HHS Public Access

Author manuscript

Drug Alcohol Depend. Author manuscript; available in PMC 2020 June 09.

Published in final edited form as:

Drug Alcohol Depend. 2017 October 01; 179: 240–246. doi:10.1016/j.drugalcdep.2017.07.003.

Alcohol Use and Receipt of Alcohol Screening and Brief Intervention in a Representative Sample of Sexual Minority and Heterosexual Adults Receiving Health Care

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Abstract

Background.—Despite evidence of alcohol disparities between sexual minority and heterosexual individuals in the general population, research has not examined whether there are disparities in receipt of alcohol screening and brief intervention – together considered one of the highest prevention priorities for US adults. This study examined differences in alcohol use and receipt of alcohol screening and brief intervention across sexual minority status.

Methods.—Behavioral Risk Factor Surveillance System 2014 data from eight US states were used to estimate patterns of alcohol use and receipt of alcohol screening and brief intervention among persons reporting sexual orientation and a checkup in the last two years (N=47,800). Analyses were conducted in 2016–2017.

Results.—Gay men and bisexual women reported higher rates of alcohol use on some measures compared to heterosexual men and women, respectively. There were some differences in screening and brief intervention by sexual orientation. Lesbian women were more likely to report being asked about heavy episodic drinking than heterosexual women, and among those reporting unhealthy alcohol use, gay men were less likely, and bisexual men were more likely, to report receiving brief intervention compared to heterosexual men.

Conclusions.—Overall similarities between sexual minorities and heterosexuals in alcohol use and receipt of screening and brief intervention are encouraging. Nonetheless, research is needed to confirm findings and understand mechanisms underlying disparities in receipt of brief intervention between gay and heterosexual men.

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Keywords

Sexual orientation; sexual minorities; alcohol screening and brief intervention

1. Introduction

Sexual minorities, including lesbian, gay, and bisexual women and men, experience a wide array of health disparities and have recently been designated as a health disparity population by the National Institutes of Health (2016). Unhealthy alcohol use, which ranges from drinking above recommended drinking limits to presence of alcohol use disorders (Saitz, 2005), is a leading cause of morbidity and mortality (Rehm et al., 2010) and one of the health outcomes more heavily impacting sexual minority communities. Research has detected disparities in unhealthy alcohol use for both sexual minority men and women compared to their heterosexual counterparts (Gonzales et al., 2016; Nawyn et al., 2000). Nonetheless, recent data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) demonstrated that lesbian (59%) and bisexual (54%) women were more likely than heterosexual women (22%) to have lifetime alcohol use disorder, but no such differences were detected between gay and bisexual men compared to heterosexual men (59% and 52% vs. 48%, respectively; McCabe et al., 2013). Other research has found that lesbian and bisexual women are more likely to drink alcohol, engage in unhealthy alcohol use, and experience alcohol-related problems compared to heterosexual women (Cochran et al., 2000; Diamant et al., 2000; Drabble et al., 2005; Drabble & Trocki, 2005; Gilman et al., 2001; Hughes & Eliason, 2002; Ziyadeh et al., 2007) and that bisexual individuals report higher prevalence of unhealthy alcohol use compared to individuals who identify as gay, lesbian, or heterosexual, with particularly high rates among bisexual women (Eisenberg & Wechsler, 2003; McCabe et al., 2009)

While disparities in unhealthy alcohol use by sexual orientation have been well-documented, particularly among women, much less is known about whether sexual minorities receive recommended care for unhealthy alcohol use to the same extent as their heterosexual counterparts. Among populations receiving primary care, both alcohol screening and brief intervention for those who screen positive for unhealthy alcohol use are recommended. Based on the clinical burden of unhealthy alcohol use and the effectiveness of brief interventions for reducing drinking (Jonas et al., 2012; Kaner et al., 2007), routine screening and brief intervention are together considered one of the highest prevention priorities for US adults (Solberg et al., 2008). Brief interventions vary in their content and delivery (Jonas et al., 2012), although one of their key components is advising patients about recommended drinking limits. The extant research that has been conducted on sexual orientation and alcohol-related care has specifically focused on utilization of specialty addictions treatment, rather than on screening and brief intervention (Allen & Mowbray, 2016; McCabe et al., 2013).

