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Permalink

<https://escholarship.org/uc/item/6r862110>

Journal

Journal of Alzheimer's Disease, Preprint(Preprint)

ISSN

1387-2877

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Publication Date

2018

DOI

10.3233/jad-171061

Peer reviewed



Published in final edited form as:

J Alzheimers Dis. 2018 ; 64(1): 91–102. doi:10.3233/JAD-171061.

Correlates of subjective cognitive decline in lesbian, gay, bisexual and transgender older adults

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Abstract

Background: Little is known about subjective cognitive decline (SCD) in lesbian, gay, bisexual and transgender (LGBT) older adults.

Objectives: To examine SCD and its association with dementia risk factors, other physical and psychosocial health factors in LGBT older adults.

Methods: A cross-sectional study of SCD was conducted with LGBT older adults, aged 50 and older (n = 210). SCD was categorized based on endorsement of memory problems and one other cognitive domain. Hierarchical logistic regression examined the associations between demographic factors, dementia risk factors, other health and psychosocial factors, and SCD.

Results: Nearly 25% of LGBT older adults were classified as having SCD. LGBT older adults who were people of color (OR = 2.5; 95% CI = 1.1 – 7.8), depressed (OR = 2.9; 95% CI = 1.3 – 6.9), or reported having functional impairment (OR = 2.6; 95% CI = 1.1 – 6.5) were significantly more likely to be classified as having SCD (Nagelkerke pseudo $R^2 = .27$).

Conclusion: Depression and functional impairment should be considered when screening LGBT older adults for cognitive impairment and dementia. Future research on the cognitive impairment and dementia risk in LGBT older adults is needed.

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Disclosure Statement:

No potential conflict of interest was reported by the authors. All authors have contributed to the work, agree with the presented findings, and that the work has not been published before nor is being considered for publication in another journal

Keywords

subjective cognitive decline; subjective memory impairment; sexual minorities; depression; dementia; risk factors

INTRODUCTION

Subjective cognitive decline (SCD) is common in later life, with prevalence estimates ranging from 15% to 60% in adults aged 65 and older [1, 2]. SCD refers to a perceived decline in cognition, often memory-related, in the absence of objective assessment of cognitive impairment [3, 4]. SCD manifests as complaints of one or more cognitive domains, including concerns about memory and worries about future decline in concentration, executive function and other cognitive functions [4]. According to the Subjective Cognitive Decline Initiative working group's conceptual framework for research on SCD plus [3], there is an increase likelihood of preclinical Alzheimer's disease (AD) if participants experience: 1) subjective decline in memory rather than other cognitive domains; 2) onset of SCD in the past 5 years; 3) Age of onset of SCD is at 60 years or older; 4) Worries associated with SCD; and 5) Beliefs that cognitive performance is worse than others of the same age. In addition, the SCD framework recommends if possible to obtain confirmation of cognitive decline by an informant, determine whether there is the presence of APOE ϵ 4 genotype, and to examine additional biomarker evidence for preclinical AD. For the purposes of this paper, we use the term SCD to refer to subjective cognitive complaints, memory complaints, and other subjective ratings of cognitive problems or impairment.

Past studies have shown that SCD is associated with up to three times greater risk for future objectively assessed cognitive decline [1, 5-8]. A meta-analysis found that two to seven percent of individuals with SCD, on average, progressed to mild cognitive impairment or dementia annually [9]. In addition, recent neuroimaging studies have found that individuals with SCD were more likely to have underlying premorbid brain abnormalities predictive of early identification of Alzheimer's disease [10-14].

