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Differences in Mental, Cognitive, and Functional Health

by Sexual Orientation Among Older Women:

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**Abstract**

**Background and Objectives:** This study addresses a gap in the knowledge base regarding whether there are differences in mental, cognitive, and functional health between sexual minority women age 65 and older and their heterosexual counterparts, as well as whether such disparities are moderated by age, socioeconomic status, and race/ethnicity.

**Research Design and Methods:** This study analyzes 2015 Behavioral Risk Factor Surveillance System data from 21 states, focusing on women age 65 and older. Multivariate logistic regression is used to test the hypotheses.

**Results:** Compared to heterosexual women, lesbian/gay women age 65 and older report worse functional health, bisexual women report worse cognitive health and more difficulties with instrumental activities of daily living, and women of "other" orientation report worse health across all three domains. Disparities are particularly present for women in their late 60s and those in their 70s. Sexual minority women with less education have lower odds of frequent mental distress than those with some college education. Sexual minority women of color have significantly lower odds of certain functional health problems compared to white sexual minority women.

**Discussion and Implications:** Findings indicate a need for gerontological services that provide support to older sexual minority women, particularly in relation to cognitive and functional health. Targeted outreach to midlife and "young old" sexual minority women may help address health issues. Future research is needed to understand risk and protective factors contributing to these disparities, including forms of resilience that occur among older sexual minority women of color.

*Keywords:* women; sexual minority; mental health; functional health; cognitive health

In recent years, lesbian, gay, and bisexual (*LGB*, or *sexual minority*) older women are being studied with greater frequency and depth, including as part of an NIH-funded study of LGB and transgender aging (see Fredriksen-Goldsen et al., 2011). However, many topics have yet to be examined in relation to aging and health disparities among LGB women age 65 and older. The 2011 IOM report noted a dearth of research about the mental and physical health status of LGB adults as they age and how health status varies by other sociodemographic characteristics, such as race, ethnicity, or socioeconomic status. Few studies have used population-based samples or directly compared older LGB women to their same-age heterosexual peers on health outcomes. Further, there appears to be little research about older LGB women's functional health, including ability to engage in activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (Gonzales & Henning-Smith, 2015; IOM, 2011). This is a critical gap, as disparities in functional health would likely require greater use of informal caregivers or formal long-term services and supports, such as home-based services and institutional care. The present study aims to address these gaps through analysis of data from the 2015 Behavioral Risk Factor Surveillance System (BRFSS). Before detailing the current study's design, this article will first review the literature in this area and the conceptual framework driving this study.

**Older Sexual Minority Women: Mental, Cognitive, and Functional Health**

A person's mental health, likelihood of disability, and functional ability in later life can be related to lifetime exposure to discrimination, lack of social support, and poverty, as well as having lower educational attainment (Fredriksen-Goldsen, Bryan, et al., 2017; Kim, Jen, & Fredriksen-Goldsen, 2017; Thorpe et al., 2008). Consequently, groups that experience disadvantage in these areas may demonstrate poorer health at earlier ages, accelerated aging, and earlier mortality compared to their more advantaged peers (Adler et al., 2013; Crimmins, Kim, &

Seeman, 2009; Geronimus et al., 2010; Thorpe et al., 2008). Such knowledge suggests that similar patterns may occur for LGB older women compared to heterosexual women, though perhaps moderated by other characteristics such as income, educational attainment, race/ethnicity, and social support.

Compared to heterosexual women, sexual minority women face greater risks for mental health problems such as depression, frequent mental distress, and greater tension or worry due to the marginalization, discrimination, and stigma they face in the broader social environment (Conron, Mimiaga, & Landers, 2010; Gonzales & Henning-Smith, 2017). However, there are few studies that focus particularly on the mental health of sexual minority women age 65 and older. Studies that use population-based data tend to combine middle age and older women, only gather information about co-habiting with a same-sex partner rather than LGB identity, or are limited to one region of the United States. Gonzales and Henning-Smith (2015) found that women age 50 older who were cohabiting with a same-sex partner showed greater psychological distress than women who were married to a male partner. A study by Fredriksen-Goldsen and colleagues (2013) in Washington state found that lesbian and bisexual women age 50 and older reported poorer mental health than heterosexual women. Similar findings have been documented among women ages 50-70 in California (Wallace, Cochran, Durazo, & Ford, 2011).

Little research has looked at differences in women's cognitive or functional health by sexual orientation. Sexual minority women have increased risks for dealing with some modifiable risk factors for cognitive impairment, including smoking, social isolation, mental distress, obesity, and cardiovascular disease (Fredriksen-Goldsen et al., 2013; Fredriksen-Goldsen, Jen, Bryan, & Goldsen, 2016; Gonzales & Henning-Smith, 2015). Lesbian and bisexual women may face higher risks for conditions that may contribute to or co-exist with mobility

difficulties over the life course, such as arthritis and asthma (Conron et al., 2010; Gonzales & Henning-Smith, 2017). Gonzales and Henning-Smith (2017) found that lesbians and bisexual women age 18 and older show greater activity limitations and obesity than heterosexual women. In a different study, Gonzales and Henning-Smith (2015) found that women age 50 and older in same-sex cohabiting relationships reported greater need for help with ADLs and IADLs than women who were married to male partners. In Washington state, lesbian and bisexual women age 50 and older reported more activity limitations and use of special equipment than heterosexual women (Fredriksen-Goldsen et al., 2013). In a survey in California, lesbian and bisexual women age 50-70 were more likely to report having a physical disability than heterosexual women of similar age (Wallace et al., 2011). These patterns suggest that lesbian and bisexual women may face greater challenges in functional ability compared to heterosexual women, as well as greater risk factors related to cognitive impairment. However, few studies have used population-based data from across the U.S. to examine health disparities for women past typical retirement age.