In the current study, we aimed to examine patterns of alcohol use as well as receipt of alcohol screening and brief intervention during routine clinical care in a representative sample of sexual minority and heterosexual respondents. Given prior nationally

representative research, we hypothesized that lesbian and bisexual women would report greater unhealthy alcohol use than heterosexual women but did not expect to observe parallel disparities among men. Given lack of any prior research on alcohol screening and brief intervention in clinical settings, we did not have *a priori* hypotheses about sexual orientation differences with respect to these outcomes.

2. Methods

2.1 Data

The data for this secondary analysis are from the 2014 Behavioral Risk Factor Surveillance System (BRFSS) survey. Coordinated by the Centers for Disease Control and Prevention (CDC), the BRFSS is administered to probability-based samples of non-institutionalized adults over the age of 18 within all states and territories. Each year, the CDC issues a mandatory standardized core questionnaire and various optional modules from which the states and territories can elect to supplement their core surveys. Of the optional modules in 2014, the two of principal interest for this investigation were the Sexual Orientation and Gender Identity (SOGI) module (administered by 20 states) and the Alcohol Screening and Brief Intervention (ASBI) module (administered by 19 states). Eight states – Hawaii, Indiana, Kansas, Kentucky, Minnesota, Montana, New York and Wisconsin – chose to administer *both* of these modules in 2014, and their samples formed the basis of the present analyses (total N = 65,265). Because the ASBI module was only administered to respondents who reported having a healthcare checkup in the past two years, individuals who did not have a checkup in the past two years (weighted 15.9%, n=9,420) and individuals who indicated “don’t know” or refused to answer (n=842) were excluded. Additionally, because this investigation focused on sexual minority status, respondents missing data on sexual orientation (n=838 missing, 168 other, n=402 don’t know, n=821 refusals) were excluded. Lastly, 4,974 individuals were excluded due to early termination of the survey. The analytic sample thus included 47,800 persons. All surveys are administered through computer-assisted telephone interviews, and the CDC uses complex sampling methodology to gather samples from both landline and cellular telephones. Further information about the BRFSS survey, methodology, and response rates is available through the CDC (2015a; 2015b).

2.2 Sexual orientation

The key independent variable of sexual orientation was gathered from the SOGI module, in which respondents are asked “Do you consider yourself to be: 1-straight, 2-lesbian or gay, 3-bisexual.”

2.3 Alcohol use

Four alcohol use measures were taken from the core survey from which the CDC calculates variables of alcohol consumption. First, respondents were asked, “During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?” From this item, the CDC calculated a dichotomous variable for *any alcohol use* in the past 30 days. Second, a measure of *risky drinking* was defined as adult men who on average had more >2 drinks per day or adult

women who had >1 drink per day, based on weekly drinking limits defined by the National Institute on Alcohol Abuse and Alcoholism (14 drinks/week for men or 7 drinks/week for women; NIAAA, 2007). Third, heavy episodic drinking was defined as men who report ≥5 drinks on one occasion in the last 30 days and women who report ≥4 drinks on one occasion in the last 30 days (NIAAA, 2007). Fourth, a summary measure of *any unhealthy alcohol use* was defined as respondents who either met criteria for risky drinking or any heavy episodic drinking in the last 30 days.

