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Sexual Orientation Differences in Alcohol Use Disorder Across the Adult Life Course

Jessica N. Fish, PhD¹, Cara Exten, PhD, MPH²

¹Department of Family Science, University of Maryland Prevention Research Center, School of Public Health, University of Maryland, College Park, Maryland ²College of Nursing, Pennsylvania State University, University Park, Pennsylvania

Abstract

Introduction: Sexual orientation-related disparities in alcohol use disorder are well established. Yet, the degree to which sexual orientation differences in alcohol use disorder vary across the life course is poorly understood. There is also limited understanding of how exposure to minority stressors and their relationship with alcohol use disorder vary as a function of age.

Methods: Using nationally representative data collected in 2012–2013, authors used sex-stratified time-varying effect models to estimate age-specific prevalence rates of alcohol use disorder among heterosexual and sexual minority adults aged 18–60 years ($n=28,090$). Among sexual minority adults ($n=1,050$), authors also assessed age-specific associations between exposure to lesbian, gay, and bisexual-related discrimination and alcohol use disorder. Analyses were conducted in 2019.

Results: Gay and bisexual male participants aged 18–45 years demonstrated the highest prevalence rates of alcohol use disorder (e.g., 55% at age 25 years). Whereas lesbian, gay, and bisexual female participants were most likely to meet criteria for alcohol use disorder between ages 45 and 55 years. Sexual minority adults who experienced discrimination in the past year had greater odds of alcohol use between ages 23 and 34 years and again from age 42 to 53 years; the association between discrimination and alcohol use disorder was strongest among sexual minority men.

Conclusions: Sexual orientation-related disparities in alcohol use disorder are dynamic across the life course and point to critical times for screening and intervention. Developmental perspectives of sexual minority health inequities demand focused research attention as findings help to identify strategies for promoting sexual minority health at distinct points in the life course.

Address correspondence to: Jessica N. Fish, PhD, Department of Family Science, University of Maryland Prevention Research Center, School of Public Health, University of Maryland, 4200 Valley Road, Suite 1142, College Park MD 20742. jnfish@umd.edu.

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INTRODUCTION

Sexual minority (SM; e.g., lesbian, gay, and bisexual [LGB]) people are at elevated risk for excessive alcohol use and alcohol use disorder (AUD) relative to their heterosexual peers.¹⁻⁵ SM adults are 1.5 to three times as likely as heterosexuals to meet the criteria for an AUD.^{6,7} These differences are more consistent and robust among women,^{1-3,7-9} a pattern that has been attributed to a combination of SM women's rejection of traditional gender roles, permissive drinking norms, and elevated rates of childhood victimization.^{2,10} Sexual orientation (SO)-related disparities in hazardous and disordered drinking are often attributed to LGB-related stigma and discrimination.¹¹⁻¹⁶ Similar to other social determinants frameworks, the minority stress model¹⁷ explains how anti-LGB stigma creates social conditions that increase psychological distress and decreases material and socioemotional resources for LGB people.^{15,16,18} These experiences—from the interpersonal to the structural level—coalesce to influence poor health and maladaptive coping strategies, including alcohol use and abuse.^{2,5,8,19,20}

The life-course perspective^{21,22} has the potential to reveal unique vantage points for understanding and addressing SO-related health inequities.^{23,24} The life-course perspective emphasizes how early (or earlier) social and contextual factors shape health across the lifespan.^{21,22} Importantly, these social factors can be interrupted by strategic policy and public health initiatives. Unfortunately, the lack of panel data that include SO measures constrain efforts to understand developmental trends of AUD across the life course for SMs and its association with minority stress. Developmental perspectives of alcohol use, however, are critical for identifying when SO-related disparities emerge and how they unfold across the life course.²⁵⁻²⁷ Thus, pseudo-developmental methods with large, cross-sectional data represent a creative strategy to assess how SO differences in AUD may vary by age. Findings offer guidance on critical periods for future research in addition to prevention and intervention efforts.²⁸

Limited longitudinal research suggests that, compared with their heterosexual counterparts, SMs demonstrate greater alcohol use from adolescence to early adulthood.²⁹ However, few of these studies extend beyond the late 20s, when alcohol use generally declines. New research shows age differences in AUD and its association with discrimination among SM adults,²⁵ but did not compare prevalence rates to heterosexual adults nor did they assess sex differences in AUD and its association with discrimination. Therefore, this study uses nationally representative secondary data to extend current understanding of AUD risk among SMs in three important ways. First, heterosexual and SM differences in AUD are documented across the lifespan. Second, the authors assess whether age-specific prevalence rates of AUD vary by sex to compare male–female differences in developmental patterns of SO disparities in AUD. Third, among SMs, sex differences in the age-specific associations between LGB-related discrimination and AUD are examined—potentially illuminating differential patterns of AUD and related mechanisms across the life course.