**Conceptual Framework**

The life-course perspective posits that a person's experience of aging is not simply affected by the individual's chronological age (Dannefer & Settersten, 2010, p. 3). Instead, "life experiences, which are inevitably organized by social relationships and societal contexts in which individuals are located, powerfully shape how people grow old" (Dannefer & Settersten, 2010, p. 4). While this theory is broad in scope (Elder & Shanahan, 2006), the emphases on cumulative advantage and disadvantage during one's lifespan and the interaction between a person and their social context is insightful in studying LGB aging. For example, this perspective suggests that LGB older adults' current health is influenced by lifetime experiences of

discrimination, internalized homophobia, and social stigma that are connected to sexual orientation, as well as strategies for resilience and social support that LGB people have developed to cope and thrive (Fredriksen-Goldsen, Kim, Bryan, Shiu, & Emlet, 2017; Kim, Jen, & Fredriksen-Goldsen, 2017). Health disparities, as well as differences in the aging process, are tied to these larger social experiences. Since LGB adults, on average, are exposed to a greater number of potential stressors throughout the life-course than heterosexual adults, LGB adults might be theorized to not only demonstrate disparities in health but also show some indicators of earlier aging-related health struggles compared to heterosexuals. Further, there may be differences in health *within* the population of sexual minority women such that certain groups (e.g., sexual minority women of color) may demonstrate different health patterns in later life due to lifetime exposure to risks such as discrimination.

**Research Gaps and Current Study**

Very few studies have used population-based data to study the mental, cognitive, or functional health of older sexual minority women compared to heterosexual women. Comparing sexual minority women to their heterosexual peers helps document whether there are unique patterns of health and aging for sexual minority women that may require tailored gerontological services and interventions that differ from those needed for heterosexual women. Studies that do exist in this area tend to either use convenience samples, lack a comparison group, or capture same-sex cohabitation only, which ignores LGB women not in a relationship. Few studies focus on women who are past the traditional age of retirement when aging-related health issues tend to appear for larger portions of the general population, and little research has been able to draw generalizable conclusions about disparities and the differential impact on subgroups of sexual minority older adults. The present study intends to address such gaps.

The hypotheses of this study are as follows:

1.  Sexual minority women age 65 and older will report worse mental health, cognitive health, and functional health compared to heterosexual women of similar age.

2.  Sexual minority women age 65 and older will report poorer cognitive and functional health particularly among the younger cohorts of older adults (i.e., those in their 60s and 70s) compared to heterosexual women, reflecting a pattern of accelerated aging.

3.  Differences by sexual orientation will be moderated by socioeconomic status for mental, cognitive, and functional health, and by race/ethnicity for cognitive and functional health[1] so that those of lower socioeconomic status and those who are women of color will report poorer health.

## Research Design and Methods

This study uses data from the 2015 BRFSS, a cross-sectional, state-based telephone survey coordinated each year by the Centers for Disease Control and Prevention (CDC) and carried out by state health departments. This survey captures information about preventative health behaviors and health risks among the general population of community-dwelling adults. The BRFSS uses complex sampling (disproportionate stratified sampling for landline calls, and random sampling of cell phones). When accounting for the survey's sampling and weighting, the BRFSS data are meant to be representative of the U.S. adult population.

In 2015, 21 states used the Sexual Orientation and Gender Identity (SOGI) optional BRFSS module (see *Figure 1* in the Appendix), and these states are captured in the present study. The sexual orientation question on the survey was: *Do you consider yourself to be: straight, lesbian or gay, or bisexual?* Interviewers could also mark "other" if the respondent

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[1] Research suggests that people of color do not tend to experience worse mental health than white adults (McGuire & Miranda, 2008); for this reason, differences in mental health by race/ethnicity are not expected.

described another type of identity or select "don't know/not sure"[2] or "refused." For this

analysis, the focus is on comparing heterosexual women age 65 and older (*n=34,361*) to those

who identified as either lesbian or gay (*n=158*), bisexual (*n=188*), or other (*n=146*). The "other"

group was retained because this may encompass women who preferred not to label their

orientation or preferred other terms.

**Measures**

Besides sexual orientation, the present analysis filtered respondents by age and sex so

that only females age 65 or older were included. This age group was selected both to more

closely analyze the health needs of the oldest sexual minority women and to keep some

covariates, such as income, more controlled, since women age 65 and older are likely to have

access to a stable income source, such as Social Security.

