

Sexual Minority Disparities in Subjective Cognitive Impairment: Do They Persist After Accounting for Psychological Distress?

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Abstract

Objectives: Sexual minority older adults are a health disparate group with disproportionate rates of subjective cognitive impairment (SCI) and psychological distress. This study estimated risks of SCI by sexual orientation and gender, accounting for variations in psychological distress. **Methods:** We aggregated National Health Interview Survey data (2013–2018) of adults aged 45 and older and implemented logistic regressions of SCI indicators on sexual orientation and psychological distress, adjusting for covariates. **Results:** Sexual minority adults showed higher likelihoods of SCI in terms of status, severity, frequency, extent, and activity limitations than heterosexuals, even after controlling for psychological distress. SCI risk was significantly higher among sexual minority vs. heterosexual women, with no significant difference among men. **Conclusions:** Public health initiatives should address this health disparity in SCI and support informal care networks for sexual minorities. Future research is needed that further investigates SCI at-risk groups, with attention to sexual minority women.

Keywords

sexual minorities, dementia, health disparities

Introduction

Psychological distress has been found to have a strong relationship with cognitive impairment (Hendrie et al., 2006), dementia, and Alzheimer's disease (Wilson & Bennett, 2017). In a recent national study, sexual minority (those not heterosexual or straight) older adults had higher levels of subjective cognitive impairment (SCI), defined as “self-reported confusion or memory loss that is getting worse” (Alzheimer's Association & CDC, 2018; CDC, 2019), compared to heterosexuals of similar age (Fredriksen-Goldsen et al., 2021). Another study using data across multiple states also documented higher levels of SCI (Flatt et al., 2018) compared to heterosexuals of similar age. Depression has been widely examined as a covariate of subjective cognitive function and impairment in the general population, and there is evidence that a history and symptoms of depression increases risk for cognitive impairment and dementia (Ownby et al., 2006). The CDC found 33.7% of adults with SCI reported frequent mental distress, with higher risk among those 45–64 (42.0%) (Centers for Disease Control and Prevention, 2019), which suggested confounding risks as people age.

Theoretical explanations regarding to what extent, how, and why psychological distress is correlated with cognitive

impairment remain debatable and inconclusive (Lee et al., 2012). Experiencing a compromised ability to concentrate, one of the key symptoms of emotional and psychological disorders, may negatively affect the development of cognitive reserve (Steffens & Potter, 2008), which may operate as a protective mechanism against SCI. Depressive symptoms and feelings may disrupt large portions of cognitive resources and interfere with cognitive performance (Gerstorf et al., 2009). Alternatively, researchers have speculated long-term psychological distress can affect cardiovascular and immune functioning, which may negatively affect the brain, cognitive functioning (Danner et al., 2001; Kiecolt-Glaser et al., 2002), and SCI.

Such explanations presume the emergence of psychological distress prior to experiences of SCI. In fact, there is evidence that depression is a prodromal symptom of dementia (Singh-Manoux et al., 2017). However, while that temporal

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ordering may be the experience for some, the explanation does not fully account for the association between psychological distress and SCI. It is plausible the relationship between psychological distress and SCI is bidirectional, or both are associated with other confounding underlying factors (Hendrie et al., 2006). Moreover, psychological distress and SCI are not fully related to one another. Although psychological distress has been identified as a predictor of cognitive impairment, it does not necessarily precede nor lead to cognitive impairment. The investigation of cognitive impairment should, therefore, consider psychological distress as an important associated factor and incorporate it in study models; yet, at the same time, it is important to consider the potentially independent status of cognitive impairment to holistically understand SCI among older adults.

Research suggests that sexual minorities experience disproportionately high levels of psychological distress compared with heterosexual peers of similar age (Fredriksen-Goldsen, Kim, et al., 2013b; Fredriksen-Goldsen, Kim, Shui, et al., 2017b). To the best of our knowledge, no study to date of sexual minority older adults has considered psychological distress when examining disparities in SCI among sexual minority older adults. Particularly because SCI and psychological distress are both elevated for sexual minority older adults compared to heterosexual peers, this research sought to investigate the relationship and degree of independence of SCI and psychological distress for sexual minority older adults, using a comprehensive, culturally specified model. The Health Equity Promotion Model (HEPM) posits that health outcomes, such as SCI, are associated with multiple health-promoting and risk factors including structural and environmental factors as well as psychological, social, behavioral, and biological processes (Fredriksen-Goldsen et al., 2014). For example, the elevated risk of psychological distress among sexual minorities is associated with higher rates of victimization and stigmatization, identity stigma, and lack of social resources (Fredriksen-Goldsen et al., 2013a; Fredriksen-Goldsen et al., 2017b). The HEPM highlights the importance of recognizing within-group heterogeneity by social locations, such as gender. Almost two thirds of Americans living with Alzheimer's (65 and older) are women (Hebert et al., 2013). Extant national research suggests that not only do sexual minorities in general experience greater degrees of subjective cognitive impairment than heterosexuals but also the disparity is more pronounced for sexual minority women compared to sexual minority men (Fredriksen-Goldsen et al., 2021).