2.4 Alcohol screening and brief intervention

Additional variables were taken from the 5-item ASBI module. The ASBI module focuses on receipt of screening and brief intervention from healthcare providers during a healthcare visit. Because the ASBI module measures alcohol screening and brief interventions occurring in healthcare settings, only respondents who indicated having visited a healthcare provider for a routine checkup in the last two years were asked the ASBI questions. In the context of their last checkup, respondents were asked five questions to which they responded yes or no: (1) “were you asked in person or on a form if you drink alcohol;” (2) “did the healthcare provider ask you in person or on a form how much you drink;” (3) “did the healthcare provider specifically ask whether you drank [5 for men /4 for women] or more alcoholic drinks on an occasion” (*alcohol screening questions*); (4) “were you offered advice about what level of drinking is harmful or risky for your health;” and (5) “were you advised to reduce or quit your drinking” (*brief intervention questions*). The BRFSS skip logic had only respondents who answered ‘yes’ to any of the first three screening questions administered the fifth question. The first three questions reflected receipt of alcohol screening and the last two questions assessed components of brief intervention that are commonly offered as brief alcohol counseling interventions tested in randomized controlled trials (Solberg et al., 2008).

2.5 Socio-demographic variables

Respondent characteristics that were included as covariates in this study were age coded into four categories of 18–29, 30–44, 45–64, and ≥65 years; race/ethnicity coded into five categories of non-Hispanic white, African American/black, other race, multiracial, and Hispanic; and education coded into four categories of ≤high school diploma, high school diploma, some college, and a college degree or higher. Marital status was coded into a three-category variable of being married or in an unmarried partnership, formerly married (including separated, divorced, and widowed individuals), and never married. Employment status was coded into a four-category variable of employed, unemployed, retired, and out of the workforce; the latter category included individuals who reported being homemakers, students, or unable to work. Veteran status was included as a dichotomous variable and was defined as individuals who indicated that they “ever served on active duty in the United States Armed Forces, either in the regular military or in a National Guard or military reserve unit.”

2.6 Analyses

Because of well-documented differences in alcohol use and receipt of alcohol-related care between men and women (Burman et al., 2004; Dawson et al., 1992; Grant et al., 2015;

Rubinsky et al., 2013), all analyses were stratified by sex. All analyses were conducted using Stata/SE Version 13 and weighted and adjusted for stratification and clustering to account for the complex sampling design of the BRFSS. Group differences between lesbian/gay, bisexual, and heterosexual individuals for all socio-demographic variables were examined using chi-square tests. Rather than use a corrected p-value to determine statistical significance for multiple tests of socio-demographic characteristics, all p-values for individual tests are reported for the reader. Because of strong, significant differences in age across sexual orientation categories, age-adjusted prevalence estimates were reported for all alcohol use and ABSI variables for each sexual orientation group among men and women. Moreover, because brief intervention is specifically indicated for persons screening positive for unhealthy alcohol use (Jonas et al., 2012), the two brief intervention items in the ABSI module (i.e., offered advice about risky drinking and advised to reduce alcohol consumption) were also examined specifically among the subsample of respondents who met criteria for any unhealthy alcohol use.

Age-adjusted prevalence estimates of alcohol use outcomes and alcohol screening and brief intervention were generated through multiple logistic regression models in which each measure was regressed on age group and sexual orientation. We used the method of recycled predictions to estimate the age-adjusted prevalence and 95% confidence interval for each outcome within sexual orientation group (Korn & Graubard, 1999). To identify statistically significant differences in these age-adjusted prevalence estimates between gay/lesbian and bisexual groups and the heterosexual group, we calculated risk differences and reported the p-value.

In addition to age-adjusted analyses which provided prevalence estimates, a series of multiple logistic regression models, fully adjusted for all socio-demographic characteristics, were used to examine the association of sexual orientation with each of the alcohol screening and brief intervention dependent variables. Models were stratified by sex. For the brief intervention measures, we also conducted subgroup analyses among respondents who indicated any unhealthy alcohol use, as described above. All estimates are reported as adjusted odds ratios with corresponding 95% confidence intervals. The Institutional Review Board of the VA Pittsburgh Healthcare System approved this study.