**Dependent variables.** Three major areas of health were examined in this study: mental

health, cognitive health, and functional health. The first measure of mental health, frequent

mental distress, was based on the question: *Now thinking about mental health, which includes*

*stress, depression, and problems with emotions, for how many days during the past 30 days was*

*your mental health not good?* Responses were dichotomized into 13 or fewer days per month

(coded as 0) and 14 or more days per month (coded as 1). The 14-day cutoff has been previously

used to compare population subgroups on mental health-related quality of life (Moriarty, Zack,

& Kobau, 2003). The second mental health measure was an indicator of depression: *Has a*

*doctor, nurse, or other health professional ever told you that you have a depressive disorder,*

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[2] While those who responded "don't know" (*n=604*) could include people who are questioning their identities, among older women, this group might also include those who (a) did not understand the question due to lack of exposure to LGB language, (b) are offended by the question, or (c) did not understand the question due to cognitive limitations. Chi square tests (not shown here) indicating that "don't know" respondents were significantly more likely than other older women to have cognitive limitations, use special equipment for health needs, and have physical limitations, but no different from other older women in emotional health. For these reasons, the "don't know" orientation group was not included.

*including depression, major depression, dysthymia, or minor depression?* Those who answered yes were coded as 1, while those who answered no were coded as 0.

One measure reflected cognitive health: *Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?* "Yes" responses were coded as 1 and "no" responses as 0.

Finally, five measures were examined in relation to functional health. For each measure, "yes" was coded as 1 and "no" as 0. The first question was: *Are you limited in any way in any activities because of physical, mental, or emotional problems?* The second measure was: *Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?* The third measure was: *Do you have serious difficulty walking or climbing stairs?* The fourth measure captured ability to engage in ADLs: *Do you have difficulty dressing or bathing?* The fifth measure captured ability to engage in IADLs: *Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?*

**Control variables.** According to the life-course perspective, other sociodemographic characteristics beyond sexual orientation can affect one's experiences of aging and health, and such characteristics are included here as controls. Using the BRFSS's question about current age, dummy control variables were created for the following age groups: 70-74, 75-79, and 80 and up, with 65-69-year-olds as the reference group. Second, annual household income was categorized into four $25,000 intervals, ranging from "Less than $25,000" to "$75,000 or more." Since the impact of household income can vary widely depending upon household size, the total number of household members (adults + children) was included as a control variable. Education level was captured by the question, *What is the highest grade or year of school you completed?*

This was coded so that 0=at least some college and 1=a high school diploma/GED or less.

Another measure of socioeconomic status was home ownership: *Do you own or rent your home?*

Those who owned their home were coded as 0, and those who rented or had another arrangement

were coded as 1. Finally, a dichotomous measure of race/ethnicity was included, where 0=white,

non-Hispanic, and 1=person of color. Additional race/ethnicity categories could not be included

in multivariate models due to the small cell sizes that would result for older sexual minority

women of color.

**Data Analysis**

The BRFSS data were downloaded from the CDC website and analyzed using SPSS

version 24 with the complex samples add-on to account for complex sampling and weighted

data. Chi-square tests were used for sociodemographic comparisons by sexual orientation, and

logistic regression for all multivariate models.

## Results

**Sample Demographics**

The sample includes women age 65 and older who lived in one of the 21 states

incorporating the SOGI module in the 2015 BRFSS (*N*=36,303). For analyses related to the

hypotheses, those who answered "Don't know/Not sure" (*n*=604) and those who refused to

answer the sexual orientation question (*n*=846) were dropped from the analyses, leaving a final

sample of *N*=34,853.

For states that included the SOGI module in the BRFSS, after accounting for weighting

within the survey design, 93.5% of older women are estimated to be heterosexual (unweighted

*n*=34,361), 0.5% are lesbian or gay (*n*=158), 0.5% are bisexual (*n*=188), and 0.5% are some

other sexual identity (*n*=146), with those remaining either answering "Don't know" or refusing

to answer. Weighted estimates suggest that 31% of older women are between ages 65-69, 24%

are between 70-74, 20.1% are between 75-79, and 24.8% are 80 years old or greater. The

majority (79.3%) are White non-Hispanic (unweighted *n*=78,338), while 9.3% are Black non-

Hispanic (*n*=6,594), 7.1% are Hispanic (*n*=2,794), 3.5% are another race, non-Hispanic

(*n*=2,171), and 0.8% are multiracial, non-Hispanic (*n*=1,068). Just under 17% of older women

have not graduated high school (unweighted *n*=8,685), 33.8% have a high school diploma or

GED (*n*=31,411), 30.3% have attended college or technical school (*n*=25,680), and 18.9% have

graduated from college or technical school (*n*=26,199). About 38.1% of older women are

estimated to have an annual household income of <$25,000 (unweighted *n*=25,172), 31.5% have

an income of $25,000-$49,999 (*n*=21,955), 13.5% have an income of $50,000-$74,999

(*n*=9,302), and 16.9% have an income of $75,000 or more (*n*=10,861). Table 1 provides a

comparison of weighted sociodemographic characteristics by sexual orientation. Age,

race/ethnicity, educational attainment, household income, employment status, and health

insurance status differ significantly in distribution among older women by sexual orientation.

| Insert Table 1 approximately here |

**Mental, Cognitive, and Functional Health by Sexual Orientation**

The first hypothesis was that mental, cognitive, and functional health would differ among

older women by sexual orientation, with LGB women showing worse outcomes. To begin with,

prevalence estimates were computed for each outcome variable by sexual orientation (see Table

2). Then, to assess whether odds for each outcome differed significantly by sexual orientation, a

logistic regression model was calculated for each outcome, with only sexual orientation as an

independent variable (models included dummy variables for lesbian/gay, bisexual, and other;

heterosexual women were the reference group; see Table 2).