Guided by the HEPM as a conceptual framework, we sought to investigate whether the disparity in subjective cognitive impairment for sexual minorities remains after controlling for psychological distress and background demographic factors, and whether there are significant differences based on gender.

Methods

Sample

We analyzed the National Health Interview Survey (NHIS) data aggregated from 2013 to 2018, the same representative data analyzed in a first national study of SCI among sexual minorities (Fredriksen-Goldsen et al., 2021). The NHIS, conducted under the auspice of the CDC, is a nationally representative, in-person interview survey monitoring the health of the U.S. population at large (National Center for Health Statistics, 2019). For this analysis, we utilized variables from the Family Core and Sample Adult battery and the Adult Functioning and Disability (AFD) supplement. Data on all family members is included in the Family Core whereas data on one adult aged 18 and older randomly selected from each family is in the Sample Adult battery to which a sexual orientation question was added in 2013. The study sample consisted of individuals aged 45 and older in the Sample Adult file who reported their sexual orientation ($N = 108,152$). The questions of the AFD supplement were asked of approximately one half of all sample adults prior to 2018 and all sample adults in 2018 ($N = 61,441$). The cutoff of 45 years of age was used because chronic conditions, disability, and disease rates are known to increase, and immunity to begin to decline, in middle-age (i.e., 45–65) (Mitchell et al., 2005). According to weighted estimation, 53% were women (unweighted $n = 60,365$), and 47% were men (unweighted $n = 47,787$). Whereas there were more heterosexual women (52%) than heterosexual men (46%; $p < .001$), the population estimates for sexual minority women (1%; unweighted $n = 1,147$) and men (1%; unweighted $n = 1,274$) were equivalent to each other. Women were less likely to identify as sexual minorities (1.8%) than men (2.3%; $p < .001$).

The sample demographics by sexual orientation were reported in a previous study (See Fredriksen-Goldsen et al., 2021); sexual minority adults were significantly younger (58 vs. 62) and had higher education (81% vs. 72% with some college or more education) than heterosexual counterparts. No significant differences were found in terms of race/ethnicity or the rates of living at or below 200% of the federal poverty guidelines.

Measures

Measures of Subjective Cognitive Impairment. Clinical examinations and cognitive tests of objective cognitive impairment can be time-consuming and resource prohibitive. However, familial- and self-reports of cognitive impairment have been found to provide reliable data in large scale surveys, closely reflecting results from clinical examinations and tests (Bernstein & Remsburg, 2007; Luo et al., 2018). We utilized six measures from the NHIS.

In the AFD supplement, the status of SCI was assessed by asking “Do you have difficulty remembering or concentrating?” and responses were dichotomized into no difficulty and some or more difficulty. Respondents affirming SCI by reporting some or more difficulty were asked about its severity (some vs. a lot of difficulty or inability), frequency (sometimes vs. often or all the time), and extent (difficulty with a few things vs. a lot of things or almost everything). Self-reported cognitive impairment limitations were dichotomously assessed in the Family Core by asking if respondents were limited in any way because of difficulty remembering or because they experienced periods of confusion. Self-reported dementia or “senility” limitations were assessed with two questions in the Sample Adult. Respondents were asked whether they had any limitations in physical functioning, social activities, and indoor leisure activities, and those who answered affirmatively were further asked what health conditions were associated with the limitation. Respondents who selected the NHIS category of dementia or “senility” were coded Yes vs. those who selected No.

Psychological Distress. Psychological distress was measured with the 6-item Kessler Psychological Distress Scale (Kessler et al., 2003) that assessed depressive and anxiety symptomatology for the past 4 weeks. The Cronbach’s alpha was .86. The unweighted summed score ranged from 0 to 24, and the unweighted mean was 2.6 with *SD* of 4.1.