There are some controversies around SCD given that this condition is not always associated with a decline to an objective level of cognitive impairment or future risk of dementia [15]. For instance, in some studies of individuals with SCD there has been no increased risk of cognitive decline or dementia over time [16, 17]. Other studies have found no association between SCD and brain abnormalities using MRI [8, 18]. Some research finds that SCD is associated with symptoms of depression rather than objective measures of cognition and cognitive decline [19-21]. In fact, SCD may be a symptom of depression rather than an early marker of cognitive impairment or dementia [22]. Zlatar and colleagues found that SCD was not associated with objective cognitive function after controlling for depression, and only depression was significantly associated with SCD after accounting for demographics, physical functioning, and objective cognitive function [20]. However, differences in the assessments used to measure SCD, populations (clinic vs. community samples), and study designs make it difficult to compare findings across studies. Thus, it still remains unclear whether depression may be the cause or effect of SCD.

Studies have also found that other health problems and social factors may be predictive of SCD. For instance, SCD has been found to be associated with psychiatric disorders (e.g., anxiety, post-traumatic stress disorder) [23, 24], stress [25], personality [26], and menopause [27] are associated with SCD. It has been suggested that some of these health problems may cause SCD; however, the determinants of SCD remain complex and require further study.

Minority and other disadvantaged populations are at an increased risk of cognitive impairment and dementia [28, 29]. With regards to SCD, studies have shown that SCD in older racial/ethnic minorities is associated with health difficulties, mobility limitations, depression, and lower social functioning [30, 31]. Recent findings suggests that up to 50% of lesbian, gay, bisexual, and transgender (LGBT) older adults reported moderate to severe SCD, and rates were higher among LGBT older adults who were racial/ethnic minorities [32]. By 2030, there will be an estimated seven million LGBT older adults (aged 50 and older) in the U.S. [33]. According to the Alzheimer's Association, nearly 350,000 LGBT older adults in the U.S. currently have dementia, which will increase to over a million by 2030 [34]. To date, little is known about the prevalence and correlates of SCD in LGBT older adults.

LGBT older adults experience greater health disparities than their cisgender (i.e., nontransgender) heterosexual peers [35]. It has been proposed that historical, institutional, and societal discrimination of LGBT people and related stress may be the potential cause of these health disparities [36]. Several recent studies document a higher prevalence of physical and psychosocial health problems in LGBT older adults [37-40]. Many of these health problems are considered modifiable risk factors for cognitive impairment and dementia [41-44]. For example, studies have found higher rates of cardiovascular disease [38], hypertension [40], and diabetes [40], as well as heavy smoking and alcohol use [37-39, 45]. LGBT persons also experience a higher prevalence of depression or mental health distress [33, 40, 46]. The higher rate of depression in LGBT older adults is a concern since depression is associated with a 2- to 3-fold increased risk of dementia [47, 48].

HIV, which disproportionately impacts LGBT adults, is also an independent risk factor for cognitive impairment and dementia. This includes HIV-associated neurocognitive disorders (HAND), minor cognitive motor disorder (MCMD), and HIV-associated dementia (HAD) [49, 50]. Age is a risk factor for HIV-related cognitive impairment and dementia, with studies showing up to three times higher prevalence of in older adults compared to younger adults with HIV/AIDS [51, 52]. Correlates of cognitive impairment and dementia in older adults with HIV/AIDS include physical health problems (e.g., cardiovascular disease, obesity, and diabetes), heavy alcohol use, social isolation, and HIV-related stigma and stressors [52, 53].

However, there are also potential protective factors for cognitive function and dementia risk that are found to be higher in LGBT older adults compared to their cisgender heterosexual peers. Several studies have shown that LGBT older adults may have a higher education than their cisgender heterosexual peers [38-40]; however, this is likely due to sampling bias in LGBT studies given that LGBT populations engaging in research have been predominantly white middle-class older adults. Social resources, including social networks and social

support, could also be a protective factor for the health of LGBT older adults [54-58]. Social resources are associated with a reduced risk of cognitive impairment and dementia [59-61]. However, there is a limited understanding of risk and protective factors for SCD and dementia in LGBT populations, and it remains unclear whether risk of SCD and dementia in LGBT older adults differs from cisgender heterosexual older adults.