| Insert Table 2 approximately here |

Without controlling for other sociodemographic variables, lesbian/gay women had 2.51 times the odds of experiencing frequent mental distress, 2.23 times the odds of facing any activity limitation due to a health issue, 2.08 times the odds of having difficulty walking or using stairs, and 2.09 times the odds needing help with IADLs compared to heterosexual women (see Table 2). Bisexual women had no significant differences in mental health, but had 2.19 times the odds of having a cognitive limitation and 2.27 times the odds of needing help with IADLs compared to heterosexual women. Women of "other" sexual orientation did not experience differences in mental health, but had 2.34 times the odds of using special equipment for a health issue, 3.46 times the odds of experiencing a cognitive limitation, 2.03 times the odds of having difficulty walking or using stairs, 2.82 times the odds of needing help with ADLs, and 2.52 times the odds of needing help with IADLs compared to heterosexual women.

Next, sociodemographic controls were added to the logistic regression models (see Table 3). After adding these controls, there were no longer differences in frequent mental distress between lesbian/gay and heterosexual older women. However, lesbian/gay women still had significantly greater odds of facing activity limitations due to a health issue (AOR=2.34), 2.96 greater odds of having difficulty walking or using stairs, and 2.41 greater odds of needing help with IADLs. Bisexual women had 2.41 greater odds of facing cognitive limitations and 2.72 greater odds of needing help with IADLs compared to heterosexual women. Women of "other" sexual orientation had 2.78 greater odds of being told by a health care provider that they had depression in their lifetime, 3.3 greater odds of using special equipment, 2.52 greater odds of a cognitive limitation, and 2.15 greater odds of having difficulty walking or using stairs compared

to heterosexual women. There were no longer significant differences in ability to engage in

ADLs or IADLs for this group compared to heterosexual women.

| Insert Table 3 approximately here |

**Age as a Moderator of Health Disparities**

The second hypothesis was that sexual minority women would show significantly greater

rates of cognitive and functional limitations among the younger cohorts (women in their late 60s

or 70s) compared to heterosexual women. To assess this question, the same logistic regression

models were calculated, but were run separately by age group (ages 65-69; 70-79; and 80+).

Because these models had smaller sample sizes, lesbian/gay, bisexual and other sexual minority

women were combined into one group ("sexual minority").

As displayed in Table 4, sexual minority women ages 65-69 had two times greater odds

of facing activity limitations, 2.68 greater odds of having difficulty walking or using stairs, and

3.01 times greater odds of having difficulty with IADLs than heterosexual women of this age

group. An even greater number of differences occurred for women in their 70s: sexual minority

women faced greater odds of activity limitations (AOR=2.13), using special equipment

(AOR=2.44), cognitive limitations (AOR=3.63), difficulty walking or using stairs (AOR=2.06),

and needing help with IADLs (AOR=3.15) compared to heterosexual women. There were no

significant differences in cognitive or functional health between sexual minority and

heterosexual women who were age 80 and above.

| Insert Table 4 approximately here |

**Socioeconomic Status and Race/Ethnicity as Moderators of Health Disparities**

For the final hypothesis, logistic regression models were constructed for each outcome

variable, with sexual minority status indicated using one dummy variable (LGB and "other" were

combined into one group). The hypothesis was that differences in outcomes would be moderated by socioeconomic status (income, educational attainment) across the board and by race/ethnicity for cognitive and functional health, such that those of lower SES and women of color would have greater health struggles. To test this hypothesis, one series of models had an interaction term for sexual minority by annual income; the second series of models had an interaction term for sexual minority by education level (HS diploma or less); the third series had an interaction between sexual minority by race/ethnicity (person of color).

Annual income did not moderate any of the sexual orientation disparities in mental health, cognitive health, or functional health (not displayed here). Educational attainment was a moderator only for frequent mental distress: surprisingly, older women who were sexual minorities and had a high school diploma or less education had 3.57[3] times lower odds of frequent mental distress than older sexual minority women with at least some college education (see Table 5). Being a person of color had a moderating effect on sexual orientation disparities related to several measures of functional health (Table 5). Older sexual minority women of color had 3.57 lower odds of facing activity limitations due to a health problem, 2.7 lower odds of using special equipment, and 3.03 lower odds of having difficulty walking or using stairs compared to older white sexual minority women.

| Insert Tables 5 approximately here |

## Discussion

This study set out to analyze possible disparities in mental, cognitive, and functional health by sexual orientation among women age 65 and older using population-based data. As hypothesized, older sexual minority women were more likely to report problems with mental health, cognitive health, and functional health than their heterosexual peers. After controlling for

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[3] This number is the inverse odds ratio: 1 / 0.28=3.57.

sociodemographic factors, lesbian/gay women demonstrated poorer functional health, bisexual women had poorer functional and cognitive health, and "other" sexual minority women had worse health across all three domains compared to heterosexual women. Other studies have similarly indicated disparities affecting functional health among sexual minority women age 50 and older (Fredriksen-Goldsen et al., 2013; Gonzales & Henning-Smith, 2014). Disparities in cognitive and functional health by sexual orientation indicate a need for targeted social services that can support sexual minority women as they age, as well as access to gerontologists and healthcare providers who are willing, able, and competent to serve this population (Fredriksen-Goldsen, Hoy-Ellis, Goldsen, Emlet, & Hooyman, 2014; Wallace et al., 2011). Given that findings suggest that sexual minority women may face greater difficulties with IADLs, this population may benefit from services that can help them maintain their health and execute tasks such as visiting the doctor, running errands, and completing home repairs, particularly among women with fewer social supports and weaker community ties.