Sexual Orientation and Other Sociodemographic Characteristics. Sexual orientation was determined by asking which best represented how they thought of themselves. Responses were dichotomized to indicate heterosexuals (unweighted $n = 105,731$) vs. sexual minorities (unweighted $n = 2,421$), including gay/lesbian (unweighted $n = 1,634$), bisexual (unweighted $n = 475$), and something else (unweighted $n = 312$). Age was measured in years with its unweighted mean of 63.1 (*SD* = 11.4; range = 45–85). Income indicated family income at or below vs. above 200% of the federal poverty level calculated and adjusted for each survey year (unweighted $n = 33,013$ and 71,460). Education indicated high school diploma or less vs. higher education (unweighted $n = 36,806$ and 75,080). Race/ethnicity was dichotomized into people of color (Hispanic, Black, American Indian or Alaskan Native, Asian, other, and multiple races) vs. non-Hispanic Whites (unweighted $n = 32,893$ and 79,262).

Statistical Analysis

Using StataSE 14.2, we conducted all analyses for the total sample and by gender, applying pooled weights to adjust for any sampling bias and nonresponse. First, we estimated and compared the distributions of sociodemographic characteristics and psychological distress by SCI status (weighted

means and 95% CI for age and psychological distress, and weighted prevalence and 95% CI for the other covariates). The statistical comparisons were made using logistic or linear regressions, as appropriate, controlling for survey years by including them as a categorical covariate to account for any bias associated with differences in data collection years. Differences in psychological distress between sexual minorities and heterosexuals were further examined after adjusting for sociodemographic characteristics. Second, we tested whether sexual orientation was associated with each SCI indicator by conducting a series of logistic regressions of SCI on sexual orientation and psychological distress, controlling for covariates including income, education, race/ethnicity, and age.

Results

Sociodemographic Characteristics and Psychological Distress

Table 1 presents findings on associations of SCI with sociodemographic characteristics, the study covariates, and psychological distress. People who reported SCI were older than those who did not, with an average age of 64.6 and 60.8, respectively, were more likely to have income at or below 200% of federal poverty level (38.1% vs. 22.4%), and less likely to have post-secondary education (66.2% vs. 74.6%). These differences in age, income, and education by SCI status were found invariantly for women and men. There were no significant racial/ethnic differences among women between people with and without SCI whereas there were less people of color among men with SCI (25.7%) than among men without SCI (28.2%). Psychological distress was significantly higher among women (5.7 vs. 2.1) and men (5.2 vs. 1.6) with SCI than their counterparts without SCI. Psychological distress was also significantly higher among sexual minorities than heterosexuals for both women (3.7 vs. 2.8, $p < .001$) and men (3.6 vs. 2.1, $p < .001$). These differences were maintained even after adjusting for age, income, education, and race/ethnicity ($b = .7$, $SE = .2$, $p < .001$ for women; $b = 1.3$, $SE = .2$, $p < .001$ for men) (Results not shown in tables).

Subjective Cognitive Impairment

Table 2 presents the results of the weighted logistic regression of Subjective Cognitive Impairment (SCI) status and the severity, frequency, and extent of SCI on sexual orientation, psychological distress, and the covariates including age, income, education, and race/ethnicity. First, psychological distress had significant positive associations with the odds of SCI regardless of gender. Higher scores of psychological distress were associated with increased odds of not only SCI but also reporting greater severity, frequency, and extent. After accounting for psychological distress and the

Table 1. Weighted Estimates of Sociodemographic Characteristics and Psychological Distress According to Subjective Cognitive Impairment (SCI): National Health Interview Survey, Ages 45 and Older (N = 108,152).

	All		Women		Men	
	No SCI	SCI	No SCI	SCI	No SCI	SCI
Age in years (45–85), M	60.8 (60.6, 60.9)	64.6*** (64.3, 64.9)	61.2 (61.0, 61.4)	64.6*** (64.3, 65.0)	60.3 (60.1, 60.5)	64.5*** (64.0, 65.0)
Income ≤ 200% FPL, %	22.4 (21.7, 23.1)	38.1*** (36.9, 39.4)	24.6 (23.7, 25.5)	39.3*** (37.7, 40.8)	20.1 (19.3, 21.0)	36.5*** (34.7, 38.4)
High school diploma or less, %	25.4 (24.7, 26.0)	33.8*** (32.6, 34.9)	25.9 (25.2, 26.7)	33.3*** (31.9, 34.7)	24.8 (24.0, 25.7)	34.5*** (32.7, 36.3)
People of color ^a , %	28.9 (27.8, 30.0)	27.3* (25.9, 28.8)	29.5 (28.4, 30.7)	28.4 (26.8, 30.1)	28.2 (27.0, 29.4)	25.7** (23.9, 27.6)
Psychological distress (0–24), M	1.9 (1.8, 1.9)	5.5*** (5.4, 5.6)	2.1 (2.1, 2.2)	5.7*** (5.6, 5.9)	1.6 (1.6, 1.7)	5.2*** (5.0, 5.4)

Note. In parentheses are 95% confidence intervals. Logistic or linear regressions were conducted adjusting for survey years.

