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Cardiovascular Disease Risk in Sexual Minority Women (18-59 Years Old): Findings from the National Health and Nutrition Examination Survey (2001-2012)

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A B S T R A C T

Objective: Sexual minority women (lesbian and bisexual) experience significant stigma, which may increase their cardiovascular disease (CVD) risk. The purpose of this study was to examine the prevalence of modifiable risk factors for CVD (including mental distress, health behaviors, blood pressure, glycosylated hemoglobin, and total cholesterol) and CVD in sexual minority women compared with their heterosexual peers.
Materials and Methods: A secondary analysis of the National Health and Nutrition Examination Survey (2001-2012) was conducted. Multiple imputation with chained equations was performed. Logistic regression models adjusted for relevant covariates were run. Self-report (medical history and medication use) and biomarkers for hypertension, diabetes, and high total cholesterol were examined.
Results: The final analytic sample consisted of 7,503 that included 346 sexual minority women (4.6%). Sexual minority women were more likely to be younger, single, have a lower income, and lack health insurance. After covariate adjustment, sexual minority women exhibited excess CVD risk related to higher rates of frequent mental distress (adjusted odds ratio [AOR], 2.05; 95% confidence interval [CI], 1.45–2.88), current tobacco use (AOR, 2.11; 95% CI, 1.53–2.91), and binge drinking (AOR, 1.66; 95% CI, 1.17–2.34). Sexual minority women were more likely to be obese (AOR, 1.61; 95% CI, 1.23–2.33) and have glycosylated hemoglobin consistent with prediabetes (AOR, 1.56; 95% CI, 1.04–2.34). No differences were observed for other outcomes.
Conclusions: Sexual minority women demonstrated increased modifiable risk factors for CVD, but no difference in CVD diagnoses. Several emerging areas of research are highlighted, in particular, the need for CVD prevention efforts that target modifiable CVD risk in sexual minority women.

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Sexual minorities (lesbian, gay, and bisexual individuals) experience significant health disparities related to stigma (Institute of Medicine, 2011). A growing body of research indicates that sexual minorities are exposed to interpersonal and structural stigma that is associated with negative health outcomes (Meyer, 2003), poor mental health (Collier, van Beusekom, Bos, & Sandfort, 2013; Cramer, McNiel, Holley, Shumway, & Boccellari, 2011), decreased life expectancy, and increased mortality (Hatzenbuehler, Bellatorre, et al., 2014). Approximately 80%

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of sexual minorities report experiencing some form of harassment (Katz-Wise & Hyde, 2012) and 20% to 33% have experienced a hate crime in their lifetime (Burks et al., 2015; Herek, 2009). In 2016, sexual orientation motivated violence accounted for 17.7% of all hate crimes reported in the United States, representing a 2% increase compared with the previous year (U.S. Department of Justice, 2017). Social policies represent forms of structural stigma that can also negatively impact the health of sexual minorities. Currently only 31 states have hate crime laws prohibiting bias-motivated violence against sexual minorities and there is no federal law that prohibits discrimination based on sexual orientation (Human Rights Campaign, 2015). Additional factors associated with health disparities in this population include inadequate training of health care providers, poverty, and lower rates of health insurance coverage (Institute of Medicine, 2011).

It is well-documented that, compared with their heterosexual counterparts, sexual minority women experience significant health disparities, such as higher rates of poor mental health (King et al., 2008; Pakula & Shoveller, 2013; Plöderl & Tremblay, 2015), obesity, and gynecological cancers (Institute of Medicine, 1999); however, little is known about disparities in other chronic conditions, including cardiovascular disease (CVD; Lick, Durso, & Johnson, 2013). CVD remains the leading cause of death worldwide (World Health Organization, 2014) and approximately 90% of CVD risk is attributed to modifiable risk factors, including psychosocial factors, tobacco use, alcohol consumption, physical inactivity, diet, obesity, hypertension, diabetes, and lipids (Yusuf et al., 2004). Stress is a recognized CVD risk factor (Jood, Redfors, Rosengren, Blomstrand, & Jern, 2009; Rosengren et al., 2004; Steptoe & Kivimäki, 2013; Teo et al., 2009) that has a deleterious effect on the health of sexual minorities (Meyer, 2003). Stress contributes to inflammation and endothelial dysfunction that increase CVD risk through mediated pathways (Cohen et al., 2012; Xue et al., 2015). Stress is also associated with negative health behaviors that increase CVD risk, including tobacco use, binge drinking, physical inactivity, and unhealthy dietary patterns (American Psychological Association, 2017). Maladaptive coping strategies associated with stress, such as tobacco and alcohol use, predispose sexual minority women to increased risk for CVD compared with their heterosexual peers (Bloomfield, Wicki, Wilsnack, Hughes, & Gmel, 2011; Blosnich, Lee, & Horn, 2013). In addition, two recent systematic reviews concluded that sexual minority women demonstrate higher rates of obesity than heterosexual women (Caceres et al., 2017; Eliason et al., 2015).