To date, there are no research studies on the correlates of SCD in LGBT older adults. Understanding the health and psychosocial factors associated with cognitive dysfunction is needed to inform screening methods and provide a more precise understanding of the risks for cognitive impairment and dementia in older LGBT populations. Using a community-based sample of LGBT older adults, this study: 1) examined the relationship between modifiable risk factors for dementia and SCD; and 2) identified additional health and social factors associated with SCD

MATERIALS AND METHODS

Participants

Data for this study were obtained from a convenience sample of 210 LGBT adults aged 50 years and older who were recruited in 2010-2011 from the Center on Halsted (COH), a comprehensive LGBT community center in Chicago, IL. COH provides a range of health and social services for the LGBT community, including mental health services, HIV testing and prevention, community and cultural programs, youth programs, and senior service programs for adults aged 50 and older. Participants were also recruited from several AIDS service organizations, local health fairs, and community events in Chicago. Details of the study methodology have been described elsewhere [54, 62].

Inclusion criteria for this study were identifying as LGBT, aged 50 or older, and sufficient fluency in English to complete the study survey. Prior to survey administration, participants provided informed consent. The one-time self-administered survey took between 45 to 60 minutes to complete. A total of 233 individuals completed the survey between 2010-2011; however, due to missing data or age ineligibility (n= 23), the final analytic sample consisted of 210 LGBT individuals aged 50 and older. Participants were offered a \$25 gift card for completing the survey. Study procedures were approved by the Copernicus Group Independent Review Board.

Measures

Items for the survey were based on the Research on Older Adults with HIV study [63], National Social Life, Health and Aging Project [64], and the Caregiving among Older Lesbian, Gay, Bisexual and Transgender New Yorkers study [65]. Only selected measures from the larger survey that were relevant to our research questions and SCD were included.

Subjective cognitive decline

Participants completed a survey about self-reported problems with cognitive functioning, a previously validated, cognitive measure from the Medical Outcomes Study (MOS) HIV Health Survey [66-68]. The scale consists of 4-items that query the presence of cognitive

problems experienced over the past month, including: 1) difficulty with reasoning and problem solving; 2) memory problems; 3) trouble with attention; and 4) difficulty with doing activities involving concentration and thinking. Each item is rated from 1 (all of the time) to 6 (none of the time). Responses were summed and then converted to a 0- to 100-point scale, with higher scores suggesting better subjective cognitive function [68]. The Cronbach alpha, an indicator of inter-item reliability, was 0.85 for this measure.

In order to determine the presence of SCD, each of the four cognitive questions were categorized as impaired (a score < 5 representing endorsement of a cognitive problem some of the time through all of the time) vs. non-impaired (a score of 5 or 6 representing none or a little of the time). We operationally defined SCD based on the DSM-IV criteria for dementia [69] and SCD Initiative working group framework [3]. Participants were considered to have SCD if they they endorsed a decline in memory in the past month, plus a decline in at least one other cognitive domain (difficulty with reasoning and problem solving, attention, or concentration and thinking). Prior studies on SCD have found memory impairment to be the most common complaints [1, 3, 4, 15, 70, 71]. Therefore, participants who scored < 5 on item number two (memory problems) and <5 on at least one of the other items were classified as having SCD.

Demographic variables

Demographic information was self-reported including age, gender identity (male, female, male-to-female transgender, female-to-male transgender, or intersex), sexual identity (heterosexual, gay or lesbian, bisexual, queer, or questioning), race (white, black, Asian, American Indian/Native Alaskan, and other), ethnicity (Hispanic or Latino), education (high school vs. some college or higher), and income adequacy (yes or no). Income adequacy was categorized based on participants' reporting of the availability of money for expenses, ranging from money not being a problem to not having enough money for expenses.