^aPeople of color include Hispanic, Black, American Indian or Alaskan native, Asian, other, and multiple races. SCI = subjective cognitive impairment. FPL = federal poverty level.

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

covariates, sexual minorities had higher odds of SCI than heterosexuals (AOR = 1.27; 95% CI = 1.05, 1.53) and were more likely to report greater severity (AOR = 1.78; 95% CI = 1.14, 2.79) and extent (AOR = 1.67; 95% CI = 1.15, 2.43). However, the difference by sexual orientation in SCI frequency was not statistically significant.

There were important differences by gender. Among women, sexual minorities were more likely to report SCI than heterosexuals after adjusting for psychological distress and the covariates (AOR = 1.31; 95% CI = 1.01, 1.70). Compared to heterosexual women, sexual minority women were at greater risk of SCI severity (AOR = 2.46; 95% CI = 1.40, 4.34), frequency (AOR = 1.75; 95% CI = 1.08, 2.84), and extent (AOR = 2.01; 95% CI = 1.16, 3.46). Among men, however, sexual orientation was not associated with SCI status and its severity, frequency, and extent when adjusting for psychological distress along with the other covariates.

Self-reported Cognitive Impairment Limitations

Regarding reporting limited activities due to cognitive impairment, sexual minorities had higher odds than heterosexuals, after adjusting for psychological distress and the covariates (AOR = 1.43; 95% CI = 1.15, 1.79). When analyzed separately by gender, sexual minority women showed increased odds of cognitive impairment limitations (AOR = 1.51; 95% CI = 1.08, 2.11) while sexual minority men did not as compared to their heterosexual counterparts. Psychological distress was significantly associated with self-reported cognitive impairment limitations for both women and men.

Self-reported Dementia/“Senility” Limitations

No differences in the odds of reporting activity limitations due to dementia or “senility” were found according to sexual orientation in any groups (i.e., all, women, and men) after adjusting for psychological distress and the covariates. Psychological distress was significantly associated with activity limitations due to dementia or “senility” and self-reported cognitive impairment limitations for both women and men.

Discussion

Utilizing a national representative sample, this study is the first to investigate the disparity in subjective cognitive impairment among sexual minorities, taking into consideration psychological distress. This study found sexual minority women and men compared to heterosexuals reported higher rates of psychological distress, which was found to be associated with SCI, even after taking into account demographic covariates. These findings are concerning. Given the empirical (Hendrie et al., 2006; Wilson & Bennett, 2017) and conceptual (Gerstorff et al., 2009; Kiecolt-Glaser et al., 2002; Steffens & Potter, 2008) evidence of the relationship between psychological distress and SCI, it is expected that if one construct is disproportionately present, the other is likely as well. The disproportionate prevalence of psychological distress for sexual minorities has been well documented (e.g., see Fredriksen-Goldsen, Kim, et al., 2013b; Fredriksen-Goldsen, Kim, Shui, et al., 2017b), and it may be directly related (Singh-Manoux et al., 2017) to the disproportionate prevalence of SCI. Further longitudinal and biomedical

Table 2. Logistic Regression of Subjective Cognitive Impairment on Sexual Orientation and Psychological Distress: National Health Interview Survey, Ages 45 and Older (N = 108, 152).

Predictors	Outcome variables							
	Status AOR (95% CI)	Subjective cognitive impairment			Extent		Cognitive impairment limitations AOR (95% CI)	Senility/dementia limitations AOR (95% CI)
		Severity AOR (95% CI)	Frequency AOR (95% CI)	Extent AOR (95% CI)				
All								
Sexual minority ^a	1.27* (1.05, 1.53)	1.78* (1.14, 2.79)	1.39 (.97, 2.00)	1.67** (1.15, 2.43)	1.43** (1.15, 1.79)	.90 (.44, 1.84)		
Psychological distress	1.22*** (1.21, 1.23)	1.11*** (1.10, 1.12)	1.09*** (1.08, 1.10)	1.10*** (1.09, 1.11)	1.19*** (1.18, 1.19)	1.04*** (1.02, 1.06)		
Women								
Sexual minority ^a	1.31* (1.01, 1.70)	2.46** (1.40, 4.34)	1.75* (1.08, 2.84)	2.01* (1.16, 3.46)	1.51* (1.08, 2.11)	.72 (.30, 1.70)		
Psychological distress	1.20*** (1.19, 1.21)	1.12*** (1.10, 1.14)	1.09*** (1.08, 1.11)	1.10*** (1.08, 1.11)	1.18*** (1.17, 1.19)	1.03** (1.01, 1.05)		
Men								
Sexual minority ^a	1.26 (.96, 1.64)	1.20 (.60, 2.41)	1.10 (.68, 1.79)	1.36 (.77, 2.39)	1.34 (.97, 1.85)	1.09 (.37, 3.24)		
Psychological distress	1.23*** (1.22, 1.25)	1.10*** (1.08, 1.12)	1.09*** (1.07, 1.11)	1.10*** (1.08, 1.12)	1.19*** (1.18, 1.21)	1.05*** (1.03, 1.08)		