The finding that lesbian and bisexual women did not face mental distress or depression at greater rates than heterosexual women was surprising. This contrasts with previous research that has indicated greater rates of psychological distress and poor mental health among middle age and older sexual minority women (Fredriksen-Goldsen et al., 2013; Gonzales & Henning-Smith, 2015; Wallace et al., 2011). Perhaps the measures used in the BRFSS (number of days of poor mental health and being told by a health care provider that one has depression) are not the best for capturing mental health concerns of this population. However, it is possible that this finding reflects a true lack of difference in mental health between older sexual minority and heterosexual women. Perhaps health differences that occur earlier in life are lessened with age as women develop more effective coping strategies. Nonetheless, women whose sexual orientation was

"other" did report a greater frequency of being told by a health care provider that they had depression than did heterosexual women; older women who are pansexual, same-gender-loving, use other terms, or do not label their sexuality may benefit from access to effective treatments for depression.

Results from the present study indicate that age moderated health disparities by sexual orientation. Disparities in functional health were notable among women in their late 60s, and disparities in both cognitive and functional health appeared among women in their 70s. Such patterns suggest the possibility of accelerated aging among LGB women, which can bring health challenges at earlier time points in the life-course. There may be a need for targeted support to LGB adults for health and aging-related services much earlier than age 65. These findings may also reflect differences by birth cohort due to the cross-sectional nature of the BRFSS. At the time of this study, the first wave of Baby Boomers was just reaching age 70, so patterns that look different between those in their late 60s compared to others may relate to generational patterns and shared history.

This study found no disparities in cognitive or functional health by sexual orientation among women age 80 and older. This may be connected to the fact that people who live to at least age 80 may be among the most healthy and resilient in their cohorts, making health disparities seem less prominent among the oldest women. Additionally, those who are age 80 and older may have experienced being LGB very differently than their younger peers, including going through adolescence and early/middle adulthood during a time when LGB identities were pathologized and criminalized.

Unlike hypothesized, this study found very limited indications that socioeconomic status moderated health disparities by sexual orientation. There were no significant moderations by

income level, and only one health outcome (frequent mental distress) was moderated by

educational level. Such findings suggest that patterns of health disparities by sexual orientation

are relatively consistent regardless of one's socioeconomic status. Given that this study focused

exclusively on women age 65 and older, it is possible that protective social policies such as

Social Security and Medicare may buffer the impact of poverty on health for this population. In

terms of the one significant result, sexual minority women who have less formal education may

be developing strategies of resilience that lower their risks of frequent mental distress compared

to their peers with more education. This finding deserves further study in future research.

Some surprising results appeared in relation to how race/ethnicity moderated health

disparities. For some functional health dimensions (activity limitations, use of special equipment,

and difficulty walking or climbing stairs), sexual minority women of color reported better health

compared to white sexual minority women. There are numerous possible reasons for these

findings, including strategies of resilience among older sexual minority women of color (Woody,

2015), cultural differences in acknowledging or perceiving disability or behaviors that attenuate

health risks (Fuller-Thompson, Brennenstuhl, & Hurd, 2011; McCallion, Janicki, & Grant-

Griffin, 1997), and earlier mortality of women of color who have the poorest health. Additional

research is needed in this area, particularly studies that oversample sexual minority women of

color to tease out differences between racial and ethnic subgroups.

**Limitations**

Only 21 states included the SOGI module in their 2015 BRFSS, and results cannot be

generalized to states not asking these questions, including a number of states in the Southeast and

West Coast regions. Secondly, this was a cross-sectional survey, so one cannot draw conclusions

from these findings about how disparities develop or change for women over the life-course.

There is a need for longitudinal research, such as that being conducted through the Aging with Pride project (Fredriksen-Goldsen, Kim, et al., 2017), as well as studies that might follow both heterosexual and LGB adults to compare both groups. Thirdly, respondent sex is generally assumed by BRFSS interviewers and only asked if the interviewer feels uncertain about the respondent's sex. A better practice would be to explicitly ask this question of respondents, in addition to asking a question about whether one is transgender. Finally, this study did not examine the health of transgender older adults, but future research is needed related to this population.

**Implications**

Findings from this study add to the evidence base regarding health disparities among sexual minority women. Such disparities occur across mental, cognitive, and functional health for older sexual minority women, with some differences between lesbian, bisexual, and "other" sexual minority identities. Gerontologists and social services providers need to be prepared for meeting the needs of this growing population. There may be a benefit of having gerontological services that particularly target sexual minority older adults – especially in areas with high density of LGB people - given their unique needs compared to heterosexual older adults. This research supports the recommendations of other scholars regarding the value of ensuring adequate training and LGB competency among aging services providers (Fredriksen-Goldsen et al., 2014; Seelman, Adams & Poteat, 2017; Wallace et al., 2011), particularly in terms of long-term services and supports, given that sexual minority women experienced greater problems with functional health and may need additional supports with IADLs. Such services can present risks for discrimination that negatively impact LGB older adults and may force them back into the closet, so LGB competency among long-term care providers is of the utmost importance (Czaja

et al., 2016; Seelman et al., 2017). Additionally, there is a need for policies and funding at federal and state levels that acknowledge the presence of sexual minority older adults and the unique health risks that this population faces.