3. Results

Among eligible respondents, a weighted percentage of 1.7% of men identified as gay (n=323) and 1.2% as bisexual (n=198). Among women, 1.3% identified as lesbian (n=241) and 2.0% as bisexual (n=382). Sex-stratified analyses indicated that several socio-demographic characteristics differed based on sexual orientation (Table 1). Lesbian and bisexual women and gay men tended to be younger than their heterosexual counterparts, whereas more bisexual men were over age 65. All sexual minority groups were less likely to be married or in an unmarried partnership compared to heterosexual men and women. Gay men and lesbian women had higher levels of educational attainment and were more likely to be employed than heterosexuals, whereas the opposite pattern was observed for bisexual men and women, who had lower levels of educational attainment and were less likely to be

employed compared to heterosexuals. Finally, lesbian women were more likely to be veterans compared to heterosexual women.

There were some differences across sexual orientation in age-adjusted prevalence of alcohol use among men and women (Tables 2 and 3). Among men, gay men had a higher age-adjusted prevalence of any alcohol use in the past 30 days compared to heterosexual men (Table 2). While not statistically significant, there were statistical trends ($p < 0.10$) suggesting that bisexual men had a lower age-adjusted prevalence of any alcohol use and heavy episodic drinking compared to heterosexual men in the past 30 days. Among women, bisexual women trended toward significance in having a higher prevalence of risky drinking (13.6% vs. 4.9%, p=.08), heavy episodic drinking (19.6% vs. 10.8%, p=.12), and any unhealthy alcohol use (21.5% vs. 12.0%, p=.11) in the past 30 days compared to heterosexual women (Table 3).

Among the full sample of men, there were no significant sexual orientation differences with respect to alcohol screening or brief intervention in both age-adjusted (Table 2) and fully adjusted models (Table 4). However, there were some differences in receipt of brief intervention among the subsample of men who reported unhealthy alcohol use. Specifically, among men reporting unhealthy alcohol use, gay men were less likely (Adjusted Odds Ratio [AOR] = 0.37, 95% CI 0.16–0.86) and bisexual men were more likely (AOR =3.99, 95% CI 1.37–11.63) to be offered advice about drinking compared to heterosexual men (Table 4).

Among women, lesbian women were more likely than heterosexual women to be asked about heavy episodic drinking in both age-adjusted (Table 3) and fully adjusted analyses (AOR = 1.88, 95% CI 1.08–3.25; Table 4). There were no other sexual orientation differences in screening, and no differences in receipt of brief intervention among the overall sample nor among the subset of respondents who indicated any unhealthy alcohol use in either age-adjusted or fully-adjusted models for women.

4. Discussion

This study examined differences by sexual orientation in alcohol use as well as receipt of alcohol screening and brief intervention in the context of a routine checkup in a probability sample of adults from eight US states. Among individuals reporting a health checkup in the past two years, we detected differences in alcohol use for some groups. Specifically, we detected greater alcohol use among gay men compared to heterosexual men, as well as non-significant trends of greater risky drinking in bisexual women but lower risky drinking in bisexual men compared to their heterosexual counterparts. Despite these differences, an encouraging finding in the current study is that we found few differences in receipt of alcohol screening and brief intervention by sexual orientation. However, compared to their heterosexual counterparts, lesbian women were more likely to be asked about heavy episodic drinking and, among those reporting unhealthy alcohol use, gay men were less likely and bisexual men more likely to be offered advice about drinking.

With respect to alcohol use, gay men had a higher age-adjusted prevalence of any alcohol use compared to heterosexual men in the past 30 days. However, there was no evidence that

they had higher rates of unhealthy use such as risky drinking or heavy episodic drinking, which is consistent with previous general population-based research that found no evidence for increased alcohol use disorder or alcohol-related problems among gay men (Drabble et al., 2005; McCabe et al., 2013). Bisexual women trended toward being more likely than heterosexual women to report risky drinking, heavy episodic drinking, and any unhealthy alcohol use. The fact that these differences were not significant is surprising given prior literature indicating bisexual women's higher risk for unhealthy alcohol use (Eisenberg & Wechsler, 2003; McCabe et al., 2009). It is possible the current study was inadequately powered to detect these differences. The differences in results could also be explained by the fact that the current sample was limited to those who had a health checkup in the past two years, whereas prior studies investigated unhealthy alcohol use among those with or without a health checkup. Thus, the lack of significance may be due to selection bias, in that women who obtain health care may engage in fewer risky behaviors than peers who do not obtain or have access to health care.