Note. CI = confidence intervals; AOR = adjusted odds ratio; each logistic regression models adjusted for age, income, education, race/ethnicity, and survey years; * p < .05, ** p < .01, *** p < .001.
^aHeterosexuals were the reference group.

research is needed to understand if, and the degree to which, there is temporal ordering or a causal relationship between psychological distress and SCI.

It would be important to note that sexual minorities were also more likely to report SCI, when controlling for psychological distress and the other covariates in the model. Furthermore, sexual minorities with SCI reported greater severity, frequency, and extent of impairment than heterosexuals, even when adjusting for psychological distress and other covariates. These findings suggest that psychological distress is not a proximal prodromal symptom of SCI but rather that the relationship is bidirectional and/or related to additional underlying factors that independently act upon cognitive health.

One possible explanation for the semi-independence of SCI from psychological distress for sexual minorities but not for heterosexuals is that sexual minorities are a health disparate group with disproportionate rates of chronic conditions (Fredriksen-Goldsen, Kim, Shui, et al., 2017b), some of which tend to co-occur with SCI (Alzheimer's Disease International, 2009). The confounding impact of disparities among sexual minorities of both cognitive impairment and other chronic health conditions (Kantarci et al., 2009) underscores the importance of further research to understand the relationship between chronic health conditions and cognitive impairment for this population as well as efficacious, culturally responsive interventions. The risks of psychological distress might not only be higher among sexual minorities than heterosexuals but it might also have more detrimental effects on their cognitive impairment.

Unexpectedly, when we examined women and men separately, the disparity in status, severity, frequency, and extent of SCI and cognitive impairment limitations when controlling for psychological distress remained for sexual minority women but not for sexual minority men. There are several possible explanations for this. Sexual minority women, but not sexual minority men, are more likely than heterosexual peers to experience multiple chronic health comorbidities, particularly higher rates of heart attack, stroke, and multiple comorbid chronic conditions (Fredriksen-Goldsen et al., 2017b). Cognitive impairment is associated with cardiovascular disease, and more advanced cognitive decline is associated with higher number of chronic health comorbidities (Alzheimer's Disease International, 2009). Disparate underlying biological contributions of cardiovascular disease and chronic health conditions for sexual minority women may contribute to a higher risk for developing cognitive impairment.

There is some evidence to suggest that depression symptoms increase the risk for cognitive impairment, but only in individuals with higher levels of education (Hendrie et al., 2006). Sexual minority adults had higher levels of education (Fredriksen-Goldsen et al., 2021) than heterosexuals in the sample, so it is possible the relationship

between psychological distress and SCI was so strong that for men, the residual independence of SCI was eclipsed, while the strength and quality of that relationship for sexual minority women may be more complicated. Some evidence suggest that women are more likely than men to experience psychological distress as they age, and people with chronic health conditions and stress are also more likely to experience psychological distress (Hendrie et al., 2006). Given that sexual minority women were more likely than heterosexual women to experience SCI with greater severity, frequency, and extent, the stress combined with chronic health conditions and higher levels of education may mean some sexual minority women are at especially high risk for psychological distress. Further research is warranted to investigate a possible moderating effect of psychological distress for this group. Moreover, varied experiences by sexual minority subgroups ought to be further investigated given known differences in education level and life experiences including identity management, visibility, and income (Fredriksen-Goldsen et al., 2017a, 2021). In future research, a latent class analysis may be helpful to examine varied patterns and combinations of protective and risk factors that buffer against or exacerbate psychological distress but not SCI.

More strikingly, the SCI disparity among women remained even after taking important factors into consideration, including sociodemographic characteristics (age, income, education, and race/ethnicity) and psychological distress. Thus, it is possible that findings from this study underscore underlying disparities in SCI for women compared to men. As noted, existing research has shown that sexual minority women, compared to heterosexual women, are more likely to have a disability, chronic health conditions, and comorbidities (Fredriksen-Goldsen et al., 2017b), which could be associated with SCI (Alzheimer's Disease International, 2009). This finding illustrates the importance of conducting additional analyses to better understand the gender differences in the underlying mechanisms at play.