Modifiable risk factors for dementia

Based on previous research on modifiable risk factors for dementia [41], we focused on five self-reported medical conditions (yes or no response): diabetes, heart disease, hypertension, HIV, and depression, which was assessed using the 10-item Center for Epidemiological Studies Depression Scale or CES-D [72]. The CES-D assesses the frequency of depressive symptoms experienced over the past week, ranging from 0 (none) to 3 (most days), with a range of 0 to 30. Responses were summed and then categorized as not depressed (0 to 9) and depressed (10 to 30) [72]. The Cronbach alpha for the CES-D in this study was 0.84. We also examined the presence of two self-reported adverse health behaviors: any smoking or alcohol use in the past three months.

Other health and social factors

Addition health and social factors were also queried, including functional impairment, self-rated health, living status (alone or with others), social network size, social support, and experiencing discrimination from healthcare providers. For functional impairment, the Older Americans Resources and Services assessment was used [73]. This included seven questions about instrumental activities of daily living (IADLs) and six questions about activities of

daily living (ADLs), with higher scores suggesting greater functional impairment. Functional impairment was operationally defined as reporting difficulty with two or more IADLs or ADLs. Self-rated health was rated on a 4-point Likert scale with responses ranging from excellent (1) to poor (4). Social network size was based on the total number of people, including friends, children, and family members, that were currently present in participants' social networks [54, 74, 75]. Social support received was also based on previous studies of older adults [63, 64], and included the frequency of eight types of instrumental and emotional assistance provided by family members and friends (e.g., help with shopping/running errands, preparing meals, managing finances, receiving advice on big decisions, and someone to talk to about personal or private matters). Experiencing discrimination from health providers was based on reporting that health providers did not like LGBT people.

Statistical analysis

Descriptive statistics were used to summarize demographic, risk factors for dementia, and other health and social variables. Prior to multivariable analyses, chi-square tests or analyses of variance with post-hoc tests were conducted to determine the associations of demographic, modifiable risk factors, and other health and social variables with SCD; and a correlation matrix was used to test for collinearity ($r > 0.80$). Hierarchical logistic regression was used to test associations between model 1: demographic variables, model 2: model 1 plus dementia risk factors, and model 3: model 2 plus other health and social factors with the presence or absence of SCD (dependent variable). All variables entered into the logistic regression model were treated as categorical, with the exception of age. Only variables that were significantly associated with SCD ($p < 0.05$) in the bivariate correlational analysis were tested in the regression models. However, all models were adjusted for age, race/ethnicity (person of color vs. white), sexual orientation (gay or lesbian vs. bisexual), education (high school vs. some college or higher), and income adequacy (adequate vs. inadequate). Research has shown that bisexual older adults face great health problems compared to gay and lesbian older adults [35, 38, 76-78]. Due to the small sample sizes for transgender older adults ($n = 11$), we exclude this group from the regression models. In addition, due to the small number of racial/ethnic minorities (including black and Latino LGBT older adults), those who responded as other were categorized as people of color. Regression models were evaluated in terms of the model likelihood chi-square ratio and the pseudo R -square (Nagelkerke R^2), with results presented as odds ratios (OR) and 95% confidence intervals (CIs). Diagnostic tests did not indicate any significant multicollinearity of covariates in the regression analyses. All analyses were conducted using SPSS (Statistical Package for Social Sciences) version 22.0.

RESULTS

The average age of participants was 59.6 years old ($SD = 8.0$), with a range of 50 to 92 years (see Table 1). For persons of color, a third of participants identified as black ($n = 53$), 4% Latino ($n = 8$), and 3% other ($n = 5$). Nearly 70% identified as non-Latino white ($n = 131$). The majority of the sample identified as male (71%), with 24% female and 5% transgender female. With regards to sexual identity, 25% identified as lesbian ($n = 48$), 61% identified as

gay males (n = 28), and 15% as bisexual (n=28). Nearly 80% reported graduating with some college or higher, and 61% reported their income as inadequate.