This is the first study to our knowledge to assess differences in receipt of evidence-based alcohol-related care across sexual minority status. There were relatively few differences in receipt of screening and brief intervention across sexual orientation, an encouraging finding in terms of equity of care. In fact, two findings suggested that sexual minorities may receive greater care, with lesbian women being more likely to be asked about heavy episodic drinking and bisexual men who report unhealthy alcohol use being more likely to be offered advice compared to heterosexuals. Reasons for this are unclear (perhaps providers are more aware of sexual minorities' greater risk for alcohol misuse), but as these are evidence-based practices, it is reassuring that sexual minorities are receiving this care equitably or at greater rates. Nonetheless, one potential area of disparity emerged: among those for which brief interventions are indicated (those with unhealthy alcohol use), gay men had a lower likelihood of being offered advice about drinking compared to heterosexual men. Several hypotheses might explain this finding. Healthcare providers may prioritize other behavioral health issues that are common among gay men (e.g., HIV risk, sexually transmitted infections, other drug use) at the expense of providing counseling for alcohol use (Mayer et al., 2008). Alternatively, gay men may be perceived as more health conscious by their providers (as one example, they are less likely to be overweight or obese compared to heterosexual men; Conron et al., 2010), resulting in decreased likelihood of receiving alcohol-related advice. This observed difference, however, was limited to the subset of individuals reporting unhealthy alcohol use at the time of the BRFSS survey (as opposed to during the time of the checkup), and needs to be replicated in future research.

Consistent with prior studies, findings suggest continued need for improvement in provision of evidence-based alcohol-related care in the US (CDC, 2014; Glass et al., 2016; Lapham et al., 2012; Williams et al., 2014). Specifically, in the current sample, approximately 25.5% of adults who attended a checkup were not asked about their drinking (not shown). With the exception of bisexual men, among those meeting criteria for any unhealthy alcohol use, less than half of men or women in any sexual orientation group were offered advice about risky drinking, and less than a third in any group were advised to reduce alcohol use. Thus, increased receipt of both screening and especially brief intervention is called for across sexual orientation.

While this is the first study to examine receipt of recommended population-based care for unhealthy alcohol use across sexual minority status, previous studies have examined sexual orientation differences in receipt of specialty care for alcohol and/or drug use disorders. Among those with any lifetime substance use disorder, gay and bisexual men and bisexual women were more likely than their heterosexual counterparts to report receiving specialty substance use disorder treatment in their lives, and there were no differences between lesbian and heterosexual women (McCabe et al., 2013). Another study among respondents with lifetime alcohol use disorder specifically found that bisexual individuals were more likely than heterosexuals to report any alcohol-related treatment (Allen & Mowbray, 2016). There were no overall differences in treatment utilization between gay/lesbian and heterosexual individuals, with the exception that the former were more likely to receive treatment at a crisis center. Thus, it appears that bisexual individuals may be more likely than their heterosexual counterparts to receive substance use-related treatment. Our study builds on this body of research, finding that bisexual men who reported unhealthy alcohol use were more likely to be offered advice about drinking than heterosexual men. Mechanisms underlying this difference are unclear. Given increased likelihood of treatment receipt among bisexual persons with substance use disorders, it is possible that bisexual individuals in the present study were more likely than heterosexual patients to bring alcohol up in their appointments with physicians, or to have a history of treatment documented in the medical record, suggesting an indication for brief intervention. Future studies are needed to confirm and understand this finding. Moreover, research is needed to evaluate the impact of brief intervention and other alcohol-related care on alcohol outcomes for sexual minorities given lack of prior efficacy trials of brief intervention or other evidence-based treatments among sexual minorities with unhealthy alcohol use.