The data from this study are population-based, which is a strength of the research. Interestingly, the population estimates for sexual minority women and men were equivalent to each other whereas there were more heterosexual women compared to heterosexual men. This could be due to a variety of factors. For example, sexual minority men may be more likely to participate in national health surveys than sexual minority women (Lee et al., 2018). Existing research has shown higher rates of cardiovascular disease and obesity among sexual minority women, which could be associated with premature mortality (Fredriksen-Goldsen et al., 2013b). While more research is needed to understand the factors accounting for the gender composition of the sexual minority sample, these findings also underscore the critical importance of conducting separate analyses by gender in sexual minority health research.

Public Health Implications

Dementia and caregiving are expensive, with informal caregiving burden both disproportionate and complex. The [Alzheimer's Association \(2016\)](#) estimated the 2020 annual cost of care and treatment of adults with Alzheimer's Disease and other dementias to be approximately \$305 billion, making it the most expensive disease in America. Among sexual minorities, both men and women provide high levels of care ([Fredriksen-Goldsen et al., 2018](#)), relying heavily on peers of the same age, unmarried partners, and ex-partners for caregiving as they age ([Fredriksen-Goldsen et al., 2021](#)). It has been found that 31% of sexual minority older adults provide informal caregiving assistance ([Fredriksen-Goldsen et al., 2021](#)). Given prevailing community norms, and the additional prevalence of SCI, sexual minorities may serve as care providers for others even while they themselves may also need some degree of care. More research is needed to identify contributing causal factors to reduce the disease burden for this population and reduce public health expenditures.

An important consideration for researchers is that the social networks of sexual minority adults may constrict rapidly as they age, as they have fewer children, are less likely to have a married partner, and more likely to live alone ([Fredriksen-Goldsen et al., 2021](#)). Because they are more likely to rely on informal social networks to meet care needs ([Fredriksen-Goldsen, 2007](#); [Fredriksen-Goldsen et al., 2021](#)), reductions in social networks may make it more difficult to meet personal care needs independently in the community and may exacerbate chronic health conditions that contribute to SCI. Thus, beyond the mere presence of chronic health conditions, social factors associated with the contraction of social networks may help to explain some of the disparity in SCI and its partial independence from psychological distress. Research with this population is needed to understand how the contraction of social networks, and potential for social isolation and loneliness, may ameliorate or exacerbate the functional impacts of SCI, and to assess the quality and availability of care.

Research suggests that compared to non-caregiving sexual minorities, those who provide care to others experience significantly higher levels of disability themselves as well as depression and stress ([Fredriksen-Goldsen et al., 2018](#)), putting them at further risk of negative health outcomes. Providing support to sexual minority caregivers may prolong their ability to provide care to others while also coping with their own cognitive, psychological, and emotional needs. Such support could reduce disease burden for this community while also reducing the financial costs of formal care services. Further research is needed to identify and understand the specific types of support most helpful for this population.

Despite the semi-independence of SCI and psychological distress for sexual minority women, in this study both sexual minority men and women experienced higher total levels of SCI and psychological distress compared to their heterosexual

counterparts. Findings about increased levels of psychological distress comport with other population-based studies, which found that sexual minorities have high rates of depression and loneliness ([Fredriksen-Goldsen et al., 2013a](#); [Fredriksen-Goldsen et al., 2011](#)). Particularly given the tendency for sexual minorities to rely on informal networks of care, high rates of psychological distress and loneliness may, in part, result in insufficient networks to meet increasing care needs associated with SCI. To identify possible unmet care needs, it is essential for formal systems of care to assess for the presence and severity of both SCI and psychological distress as well as care support needs.

Limitations

There were several limitations to this study. First, data used for analysis were cross-sectional, and we were unable to examine a possible causal relationship between SCI and psychological distress. Longitudinal research is needed to further investigate the temporal nature of the relationship between the two constructs. Second, data were self-report and not objective measures of cognitive decline. As such, it is possible that norms within heterosexual and/or sexual minority communities encourage over- or under-reporting of SCI. It is also possible that asking proxies, such as support persons, may provide a differing assessment of SCI limitations ([Edwards et al., 2015](#)). Relatedly, we are unable to determine whether respondents were experiencing dementia or had received a diagnosis. Further research is also needed to investigate possible subgroup differences within sexual minority communities, including subgroup differences by race and ethnicity, age and gender identity, to name a few.

Conclusion

Consistent with previous research, the study documented higher rates of SCI and psychological distress among sexual minority adults compared to heterosexuals of similar age, with greater severity, frequency, and extent of SCI. In future SCI and dementia research with sexual minorities, it is imperative that covariates, such as psychological distress, are considered. These findings suggest the importance of research to develop culturally responsive interventions addressing both SCI and psychological distress in our increasingly diverse, and often underserved older adult population.

