk of depressive symptomatology (Fredriksen-Goldsen et al., 2017b). Given that Alzheimer's disease and dementia may develop decades before the onset of symptoms (Gordon et al., 2018), it will be important to examine if sexual

minority cognitive disparities begin in earlier ages and to follow the progression of such symptoms over time using longitudinal data.

Last, addressing the intersectionality in cognitive impairment and dementia research is needed, including by race and ethnicity, gender, gender identity and expression, and sexual orientation. Existing research documents higher rates of cognitive impairment among Blacks and Hispanics than non-Hispanic Whites (Lines et al., 2014) as well as associations with disparities in cardiovascular disease and diabetes (Ormel et al., 1998), disadvantaged socioeconomic status (Jackson & Cooper, 2017; Stern, 2012), and discrimination experiences (Juster et al., 2010; Wainaina et al., 2014). Understanding the intersectionality of such factors in cognitive impairment and dementia prevalence and disparities is complex but critical in order to develop effective targeted interventions given the growing diversity in the graying of the population.

Conclusion

Sexual minorities are fast increasing in numbers as the population ages. This study is the first to document significant disparities in subjective cognitive impairment among sexual minorities using national population-based data. Facing unique challenges, sexual minorities have been shown to have disparities in health conditions and comorbidities, differing social networks and support structures, elevated risks for social isolation, stigmatization, and increased barriers to healthcare access (Alzheimer's Association, 2018). Addressing the disparities in cognitive impairment and these unique challenges among sexual minorities is important to reduce both private and public costs. Cognitive impairment is associated with elevated rates of dementia and given the aging of the populations, including among sexual minorities, costs of dementia care will continue to skyrocket.

Given the unique and challenging context experienced by sexual minority adults living with cognitive impairment, the development of interventions is needed that are responsive to their distinct needs, risks, and protective factors. Furthermore, we must develop a comprehensive strategy to promote cognitive health in these communities as well as targeted efforts at the community, society, and policy level to reduce the disparities in cognitive impairment and dementia. The inclusion of screening for subjective cognitive impairment will take on increased importance as the population of older sexual minority adults and older adults in general continue to grow (CDC, 2019b; Fredriksen-Goldsen et al., 2017b). The need to expand and increase our knowledge concerning demographic factors, such as gender, that create risk or protection will take on additional importance (Roberts et al., 2012). Acknowledgment of these disparities in the arena of public policy and health disparities research and intervention development will grow in importance in the coming years.

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