This study has several limitations. While this study was completed using national survey data, only eight states elected to participate in both the alcohol screening and brief intervention and sexual orientation survey modules. Generalizability is limited to the participating eight states, and future research is needed to replicate findings in other states. While the BRFSS dataset provided a unique opportunity to examine differences in receipt of alcohol screening and brief intervention and to stratify results by sex and sexual identity (i.e., gay/lesbian, bisexual, heterosexual), the sample size of sexual minorities in the sample was limited, especially among the subset of individuals reporting any unhealthy alcohol use. In addition, given differences in assessment periods for several questions (e.g., past-month for unhealthy alcohol use, past two years for alcohol screening and brief intervention), it is unknown if the subset of individuals reporting any unhealthy alcohol use during the BRFSS interview were drinking at unhealthy levels during the time of their checkup, when receipt of brief intervention would have been called for. Further, measures of alcohol screening and brief intervention have not been validated, although items have been used in two US population surveys including the BRFSS and the National Survey on Drug Use and Health. It is possible that items regarding alcohol screening would capture informal alcohol assessments, rather than only recommended alcohol screenings with a brief validated measure. While we were able to examine unhealthy alcohol consumption patterns such as risky drinking and heavy episodic drinking, no data on alcohol use disorder were available. Finally, it is unknown whether sexual minority respondents were “out” to their providers,

and lack of this information limits our ability to interpret observed differences. For example, our interpretations regarding gay men's reduced likelihood of being offered advice about drinking rely on providers' knowledge of their patients' sexual orientation. Thus, future research that clarifies whether sexual orientation or behavior was also assessed in the healthcare visit would be useful.

In conclusion, there were more similarities than differences by sexual orientation with respect to patterns of alcohol use, as well as receipt of alcohol screening and brief intervention from a healthcare provider. This is an optimistic finding. However, several differences were observed across sexual minority status, including a lower odds of receiving advice about drinking when indicated among gay men compared to heterosexual men. Future studies should be conducted in larger samples to replicate findings and understand observed differences. Moreover, this study was not able to assess quality of alcohol-related care received across sexual minority status. Because sexual minorities report high levels of discrimination in their experiences with health care and care by providers who lack knowledge about their unique health needs (Eliason & Hughes, 2004; McCabe et al., 2010), future studies should also assess variation in quality of alcohol-related care across sexual minority status.

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Drug Alcohol Depend. Author manuscript; available in PMC 2020 June 09.

Table 1.

Socio-demographics of 2014 BRFSS adults who reported a checkup in the last two years from eight US states stratified by sex, by sexual orientation

	Men				Women			
Socio-demographics	**Gay (n=323) %**	**Bisexual (n=198) %**	**Heterosexual (n=18,925) %**	***p***	**Lesbian (n=241) %**	**Bisexual (n=382) %**	**Heterosexual (n=27,731) %**	***p***
Age group								
18–29	19.7	27.6	19.0	.004	31.7	45.6	17.4	<.001
30–44	20.6	9.7	23.8		21.9	26.0	24.6	
45–64	52.0	30.0	36.8		33.9	19.5	35.0	
≥65	7.7	32.7	20.4		12.5	8.9	23.0	
Race								
White	76.6	68.7	72.9	.228	78.9	67.4	72.4	.050
African American	8.9	7.2	9.1		10.9	9.7	10.3	
Other	1.8	17.7	6.6		3.4	1.6	6.7	
Multiracial	2.4	3.3	2.2		2.5	3.3	2.0	
Hispanic	10.3	3.1	9.2		4.3	18.0	8.6	
Education								
≤High school diploma	10.4	5.1	11.4	.012	6.5	25.1	10.1	.040
High school diploma	13.6	39.6	30.5		18.1	31.6	27.3	
Some college	24.4	30.1	29.8		38.5	25.8	32.4	
<College degree	51.6	25.1	28.3		36.9	17.5	30.2	
Partnership status								
Married/coupled	47.4	38.8	60.5	<.001	40.8	34.1	54.8	<.001
Formerly married	3.6	17.6	15.3		9.3	17.8	23.5	
Never married	49.0	43.6	24.2		49.9	48.1	21.7	
Employment status								
Employed	71.0	36.6	61.3	.017	62.4	43.3	54.5	.014
Unemployed	5.1	8.6	5.7		4.9	6.9	5.1	
Out of workforce	13.6	17.9	12.0		18.4	42.2	23.2	
Retired	10.3	36.9	22.0		14.3	7.6	19.2	
Veteran	13.2	17.4	21.2	.336	8.8	1.0	1.4	<.001

Note. Percentages are weighted.