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Table 1

*Sociodemographic Characteristics of 2015 BRFSS Female Respondents, Age 65 and Older, by Sexual Orientation Using Weighted Data*

| | Heterosexual (*N*=34,361) | Lesbian or Gay (*N*=158) | Bisexual (*N*=188) | Other (*N*=146) | Pearson $\chi^2$ |
|---|---|---|---|---|---|
| Total | 98.4% | 0.5% | 0.5% | 0.6% | |
| Age, years | | | | | 120.38*** |
| 65-69 | 31.6% | 59.5% | 35.1% | 16.6% | |
| 70-74 | 23.9% | 18.1% | 19.3% | 15.7% | |
| 75-79 | 20.4% | 12.4% | 15.5% | 31.2% | |
| 80+ | 24.1% | 10.0% | 30.1% | 36.5% | |
| Race/ethnicity | | | | | 291.00*** |
| White only, non-Hispanic | 82.5% | 81.6% | 66.1% | 64.1% | |
| Black only, non-Hispanic | 9.5% | 3.1% | 22.0% | 7.9% | |
| Other race, non-Hispanic | 2.3% | 5.5% | 1.7% | 5.4% | |
| Multiracial, non-Hispanic | 0.8% | 1.1% | 0.4% | 2.8% | |
| Hispanic | 3.9% | -- | 9.3% | 14.4% | |
| Don't know/Not Sure/Refused | 1.0% | 8.7% | 0.4% | 5.5% | |
| Educational Attainment | | | | | 562.84*** |
| Less than Grade 12 | 13.3% | 16.9% | 23.4% | 42.2% | |
| Grade 12 or GED | 35.6% | 18.5% | 25.3% | 39.3% | |
| Some college or technical school | 30.9% | 21.2% | 22.7% | 10.3% | |
| College grad | 19.9% | 43.4% | 28.5% | 7.3% | |
| Household Income per Year | | | | | 83.58** |
| <$25,000 | 35.1% | 35.1% | 43.5% | 62.3% | |
| $25,000-$49,999 | 33.5% | 24.3% | 30.6% | 32.1% | |
| $50k - $74,999 | 14.5% | 11.6% | 11.5% | 2.4% | |
| $75,000 or more | 16.9% | 29.1% | 14.4% | 3.2% | |
| Employment Status | | | | | 120.58* |
| Employed | 12.8% | 19.2% | 16.8% | 8.7% | |
| Unemployed | 1.3% | -- | 0.8% | 2.2% | |
| Retired / Not in labor force | 81.5% | 68.7% | 80.8% | 76.8% | |
| Unable to work | 4.4% | 12.1% | 1.6% | 12.3% | |
| Home Ownership | | | | | 3.74 |
| Own | 87.3% | 87.1% | 87.2% | 82.7% | |
| Rent or other arrangement | 12.7% | 12.9% | 12.8% | 17.3% | |
| Health Insurance | | | | | 169.85*** |
| Yes | 98.7% | 99.3% | 87.3% | 98.7% | |
| No or don't know | 1.3% | 0.7% | 12.7% | 1.3% | |

*\* p < .05. \*\* p < .01. \*\*\* p < .001.*

Table 2

*Mental, Cognitive, and Functional Health by Sexual Orientation: Females, Age 65 and Older*

| | Straight (N=34,361) | Lesbian or Gay (N=158) | | Bisexual (N=188) | | Other (N=146) | |
|---|---|---|---|---|---|---|---|
| | Weighted % | Weighted % | AOR (95% CI) | Weighted % | AOR (95% CI) | Weighted % | AOR (95% CI) |
| Freq. Mental Distress | 7.6% | 17.1% | 2.51* (1.05-5.97) | 14.1% | 1.99^ (.94-4.22) | 8.3% | 1.09 (.39-3.04) |
| Depression (Lifetime) | 17.8% | 23.5% | 1.42 (.80-2.50) | 24.4% | 1.49 (.84-2.63) | 30.9% | 2.06^ (.99-4.26) |
| Any Activity Limitation | 30.4% | 49.2% | 2.23** (1.31-3.79) | 32.4% | 1.10 (.66-1.84) | 40.4% | 1.55 (.83-2.91) |
| Uses Special Equipment | 20.6% | 23.0% | 1.16 (.64-2.10) | 18.5% | .88 (.52-1.49) | 37.7% | 2.34* (1.20-4.56) |
| Cognitive Limitation | 8.6% | 16.9% | 2.16^ (.93-5.03) | 17.1% | 2.19* (1.11-4.33) | 24.6% | 3.46*** (1.74-6.87) |
| Difficulty Walking/ Stairs | 28.8% | 45.6% | 2.08** (1.22-3.53) | 31.2% | 1.13 (.62-2.05) | 45.0% | 2.03* (1.09-3.78) |
| Needs Help with ADL | 5.2% | 4.7% | .90 (.33-2.47) | 3.2% | .60 (.27-1.31) | 13.4% | 2.82* (1.03-7.68) |
| Needs Help with IADL | 11.4% | 21.2% | 2.09* (1.07-4.09) | 22.6% | 2.27* (1.03-5.03) | 24.5% | 2.52* (1.08-5.85) |

AOR=Adjusted odds ratio. CI=Confidence interval. ADL=Activities of Daily Living. IADL=Instrumental Activities of Daily Living.

^ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.

*Multivariate Logistic Regression Models for Mental, Cognitive, and Functional Health by Sexual Orientation for Females, Age 65 and Older*

| | Freq. Mental Distress (N=25,916) | Depression (N=26,276) | Activity Limitations (N=26,195) | Uses Special Equipment (N=26,326) | Cognitive Limitation (N=26,220) | Difficulty Walking/Stairs (N=26,214) | Needs help with ADL (N=26,319) | Needs help with IADL (N=26,266) |
|---|---|---|---|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Lesbian | 1.92 (0.86-4.25) | 0.88 (0.47-1.63) | 2.34** (1.38-3.98) | 1.48 (0.76-2.92) | 1.11 (0.49-2.53) | 2.96*** (1.72-5.09) | 0.41 (0.13-1.23) | 2.41* (1.09-5.34) |
| Bisexual | 2.23^ (0.94-5.31) | 1.89^ (0.97-3.70) | 1.11 (0.62-1.97) | 0.73 (0.38-1.41) | 2.41* (1.01-5.76) | 1.06 (0.53-2.14) | 0.53 (0.21-1.35) | 2.72* (1.12-6.65) |
| Other | 0.69 (0.26-1.80) | 2.78* (1.20-6.46) | 1.48 (0.66-3.30) | 3.30** (1.52-7.19) | 2.52* (1.05-6.03) | 2.15* (1.05-4.41) | 2.61^ (0.84-8.12) | 2.50^ (0.89-7.04) |
| Early 70s | 0.87 (0.69-1.08) | 0.72*** (0.62-0.83) | 0.91 (0.80-1.03) | 1.07 (0.91-1.27) | 0.95 (0.74-1.21) | 1.03 (0.90-1.19) | 0.75^ (0.55-1.03) | 0.93 (0.75-1.16) |
| Late 70s | 0.84 (0.65-1.10) | 0.59*** (0.50-0.70) | 1.08 (0.93-1.25) | 1.41*** (1.17-1.69) | 0.98 (0.74-1.30) | 1.30** (1.11-1.52) | 0.96 (0.68-1.35) | 1.25^ (0.98-1.59) |
| 80+ | 0.50*** (0.39-0.64) | 0.37*** (0.31-0.44) | 1.10 (0.95-1.26) | 2.68*** (2.26-3.18) | 1.12 (0.87-1.44) | 1.62*** (1.40-1.87) | 1.36^ (0.99-1.87) | 2.30*** (1.85-2.87) |
| Income | 0.68*** (0.61-0.76) | 0.80*** (0.75-0.85) | 0.78*** (0.74-0.82) | 0.71*** (0.66-0.76) | 0.60*** (0.53-0.67) | 0.70*** (0.66-0.74) | 0.64*** (0.55-0.75) | 0.65*** (0.58-0.72) |
| Household Size | 1.10* (1.01-1.20) | 1.02 (0.95-1.09) | 1.06^ (1.00-1.12) | 1.05 (0.98-1.12) | 1.04 (0.95-1.13) | 1.09** (1.03-1.16) | 1.09^ (0.99-1.20) | 1.14*** (1.06-1.22) |
| HS diploma or less | 1.22* (1.02-1.46) | 1.01 (0.89-1.14) | 0.79*** (0.71-0.88) | 0.92 (0.81-1.05) | 1.31** (1.08-1.58) | 1.20** (1.07-1.34) | 1.24^ (0.97-1.58) | 1.12 (0.94-1.33) |
| Rents home | 1.49*** (1.22-1.84) | 1.63*** (1.41-1.89) | 1.53*** (1.35-1.74) | 1.96*** (1.71-2.25) | 1.37** (1.13-1.67) | 1.78*** (1.57-2.03) | 1.73*** (1.36-2.20) | 1.72*** (1.44-2.05) |
| Person of Color | 0.83 (0.64-1.07) | 0.52*** (0.42-0.64) | 0.71*** (0.61-0.82) | 1.27** (1.07-1.51) | 1.18 (0.92-1.51) | 1.21* (1.03-1.43) | 1.57** (1.20-2.07) | 1.38** (1.12-1.71) |

ADL=Activities of Daily Living. IADL=Instrumental Activities of Daily Living. AOR=Adjusted odds ratio. CI=Confidence interval.

^ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.