About 36% of participants had scores on the CES-D that fell in the depressed range. More than a quarter reported smoking in past three months, and about 20% reported having hypertension. With regards to other health and social factors, over one-third reported being HIV positive, 24% reported fair to poor self-rated health, 63% lived alone, and 10% reported experiencing discrimination from a healthcare provider. About 41% reported functional impairment or two or more impairments of ADL and IADL. Participants' social networks were comprised of 11 people on average (SD = 7.4, range = 0 - 46) and reported receiving 4.1 types of social support (SD = 3.4, range = 0 - 15), with the top types of social support being having someone to provide advice, talk with about problems, and to cheer up.

Overall, 44% of participants endorsed at least one of the symptoms of SCD, with the highest proportion reporting problems with memory (31%) followed by attention (26%), reasoning and problem solving (23%), and concentration and thinking (19%) (Table 2). The mean score for SCD on the continuous scale was 84.8 (SD = 15.4; range = 0 - 100). Based on our operational definition of SCD for those with memory impairment plus another cognitive impairment, 23% were classified as *impaired* (n = 49) vs. 77% *not impaired* (n = 160). Overall, 18% reported one SCD, 8% two impairments, 7% three, and 12% all four cognitive impairments. Looking at the percentage of LGBT older adults with SCD who were age 60, 24.5% of those experiencing SCD in the past month were aged 60+.

In the bivariate analyses, SCD was significantly associated with being younger (mean = 56.9 vs. 60.4, $p = .002$), people of color ($p < .001$), having high school education ($p = .049$), and reporting an income inadequacy ($p = .01$). Of the six dementia risk factors, only depression ($p < .001$) and being HIV positive ($p = .002$) were associated with SCD. Other health and social factors that were associated with SCD included functional impairment ($p < .001$) and reporting fair to poor self-rated health ($p = .048$).

Using Hierarchical logistic regression models, we tested associations between demographic variables (model 1), added dementia risk factors (model 2), and then added other health and social factors (model 3) with the presence SCD. As shown in Table 3, people of color had three times greater odds of reporting SCD compared to their white counterparts (OR = 3.1; 95% CI = 1.3 – 7.7). After the addition of the dementia risk factors, being a person of color (OR = 3.1; 95% CI = 1.2 – 8.0) and greater depressive symptoms (OR = 3.3; 95% CI = 1.5 – 7.2) were significantly associated with SCD (model $\chi^2(7) = 27.69$; $p < .001$; Nagelkerke pseudo $R^2 = .22$). After the addition of health and social factors, people of color had 2.5 times greater odds of having SCD (OR = 2.5; 95% CI = 1.1 – 7.8), individuals with greater depressive symptoms had three times greater odds of reporting SCD (OR = 2.9; 95% CI = 1.3 – 6.9), and LGB older adults that reported having functional impairment had three times greater odds of reporting SCD (OR = 2.6; 95% CI = 1.1 – 6.5; Final model $\chi^2(10) = 34.10$; $p < .001$; Nagelkerke pseudo $R^2 = .27$). While age, gender, income inadequacy, self-reported health, and HIV status were associated with SCD at the bivariate level, they were not significantly associated in the multivariable model.

DISCUSSION

Nearly 25% of LGB older adults in this study endorsed experiencing SCD, which was more likely to be reported by those with greater depressive symptoms, HIV, functional impairment, and poor self-rated health. The prevalence of SCD in this population was similar to other community-based studies (sexual and/or gender identity was not mentioned) in adults aged 65 and older that have found SCD to range between 25% to 56% [6]; however, the mean age of our LGBT participants was nearly 60. Further study is needed to determine whether LGBT older adults experience a greater risk for SCD. Results did not suggest that several risk factors for dementia, including age, education, heart disease, hypertension, diabetes, and current smoking and alcohol use, were associated with SCD in LGBT older adults. This finding may be due to very few LGBT older adults reporting cardiovascular risks (diabetes, heart disease and hypertension) and the younger age of the sample. Other studies have found that age, education, and gender were not associated with SCD [79, 80], but some studies have found that SCD was associated with number of illnesses [80], stress [81], objective markers of heart disease [82], and mortality [83].