Table 2.

Age-adjusted prevalence of alcohol use, alcohol screening, and brief intervention among men who reported a checkup in the last two years, by sexual orientation.

	Men		
	Gay (n=323)	**Bisexual (n=198)**	**Heterosexual (n=18,925)**
Alcohol use in past 30 days	**% (95% CI)**	**% (95% CI)**	**% (95% CI)**
Any alcohol use	79.6 (70.9–88.2) ***	46.4 (31.2–61.6) †	60.1 (58.0–62.1)
Risky drinking	6.6 (1.8–11.4)	10.9 (1.3–20.5)	5.2 (4.3–6.1)
Heavy episodic drinking	24.9 (15.7–34.2)	12.1 (4.1–20.2) †	20.3 (18.6–21.9)
Any unhealthy alcohol use	25.4 (16.0–34.7)	17.7 (7.2–28.2)	20.7 (19.0–22.4)
Alcohol screening and brief intervention during last checkup (Overall)			
1. Asked during checkup if you drink any alcohol	78.9 (70.3–87.5)	61.0 (44.4–77.6)	74.8 (73.0–76.6)
2. Asked during checkup how much you drink	72.0 (61.9–82.2)	53.2 (37.4–69.0)	64.2 (62.1–66.3)
3. Asked about heavy episodic drinking	36.1 (21.5–50.7)	45.6 (26.3–64.9)	32.8 (30.7–35.0)
4. Offered advice about drinking	20.9 (11.3–30.5)	27.9 (15.1–40.7)	24.2 (22.3–26.1)
5. Advised to reduce alcohol[a]	15.6 (1.0–30.2)	14.4 (4.1–24.6)	10.0 (8.4–11.5)
Brief intervention during last checkup (Among those reporting unhealthy alcohol use)	(n=82)	(n=33)	(n=3,330)
4. Offered advice about drinking	17.2 (6.2–28.2) **	72.1 (50.5–93.8) **	37.9 (33.0–42.7)
5. Advised to reduce alcohol[b]	15.9 (0.4–31.4)	29.9 (3.2–56.6)	16.4 (13.4–19.5)

Note. Age-adjusted weighted percentages are reported with survey-adjusted 95% confidence intervals.

[a] Sample size for this item excluded respondents reporting “no” to all items 1–3 (n=66 gay, n=39 bisexual, and n=3,643 heterosexual).

[b] Sample size for this item excluded respondents who reported “no” to all items 1–3 (n=13 gay, n=3 bisexual, and n=486 heterosexual).

† p < .10

* p < .05

** p < .01

*** p < .001, heterosexual as reference group.

Table 3.

Age-adjusted prevalence of alcohol use, alcohol screening, and brief intervention among women who reported a checkup in the last two years, by sexual orientation