Declaration of Conflicting Interests

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References

- Alzheimer's Association. (2016). 2016 Alzheimer's disease facts and figures. *Alzheimer's & Dementia*, 12(4), 459–509. <https://doi.org/10.1016/j.jalz.2016.03.001>
- Alzheimer's Disease International. (2009). *World Alzheimer's report 2009*. Alzheimer's Disease International. https://www.alz.org/national/documents/report_full_2009worldalzheimerrreport.pdf
- Bernstein, A. B., & Remsburg, R. E. (2007). Estimated prevalence of people with cognitive impairment: Results from nationally representative community and institutional surveys. *The Gerontologist*, 47(3), 350–354. <https://doi.org/10.1093/geront/47.3.350>
- Centers for Disease Control and Prevention. (2019). *Subjective cognitive decline – a public health issue*. CDC. <https://www.cdc.gov/aging/aginginfo/docs/subjective-cognitive-decline-508.pdf>
- Danner, D. D., Snowdon, D. A., & Friesen, W. V. (2001). Positive emotions in early life and longevity: Findings from the nun study. *Journal of Personality and Social Psychology*, 80(5), 804–813.
- Edwards, V. J., Anderson, L. A., & Deokar, A. J. (2015). Proxy reports about household members with increased confusion or memory loss, 2011 Behavioral Risk Factor Surveillance System. *Preventing Chronic Disease*, 12, E47. <https://doi.org/10.5888/pcd12.140427>
- Flatt, J. D., Johnson, J. K., Karpiak, S. E., Seidel, L., Larson, B., & Brennan-Ing, M. (2018). Correlates of subjective cognitive decline in lesbian, gay, bisexual, and transgender older adults. *Journal of Alzheimer's Disease*, 64(1), 91–102. <https://doi.org/10.3233/JAD-171061>
- Fredriksen-Goldsen, K., Kim, H.-J., Emler, C., Muraco, A., Eroshcheva, E., Hoy-Ellis, C., Goldsen, J., & Petry, H. (2011). *The Aging and Health Report: Disparities and resilience among lesbian, gay, bisexual, and transgender older adults*. Institute for Multigenerational Health. <http://caringandaging.org/wordpress/wp-content/uploads/2011/05/Full-Report-FINAL-11-16-11.pdf>
- Fredriksen-Goldsen, K. I. (2007). *Caregiving with pride*. Hawthorth Press.
- Fredriksen-Goldsen, K. I., Emler, C. A., Kim, H. J., Muraco, A., Eroshcheva, E. A., Goldsen, J., & Hoy-Ellis, C. P. (2013a). The physical and mental health of lesbian, gay male, and bisexual (LGB) older adults: The role of key health indicators and risk and protective factors [article]. *Gerontologist*, 53(4), 664–675. <https://doi.org/10.1093/geront/gns123>
- Fredriksen-Goldsen, K. I., Jen, S., Bryan, A. E. B., & Goldsen, J. (2018). Cognitive impairment, alzheimer's disease, and other dementias in the lives of lesbian, gay, bisexual and transgender (LGBT) older adults and their caregivers: Needs and competencies. *Journal of Applied Gerontology*, 37(5), 545–569. <https://doi.org/10.1177/0733464816672047>
- Fredriksen-Goldsen, K. I., Jung, H., Kim, H. J., Petros, R., & Emler, C. (2021). Disparities in subjective cognitive impairment by sexual orientation and gender in a national population based study of U.S. Adults, 2013–2018. *Journal of Aging and Health*, 34(4–5), 519–528. <https://doi.org/10.1177/08982643211046466>
- Fredriksen-Goldsen, K. I., Kim, H. J., Barkan, S. E., Muraco, A., & Hoy-Ellis, C. P. (2013b). Health disparities among lesbian, gay, and bisexual older adults: Results from a population-based study. *American Journal of Public Health*, 103(10), 1802–1809. <https://doi.org/10.2105/ajph.2012.301110>
- Fredriksen-Goldsen, K. I., Kim, H.-J., Bryan, A. E. B., Shiu, C., & Emler, C. (2017a). The Cascading effects of marginalization and pathways of resilience in attaining good health among LGBT older adults. *The Gerontologist*, 57(Suppl_1), S72–S83. <https://doi.org/10.1093/geront/gnw170>
- Fredriksen-Goldsen, K. I., Kim, H. J., Shui, C., & Bryan, A. E. B. (2017b). Chronic health conditions and key health indicators among lesbian, gay, and bisexual older US adults, 2013–2014. *American Journal of Public Health*, 107(8), 1332–1338. <https://doi.org/10.2105/AJPH.2017.303922>
- Fredriksen-Goldsen, K. I., Simoni, J. M., Kim, H.-J., Lehavot, K., Walters, K. L., Yang, J., Hoy-Ellis, C. P., & Muraco, A. (2014). The health equity promotion model: Reconceptualization of lesbian, gay, bisexual, and transgender (LGBT) health disparities. *American Journal of Orthopsychiatry*, 84(6), 653–663. <https://doi.org/10.1037/ort0000030>
- Gerstorff, D., Hoppmann, C. A., Kadlec, K. M., & McArdle, J. J. (2009). Memory and depressive symptoms are dynamically linked among married couples: Longitudinal evidence from the AHEAD study. *Developmental Psychology*, 45(6), 1595–1610. <https://doi.org/10.1037/a0016346>
- Hebert, L. E., Weuve, J., Scherr, P. A., & Evans, D. A. (2013). Alzheimer disease in the United States (2010–2050) estimated using the 2010 census. *Neurology*, 80(19), 1778–1783. <https://doi.org/10.1212/WNL.0b013e31828726f5>
- Hendrie, H. C., Albert, M. S., Butters, M. A., Gao, S., Knopman, D. S., Launer, L. J., Yaffe, K., Cuthbert, B. N., Edwards, E., & Wagster, M. V. (2006). The NIH cognitive and emotional health project. *Alzheimer's & Dementia*, 2(1), 12–32. <https://doi.org/10.1016/j.jalz.2005.11.004>
- Kantarci, K., Weigand, S. D., Przybelski, S. A., Shiung, M. M., Whitwell, J. L., Negash, S., Knopman, D. S., Boeve, B. F., O'Brien, P. C., Petersen, R. C., & Jack, C. R. (2009). Risk of dementia in MCI: Combined effect of cerebrovascular disease, volumetric MRI, and 1H MRS. *Neurology*, 72(17), 1519–1525. <https://doi.org/10.1212/wnl.0b013e3181a2e864>
- Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., Howes, M. J., Normand, S.-L. T., Manderscheid, R. W., Walters, E. E., & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184–189. <https://doi.org/10.1001/archpsyc.60.2.184>
- Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Emotions, morbidity, and mortality: New perspectives from psychoneuroimmunology. *Annual Review of Psychology*, 53(1), 83–107. <https://doi.org/10.1146/annurev.psych.53.100901.135217>