Similar to other studies [1, 30, 31], having depressive symptoms, reporting functional impairment and identifying as a racial/ethnic minority were significantly associated with SCD. As mentioned previously, studies have suggested that the association between SCD and depression may be a symptom of the psychiatric condition [22]. However, in a recent study in older adults with a history of major depression, subjective memory complaints were associated with worse objective memory after controlling for depressive symptoms [84]. In addition, a recent meta-analysis found that SCD was independently associated with both objective cognitive function and depressive symptoms [70]. We also found that LGBT persons of color were more likely to have greater depressive symptoms (46% vs. 28%, $p = 0.01$) than their white peers; however, results were not significant after adjusting for age and gender identity. Future research is needed to better understand the complexity of these relationships and if there are different subtypes of SCD with or without depression that may lead to future cognitive decline and dementia. Given that research has shown consistently that late life depression is a risk factor for Alzheimer's and other dementias [41, 48, 85], it is possible that depressive symptoms may be early manifestations of cognitive impairment and preclinical dementia [3]. Given the higher prevalence of depression in LGBT populations, future studies should further explore depression as a potential risk for SCD, as well as objective cognitive impairment and dementia, in LGBT older adults. It is also important to consider other mental health problems, such as anxiety and post-traumatic stress disorder, given the potential elevated risk for dementia [86, 87].

With regards to our finding that SCD was associated with greater functional impairment, another study found that subjective memory problems were associated reduced functional autonomy, including problems with IADLs, ADLs, communication, mental functions, and mobility [81]. The association between SCD and functional impairment may suggest early signs of physical challenges due to cognitive impairment and/or dementia. However, longitudinal research is needed to better understand the relationships between functional and cognitive decline in LGBT older adults with SCD.

This study also found that those who were younger age were more likely to endorse SCD. However, age was not associated with SCD in the multivariate analyses. Being aged 60 years and older is typically the proposed age of onset for cognitive impairment and dementia risk [3]. SCD at younger ages may suggest that subjective decline may be due to other causes, such as stress and depression. In addition, younger LGBT adults in our study were using health services at a local community health center, which may suggest that these individuals had more chronic health conditions and health risks. Future studies with LGBT older adults should consider differences by age, race/ethnicity and depression and explore whether propensity score matching or another matched subset could aid in explore the associations between SCD and demographics and dementia risk factors.

This study highlights the need for greater understanding of cognitive impairment and dementia in LGBT older adults. Studies are needed that compare the rates and related factors associated with SCD in LGBT older adults compared to their cisgender heterosexual peers. In addition, future studies with LGBT older adults would benefit from having informants that can report on observable SCD as well as the potential presence of dementia. It has been estimated that more than a million LGBT older adults will have dementia by 2030 [34]. Currently, there are little to no studies on dementia risk, cognitive impairment, and memory loss in LGBT older adults; and it remains unclear if risk of dementia differs for LGBT older adults compared to cisgender heterosexuals. Future efforts aimed at developing culturally relevant and sensitive assessments of cognitive function and related physical and psychosocial factors among LGBT older adults are needed [32]. During these assessments, it is important to create a welcoming environment, use terms that are inclusive of different sexual and gender identities and expressions, and train staff to use inclusive language and respect individuals' differences [88]. Also health professionals should recognize same-sex partners, friends, and neighbors as informants as this will aid in collecting information on memory changes and dementia symptoms experienced by LGBT older adults. There is also a need for targeted community education programs that promote early detection of cognitive impairment and dementia in LGBT older adults. Depression and functional impairment may also be important health problems to consider when screening LGBT older adults for cognitive impairment and dementia. Finally, there is a need for training professional caregivers and staff from specialized social services to support LGBT older adults with cognitive impairment and dementia and their caregivers [34, 89].