Based on prior research,¹⁻⁶ the authors hypothesize that SM adults have higher prevalence rates of AUD relative to their same-sex heterosexual peers across all ages, with larger SO differences among women.^{2,4,8} Among SMs, discrimination is expected to be positively

associated with AUD, with strongest associations among younger adults.^{28,30,31} Sex-stratified differences in the prevalence of AUD and its association with discrimination by age are exploratory.

METHODS

Study Sample

Data were from the National Epidemiologic Survey of Alcohol and Related Conditions III, a nationally representative, cross-sectional survey conducted on non-institutionalized U.S. adults aged 18 years in 2012–2013 (N=36,309). Trained interviewers conducted the Alcohol Use Disorder and Associated Disabilities Interview Schedule 5³² via computer-assisted personal interviews. Participants were included if they identified as heterosexual, lesbian, gay, or bisexual. Those who were *not sure* of their sexual identity ($n=156$; explained further in the Appendix) or whose sexual identity was unknown ($n=229$) were not included in the analytic samples. The first subsample consisted of all participants aged 18–60 years (Sample 1, $n=28,090$). The second subsample was restricted to those who identified as LGB (Sample 2, $n=1,050$), given that discrimination items were only administered to SM participants. This study was deemed exempt by the University of Maryland IRB.

Measures

Participants were asked: *Which of the following best describes you?* Participants who reported a *gay or lesbian* or *bisexual* identity were recoded into a single group defined as “LGB.” The terms “sexual identity” and “LGB” are used when referring to the results of this particular study given that SO identity was measured. The Introduction and Discussion sections refer to SMs given the variation in SO measures (i.e., attraction, behavior, and identity) used in the broader literature.

Eleven items were used to assess past-year DSM-V AUD symptoms.³¹ Example items include: *Did you ever find that... your usual number of drinks had much less effect on you than it once did?* and *more than once try to stop or cut down on your drinking but found you couldn't do it?* Response options are *yes* or *no*. Based on DSM-V criteria and previous research,³⁵ participants were coded as having an AUD if they experienced at least two symptoms within the past year ($yes=1$, $no=0$).

Past-year experiences with LGB-related discrimination were assessed with six items adapted from the Experience of Discrimination Scale.^{36,37} For example: *How often did you experience discrimination in public, like on the street, in stores or in restaurants, because you were assumed to be gay, lesbian, or bisexual?* Response options ranged from *never* (0) to *very often* (5). Given the power necessary for age-specific estimates, and consistent with previous studies,^{28,31} these items were used to create a single item that reflected exposure to any discrimination in the previous year ($yes=1$, $no=0$).

Covariates were chosen for inclusion in models based on a directed acyclic graph for this population and outcome.^{38,39} Models were adjusted for race/ethnicity (black, Hispanic, other race/ethnicity, white [ref]).

Statistical Analysis

First, using weighted adjusted logistical regression, non-age dependent prevalence rates of AUD by sexual identity (Sample 1), and non-age dependent associations between discrimination and AUD among SMs (Sample 2) were estimated. Logistic time-varying effect modeling (TVEM)⁴⁰ was used to estimate age-specific prevalence of AUD by sexual identity (Sample 1) and age-varying associations between discrimination and AUD among SMs (Sample 2). Intercept-only TVEMs estimated age-specific prevalence rates of AUD (Appendix Figures 2 and 3 show the age distribution in the overall and SM-specific samples.), and then again stratified by sex. Logistic TVEM was used to estimate the odds of AUD as a function of discrimination among SM adults, stratified by sex. All analyses were conducted in 2019 using the WeightedTVEM SAS Macro in SAS, version 9.4 for nationally representative estimates.