*Comparison of Cognitive and Functional Health by Age Group and Sexual Orientation*

| | Activity Limitations | Uses Special Equipment | Cognitive Limitation | Difficulty Walking/Stairs | Needs help with ADL | Needs help with IADL |
|---|---|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Late 60s | (*N*=8,796) | (*N*=8,841) | (*N*=8,815) | (*N*=8,821) | (*N*=8,847) | (*N*=8,828) |
| Sexual minority | 2.00* (1.09-3.66) | 1.15 (0.51-2.58) | 1.22 (0.57-2.63) | 2.68** (1.43-5.00) | .33^ (0.09-1.19) | 3.01* (1.18-7.69) |
| 70s | (*N*=11,555) | (*N*=11,602) | (*N*=11,546) | (*N*=11,552) | (*N*=11,597) | (*N*=11,584) |
| Sexual minority | 2.13* (1.20-3.79) | 2.44* (1.20-4.95) | 3.63** (1.64-8.02) | 2.06* (1.13-3.74) | 1.21 (0.45-3.24) | 3.15* (1.24-7.99) |
| 80s+ | (*N*=5,865) | (*N*=5,904) | (*N*=5,879) | (*N*=5,862) | (*N*=5,903) | (*N*=5,875) |
| Sexual minority | 0.55^ (0.29-1.04) | 1.22 (0.54-2.76) | 1.37 (0.58-3.23) | 1.08 (0.49-2.37) | 2.42 (0.61-9.58) | 1.51 (0.72-3.18) |

ADL=Activities of Daily Living. IADL=Instrumental Activities of Daily Living. AOR=Adjusted odds ratio. CI=Confidence interval.

*Note:* Models include controls for income, education level, home ownership, and race (white/person of color), though not displayed here. Due to model errors with small cell sizes, college education was not used as a control for the ADL model for those in their 70s or for the Depression model for those 80 and older.

^ $p < .10$. * $p < .05$. ** $p < .01$.

Table 5.

*Models with Significant Sociodemographic Interaction Terms: Educational Attainment and Race/Ethnicity*

| Moderating Effect of Educational Attainment | | | Moderating Effect of Race/Ethnicity | | |
|---|---|---|---|---|---|
| Freq. Mental Distress ($N$=25,934) | | | Activity Limitations ($N$=26,216) | Uses Special Equipment ($N$=26,347) | Difficulty Walking/Stairs ($N$=26,235) |
| AOR (95% CI) | | | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Sexual minority | 2.84** (1.47-5.50) | Sexual minority | 2.08*** (1.38-3.14) | 2.08** (1.26-3.43) | 2.55*** (1.71-3.81) |
| HS diploma or less | 1.26* (1.05-1.52) | Person of Color | 0.74*** (0.64-0.86) | 1.33** (1.12-1.57) | 1.29** (1.10-1.51) |
| Sexual minority * HS diploma or less | 0.28* (0.11-0.74) | Sexual minority * Person of Color | 0.28** (0.12-0.66) | 0.37* (0.15-0.91) | 0.33* (0.12-0.87) |

AOR=Adjusted odds ratio. CI=Confidence interval. HS=high school.
*Note:* The educational attainment model controls for age, income, home ownership, and race (white/person of color), although not displayed here. The race/ethnicity models control for age, income, home ownership, and education level.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix
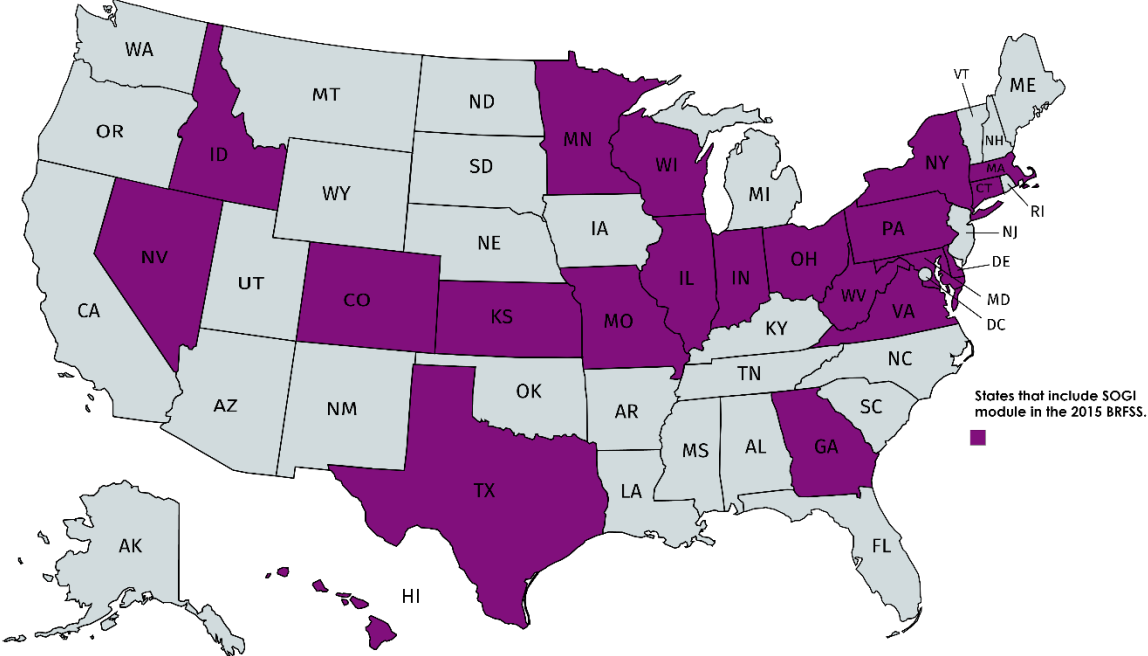


*Supplementary Figure 1. Map of U.S. states that participated in the 2015 BRFSS and included*

*the SOGI module.*