There are several limitations of this study. First, this was an exploratory cross-sectional study. Future research on SCD is needed to further understand the physical and social correlates, as well as the need for objective measures of cognitive function and longitudinal assessments of cognitive decline and dementia risk in LGBT older adults. Second, this study was conducted with a relatively small sample of LGBT older adults, including a very small number of older bisexual, transgender, and racial/ethnic minorities. Therefore, this study likely lacks adequate power to detect important differences among these groups. This study also could not to tease out effects of correlated covariates, such as age and HIV status. Given the lower mean age and age range of participants (50 to 92), it is also possible that this study may underestimate the prevalence of SCD in LGBT older adults. Moreover, the SCD Initiative working group has recommended that researchers consider examining SCD primarily in adults aged 60 and older [3]. Despite these limitations, this study was the first

descriptive study of the potential correlates of SCD in LGBT older adults. This study provides an essential first step in better understanding SCD, and future research on dementia in this understudied population is greatly needed. Another limitation of this study was that findings on the dementia risk factors and other health and social factors were primarily based on self-report; however, past research has validated the use of self-reports of these conditions in older adults [90]. Finally, while the measure of SCD has been widely used with older adults with HIV [66-68], this was the first study to use this measure in a diverse sample of LGBT older adults. In addition, it was the first time that this measure had been used to categorize individuals with or without SCD. Future research aimed at validating this tool in LGBT older adults, examining its sensitivity and specificity for detecting objective cognitive impairment, and whether our categorization of with and without SCD adequately identifies individuals with cognitive impairment are needed. However, results from our multivariate analyses were similar when treating SCD as continuous or categorical.

This study showed that LGBT older adults who were people of color and reported greater depressive symptoms and functional impairment were nearly three times more likely to endorse having SCD compared to their LGBT counterparts who were white and did not report having these health problems. These results provide initial insight into the potential correlates of cognitive impairment in LGBT older adults. Culturally sensitive programs and screenings are needed for LGBT older adults, as well as future studies aimed at better understanding the potential burden of cognitive impairment and dementia in this population. This includes additional studies on SCD, objective cognitive function, and future risk of cognitive decline and dementia in LGBT older adults.

ACKNOWLEDGEMENTS

Funding for this study was obtained from a grant from the Human Resources Services Administration to the Center on Halsted, Chicago, IL, who commissioned the work with ACRIA. Drs. Flatt and Johnson were supported by the UCSF Center for Aging in Diverse Populations (P30AG015272), UCSF Older Americans Independence Center (P30AG044281), and the National Center for Advancing Translational Sciences of the National Institutes of Health (KL2TR001870). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Human Resources Services Administration or National Institutes of Health.

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Table 1

Subjective cognitive decline by demographic, risk factors for dementia, and other health and social factors in LGBT older adults (N = 210)

	Overall Mean (SD) or N (%)	Subjective Cognitive Decline		p value
		No N (%) N = 160 (76.2)	Yes N (%) N = 49 (23.3)	
Background characteristics				
Age, Mean (SD)	59.6 (8.0)	60.4 (8.3)	56.9 (6.3)	.002
Gender				
Female	50 (23.9)	37 (23.1)	13 (26.5)	.03
Male	148 (70.8)	118 (73.8)	30 (61.2)	
Transgender	11 (5.3)	5 (3.1)	6 (12.2)	
Sexual Identity				
Lesbian	48 (24.9)	34 (22.8)	14 (32.6)	.10
Gay male	117 (60.6)	96 (64.4)	20 (46.5)	
Bisexual	28 (14.5)	19 (12.8)	9 (20.9)	
Race				
Person of color	66 (33.5)	39 (26.4)	26 (59.1)	<.001
White	131 (66.5)	109 (73.6)	18 (40.9)	
Education				
High school graduate	41 (20.2)	27 (17.2)	14 (30.4)	.049
Some college or higher	162 (79.8)	130 (82.8)	32 (69.6)	
Income inadequate	125 (61.0)	89 (56.3)	36 (76.6)	.01
Dementia Risk Factors				
Diabetes	32 (15.5)	21 (13.3)	11 (22.4)	.12
Depression (CES-D 10)	75 (35.9)	43 (26.9)	32 (65.3)	<.001
Heart disease	27 (13.1)	20 (12.7)	7 (14.3)	.78
Hypertension	39 (18.8)	26 (16.5)	13 (26.5)	.12
HIV	70 (34.0)	45 (28.5)	25 (52.1)	.002
Smoking (past 3 months)	52 (25.4)	36 (22.9)	16 (33.3)	.15
Alcohol Use (past 3 months)	129 (62.6)	104 (65.4)	25 (53.2)	.13
Other Health and Social Factors				
Functional impairment	84 (40.6)	53 (33.5)	31 (63.3)	<.001
Fair to poor self-rated health	51 (24.6)	34 (21.4)	17 (35.4)	.048
Live alone	129 (62.9)	99 (62.3)	30 (65.2)	.72
Social network size, mean (SD)	10.61 (7.4)	10.5 (7.2)	11.0 (7.9)	.65
Social support, mean (SD)	4.13 (3.4)	3.9 (3.2)	5.0 (3.8)	.07
Discrimination from health providers	22 (10.9)	16 (10.3)	6 (13.0)	.60