RESULTS

Sample demographic characteristics are presented in Table 1. The weighted prevalence of AUD was 17% among heterosexual adults (20.8% among male and 12.5% among female adults) and 30% among LGB adults (31.5% among male and 29.3% among female adults). Roughly 41% of gay and bisexual male participants reported discrimination in the past year, relative to 34.8% of LGB female participants.

Prevalence of AUD was higher among LGB adults compared with heterosexual adults from ages 18–55 (Figure 1). SO differences widened across participants aged 18–24 years, then remained relatively stable through age 45 years, followed by a narrowing to null for those aged 55 years.

Sex-stratified models revealed dynamic age differences in AUD by sex and sexual identity (Figure 2). Gay and bisexual male adults aged 18–45 years showed the highest prevalence of AUD; >45% of gay and bisexual male adults around the age 25 years met the criteria for AUD. Among those aged 45–55 years, LGB female adults had the highest prevalence of AUD. Heterosexual and gay and bisexual male adults differed in prevalence of AUD from ages 18 to 50 years, where gay and bisexual male adults in their 20s and 30s were approximately 12%–15% more likely to meet the criteria for AUD. Compared with heterosexual female adults, LGB female adults were more likely to have an AUD from ages 18 to 57 years, demonstrating a 17%–20% difference in the early 20s and again in the mid-40s. LGB female participants aged 18–55 years were more likely to have an AUD than both heterosexual female and male adults.

The LGB adults who experienced discrimination had 1.54 (95% CI=1.16, 2.05) greater odds of having AUD relative to LGB adults who did not experience discrimination. Age-specific associations between discrimination and AUD (Appendix Figure 1) showed elevated odds of AUD in the presence of discrimination starting at age 23 years, with an overall bimodal distribution; associations were strongest for those in their late 20s to early 30s and again for those in their late 40s to early 50s, the association was null for those aged 35–41 years. Sex-stratified models (Figure 3) showed that associations between discrimination and AUD were largely specific to male adults, and were strongest for male adults in their mid-20s and late

40s to early 50s. Conversely, associations between discrimination and AUD were significant exclusively among female adults aged 28–35 years.

DISCUSSION

These findings demonstrate that SO differences in past-year AUD are dynamic across the life course. Male and female SMs had greater prevalence of AUD than their heterosexual peers across most age years. Results support previous work demonstrating more robust and consistent SO-related disparities in AUD among female adults, relative to male adults. However, SO differences in AUD were more dynamic among female adults, relative to male adults, across the life course. Both male and female SMs report greater prevalence of AUD relative to heterosexual male and female adults, and male SMs reflect greater rates of AUD than female SMs at younger ages, whereas female SMs show greater risk relative to male SMs later in the life course. Findings suggest that models not attuned to age may overestimate or underestimate AUD risk for SM adults at various developmental stages. For example, the overall prevalence rate of AUD was 30% among SMs, compared with 17% among heterosexuals in the overall sample. However, SMs in their late 20s and early 30s showed a prevalence rate greater than 40%—an important distinction for identifying critical periods for screening, prevention, and intervention.

Male SMs largely mimicked the developmental pattern of male heterosexuals, though rates of AUD declined more quickly across the 40s. Conversely, developmental patterns of AUD among female heterosexuals and SMs were more divergent, with a bimodal distribution of AUD from age 18 to 60 years. This could be because sexual fluidity appears to be more common among female versus males adults^{40–42} and that shifts in sexual attraction, behavior, or identity and sexual self-concept ambiguity correspond with greater alcohol use.^{43,45–46} Most notably, female SMs had greater odds of AUD than both female and male heterosexuals. Given the greater impact of alcohol on the long-term health, morbidity, and mortality among female relative to male adults,^{47,48} these findings demand focused research and programmatic attention.