	Women		
	Lesbian (n=241) % (95% CI)	**Bisexual (n=382) % (95% CI)**	**Heterosexual (n=27,731) % (95% CI)**
Alcohol use in past 30 days			
Any alcohol use	55.9 (40.8–71.0)	51.2 (34.5–67.8)	50.7 (48.9–52.5)
Risky drinking	3.6 (0.7–6.4)	13.6 (3.9–23.4) †	4.9 (4.2–5.6)
Heavy episodic drinking	21.5 (5.5–37.5)	19.6 (8.5–30.7)	10.8 (9.7–11.9)
Any unhealthy alcohol use	22.7 (6.0–39.4)	21.5 (9.9–33.1)	12.0 (10.9–13.1)
Alcohol screening and brief intervention during last checkup (Overall)			
1. Asked during checkup if you drink any alcohol	81.0 (71.3–90.7)	79.8 (70.7–88.8)	74.9 (73.3–76.5)
2. Asked during checkup how much you drink	75.5 (63.8–87.2)	51.8 (35.3–68.4)	65.6 (63.8–67.4)
3. Asked about heavy episodic drinking	40.6 (28.2–53.1) *	21.4 (11.4–31.4)	27.5 (25.8–29.1)
4. Offered advice about drinking	17.5 (7.6–27.3)	15.5 (6.9–24.0)	16.1 (14.7–17.6)
5. Advised to reduce alcohol [a]	7.8 (0.6–14.9)	9.7 (2.0–17.3)	5.9 (4.8–6.9)
Brief intervention during last checkup (Among those reporting unhealthy alcohol use)	(n=38)	(n=73)	(n=2,787)
4. Offered advice about drinking	28.9 (7.0–68.7)	18.3 (8.3–35.5)	20.9 (17.4–24.9)
5. Advised to reduce alcohol [b]	9.6 (1.4–44.0)	12.0 (3.6–33.0)	6.9 (5.0–9.5)

Note. Age-adjusted weighted percentages are reported with survey-adjusted 95% confidence intervals.

[a] Sample size for this item excluded respondents who reported “no” to all items 1–3 (n=34 lesbian, n=70 bisexual, and n=5,650 heterosexual).

[b] Sample size for this item excluded respondents who reported “no” to all items 1–3 (n=6 lesbian, n=11 bisexual, and n=322 heterosexual).

† p < .10

* p < .05

** p < .01

*** p < .001, heterosexual as reference group.

Table 4.

Association of sexual orientation with alcohol screening and brief intervention measures among men and women 2014 BRFSS respondents with a checkup in the last 2 years, overall and among those reporting unhealthy alcohol use

	During last checkup:				
	Asked if you drink any alcohol	**Asked how much you drink**	**Asked about heavy episodic drinking**	**Offered advice about drinking**	**Advised to reduce alcohol**
	AOR (95% CI)	**AOR (95% CI)**	**AOR (95% CI)**	**AOR (95% CI)**	**AOR (95% CI)**
Overall (men)					
Sexual orientation	(n=17,686)	(n=17,653)	(n=15,777)	(n=18,296)	(n=14,020)
Heterosexual	Ref	Ref	Ref	Ref	Ref
Gay/lesbian	1.30 (0.77–2.19)	1.48 (0.88–2.49)	1.41 (0.75–2.63)	0.87 (0.46–1.65)	1.73 (0.69–4.37)
Bisexual	0.56 (0.30–1.07)	0.66 (0.36–1.20)	2.15 (0.87–5.31)	1.14 (0.59–2.19)	1.23 (0.53–2.87)
Among those who reported unhealthy alcohol use (men)					
Sexual orientation				(n=3,391)	(n=2,835)
Heterosexual				Ref	Ref
Gay/lesbian				**0.37 (0.16–0.86)**	1.22 (0.36–4.09)
Bisexual				**3.99 (1.37–11.63)**	2.80 (0.69–11.30)
Overall (women)					
Sexual orientation	(n=25,484)	(n=25,563)	(n=22,765)	(n=26,751)	(n=19,993)
Heterosexual	Ref	Ref	Ref	Ref	Ref
Gay/lesbian	1.38 (0.70–2.72)	1.54 (0.80–2.99)	**1.88 (1.08–3.25)**	1.17 (0.55–2.45)	1.45 (0.51–4.18)
Bisexual	1.36 (0.73–2.52)	0.58 (0.29–1.15)	0.65 (0.34–1.26)	0.84 (0.39–1.80)	1.41 (0.57–3.51)
Among those who reported unhealthy alcohol use (women)					
Sexual orientation				(n=2,873)	(n=2,473)
Heterosexual				Ref	Ref
Gay/lesbian				1.56 (0.25–9.54)	1.37 (0.32–5.87)
Bisexual				0.87 (0.31–2.39)	1.76 (0.51–6.02)

Note. Significant values in bold. All analyses are weighted and adjusted for age group, race/ethnicity, education, marital status, employment status, and veteran status.