Note. CES-D, Center for Epidemiological Studies Depression Scale; Functional impairment was operationalized as two or more impairments on activities of daily living (ADL) and independent ADL.

Table 2

Frequency of subjective decline by cognitive domain in LGBT older adults

Cognitive domain	Subjective Impairment n (%)
Memory problems	66 (31.4)
Difficulty with reasoning and problem solving	48 (23.0)
Trouble with attention	55 (26.2)
Difficulty with doing activities involving concentration and thinking	39 (18.6)

Note. Subjective cognitive decline was categorized as impaired if participants endorsed some of the time to all of the time. N = 210.

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Table 3
Hierarchical logistic regression model for dementia risk factors and other health and social factors associated with subjective cognitive decline in LGBT older adults

Characteristics	Model 1 ^a			Model 2 ^b			Model 3 ^c		
	OR	95% CI	p-Value	OR	95% CI	p-Value	OR	95% CI	p-Value
Demographics									
Age	0.98	0.92, 1.04	.50	1.00	0.94, 1.07	.96	1.00	0.93, 1.07	.92
Female	1.66	0.71, 3.87	.24	2.31	0.78, 6.81	.13	2.46	0.80, 7.53	.12
Gay/Lesbian	0.87	0.32, 2.35	.78	0.78	0.27, 2.25	.65	0.84	0.29, 2.45	.75
Person of color	3.14	1.28, 7.70	.01	2.72	1.04, 7.13	.04	2.89	1.07, 7.79	.04
High school graduate	1.53	0.60, 3.91	.38	1.31	0.48, 3.59	.59	1.22	0.44, 3.40	.71
Income inadequate	2.10	0.88, 5.00	.09	1.63	0.66, 4.05	.29	1.26	0.47, 3.41	.65
Dementia Risk Factors									
Depression	-	-	-	3.26	1.46, 7.25	.004	2.94	1.25, 6.92	.01
HIV	-	-	-	2.21	0.70, 6.92	.18	2.07	0.65, 6.65	.22
Other Health and Social Factors	-	-	-	-	-	-	-	-	-
Poor self-rated health	-	-	-	-	-	-	1.32	0.47, 3.69	.60
Functional impairment	-	-	-	-	-	-	2.63	1.07, 6.51	.04

Note. CI = confidence interval. Model 1: Adjusted for demographics; Model 2: Adjusted for demographics plus Depression and HIV; Model 3: Adjusted for Model 2 plus poor self-rated health and functional impairment. N = 210.

^a χ^2 (df = 6, N = 181) = 19.01, p = .004; Nagelkerke R² = .16

^b χ^2 (df = 7, N = 181) = 29.58, p < .001; Nagelkerke R² = .24

^c χ^2 (df = 10, N = 181) = 34.10, p < .001; Nagelkerke R² = .27.