- Lee, J., Paddock, S. M., & Feeney, K. (2012). Emotional distress and cognitive functioning of older couples. *Journal of Aging and Health, 24*(1), 113–140. <https://doi.org/10.1177/0898264311423703>
- Lee, S., Fredriksen-Goldsen, K. I., McClain, C., Kim, H.-J., & Suzer-Gurtekin, Z. T. (2018). Are sexual minorities less likely to participate in surveys? An examination of proxy nonresponse measures and associated biases with sexual orientation in a population-based health survey. *Field Methods, 30*(3), 208–224. <https://doi.org/10.1177/1525822X18777736>
- Luo, H., Yu, G., & Wu, B. (2018). Self-reported cognitive impairment across racial/ethnic groups in the United States, national health interview survey, 1997–2015. *Preventing Chronic Disease, 15*, E06. <https://doi.org/10.5888/pcd15.170338>
- Mitchell, S. L., Teno, J. M., Miller, S. C., & Mor, V. (2005). A national study of the location of death for older persons with dementia. *Journal of the American Geriatrics Society, 53*(2), 299–305. <https://doi.org/10.1111/j.1532-5415.2005.53118.x>
- National Center for Health Statistics. (2019). *Survey description*. National Health Interview Survey.
- Ownby, R. L., Crocco, E., Acevedo, A., John, V., & Loewenstein, D. (2006). Depression and risk for alzheimer disease: Systematic review, meta-analysis, and metaregression analysis. *Archives of General Psychiatry, 63*(5), 530–538. <https://doi.org/10.1001/archpsyc.63.5.530>
- Singh-Manoux, A., Dugravot, A., Fournier, A., Abell, J., Ebmeier, K., Kivimäki, M., & Sabia, S. (2017). Trajectories of depressive symptoms before diagnosis of dementia: A 28-year follow-up study. *JAMA Psychiatry, 74*(7), 712–718. <https://doi.org/10.1001/jamapsychiatry.2017.0660>
- Steffens, D. C., & Potter, G. G. (2008). Geriatric depression and cognitive impairment. *Psychological Medicine, 38*(2), 163–175. <https://doi.org/10.1017/s003329170700102x>
- Wilson, R., & Bennett, D. (2017). How does psychosocial behavior contribute to cognitive health in old age? *Brain Sciences, 7*(12), 56. <https://doi.org/10.3390/brainsci7060056>