The National Academy of Medicine underscored the need for research on CVD in sexual minorities (Institute of Medicine, 2011). A recent systematic review examined CVD risk and CVD diagnoses in sexual minority and heterosexual adults (Caceres et al., 2017). Overall, sexual minority women exhibited greater CVD risk compared with heterosexual women. Despite the strength of these findings the authors identified several limitations of the empirical literature. Although stress is posited as a main contributor to health disparities in sexual minorities (Lick et al., 2013), only five studies included any measures of stress. Also, to date, few researchers have used biomarkers to examine CVD in sexual minorities. Most data are based on participant self-report, with only seven studies including biomarkers. The present study sought to address these research gaps.

We hypothesized that sexual minority women would exhibit greater modifiable risk factors for CVD compared with heterosexual women. Thus, the purpose of this study, using data from the National Health and Nutrition Examination Survey (NHANES; 2001-2012), was to examine the prevalence of modifiable risk factors for CVD (including mental distress, tobacco use, alcohol consumption, physical inactivity, and dietary fat intake, hypertension, diabetes, and high total cholesterol) and CVD outcomes in sexual minority and heterosexual women.

Materials and Methods

A secondary analysis of NHANES (2001-2012) data was conducted. NHANES is a national cross-sectional survey used to monitor the health of the nation by estimating the prevalence of major diseases and risk factors (Johnson, Dohrmann, Burt, & Mohadjer, 2014). NHANES is the largest national survey in the United States that collects information about sexual identity and the biomarkers of interest. NHANES uses a complex multistage probability sampling design to achieve a representative sample of individuals from across the United States (Johnson et al., 2014). Data from the 2013-2014 NHANES release were not included because the measure of mental distress used from 2001-2012 was removed starting this cycle. This study was exempt by the Institutional Review Board of New York University.

Sample Size

Inclusion criteria

Only participants between the ages of 18 and 59 were asked about sexual identity as part of the sexual behavior module in NHANES. All female adult participants who identified as sexual minority women (lesbian and bisexual), regardless of sexual behavior, were included in this study. Because we were primarily concerned with the impact of sexual identity on CVD risk, we only included participants who identified as heterosexual and reported no sexual behavior with women.

Exclusion criteria

The following participants were excluded those who 1) responded “don’t know,” “refused,” “something else,” or “not sure” to the sexual identity item, 2) had missing data for sexual identity, blood pressure, glycosylated hemoglobin (HbA1C), total cholesterol, or CVD outcomes, and 3) were heterosexual women who reported any history of sexual behavior with women.

Measures

Sexual identity

Sexual identity was measured with the item: “Do you think of yourself as heterosexual or straight, homosexual or lesbian, bisexual, something else, or not sure?” Women who identified as lesbian or bisexual were then categorized as sexual minority women.

Demographic and clinical characteristics

Demographic characteristics were selected based on social determinants of health that are significantly associated with increased CVD risk (Havranek et al., 2015). Age was a continuous variable ranging from 18 to 59 years. Race/ethnicity was coded as non-Hispanic white, non-Hispanic Black, Hispanic, and other race. The measure of income was the family income to poverty ratio provided by NHANES. The income to poverty ratio (range, 0-5) was calculated by dividing the total household income by the poverty threshold as published by the *Federal Register* for that specific survey year. Participants with an income to poverty ratio