In line with minority stress theory, experiences with LGB-related discrimination were hypothesized to be positively associated with AUD. There was a relatively persistent association between discrimination and AUD across the life course, and sex stratification revealed that associations were strongest among male SMs. Counter to hypotheses, the association between discrimination and AUD was not limited to young adults. Among male adults, discrimination was strongly associated with AUD during the early 20s, but most strongly between the late 40s and early 50s. These patterns suggest that: (1) the co-occurrence of discrimination and alcohol use are distinct across developmental periods and (2) cohort effects might differentially shape the link between minority stress and AUD for male SMs of different ages. For example, in this sample, gay and bisexual males in their 50s would have been in their early 20s in the mid-1980s—during the height of the AIDS epidemic. This likely had a distinct impact on their perceptions of LGB-related stigma, alcohol use, and their association.^{23,31,49} In fact, recent work demonstrates a unique uptick in self-reported LGB-related discrimination among male SMs of this age and cohort,²⁶ but more research is needed to understand why this may be and whether the impact on health is

developmental or cohort-specific. For males in their early 20s, there may be contributing developmental vulnerabilities whereby male SMs remain susceptible to peer conformity and influence in ways that strengthen the relationship between minority stress and alcohol use.^{30,50}

Among female adults, there was a relatively consistent null association between discrimination and AUD despite a bimodal distribution of AUD across the life course. This suggests that: (1) there may be events earlier in the life course that could impact AUD risk for female SMs or (2) unmeasured forms of minority stress (i.e., internalized stigma) or other mechanisms entirely (e.g., everyday stressors, sexism) might be better predictors of AUD among female SMs. With respect to the first point, and in line with the life-course perspective, females in general, but SM females in particular, are more likely to experience childhood victimization,^{10,51} and these experiences are linked to excessive alcohol abuse across the lifespan.^{10,52} Supporting the second point, research suggests that internalized stigma is associated with alcohol use for female SMs, and that other cognitive factors might differentially influence female SM's alcohol use in addition to minority stressors (e.g., alcohol expectancies, motivations, norms).^{53–55} In this sample, 41% of male SMs reported past-year discrimination compared with 35% of female SMs. However, discrimination, as measured, was limited to more interpersonal and enacted stigma, which may not capture other forms of stress and stigma that are more closely associated with alcohol use among women: For example, SM women appear to have more economic instability compared to heterosexual male and female and gay male peers,⁵⁶ which may exacerbate stress and maladaptive coping strategies.

Further, given the nature of intersectional oppression, it may be difficult for women to attribute their experiences of discrimination as being unique to their SO. With advancements in conceptualizing and measuring intersectional oppression (e.g., gendered racism),^{57–59} more work is needed to understand how sexism and heterosexism jointly impact the health of SM women. Studies that investigate multiple, concomitant pathways through which SMs come to abuse alcohol are needed.⁶⁰ Studies focused on individual mechanisms of SO-related disparities have been vital to understanding alcohol abuse among SM people; however, they have yet to capture more complex processes that influence alcohol abuse among SMs, and how this may differ by sex. Another plausible explanation may be that female SMs cope with discrimination differently than male SMs. Research suggests sex differences in the pathway to mental distress and substance abuse comorbid in the general population, whereby substance abuse is a secondary comorbidity for women, but a primary comorbidity for men.⁶¹ Ultimately, the need to understand the precursors of AUD among SM populations remains urgent.

Limitations

This study's findings should be interpreted in light of its limitations. Given the cross-sectional survey design, causality cannot be inferred. New and compelling research leverages experimental laboratory designs to demonstrate a more proximal link between stigma and alcohol use,⁶² which strengthens the authors' inference on the directionality of this relationship. Similarly, because the data are cross-sectional, age and cohort effects

cannot be differentiated—that is, to what extent the documented SO disparities represent a divergence from normative human developmental or the confluence of human developmental and sociohistorical events. Investigations that aim to understand how human development and sociohistorical time collide to inform risk for alcohol abuse are critical for moving the field forward, particularly in the area of policy, prevention, and intervention.^{30,50} The discrimination measure was dichotomized to provide enough power to estimate effects by age, but future research with more robust samples might be able to assess how discrimination dosage may alter the effects between discrimination and AUD.⁸

Data were limited in their ability to capture risk for AUD from adolescence to adulthood: SO disparities were already present by age 18 years. Given that studies consistently demonstrate SO-related disparities in excessive alcohol use among youth,^{3,4,9} these findings are not surprising, but do reiterate the importance of early assessment and intervention for alcohol use and abuse among SMs. Similarly, other important social identities may influence risk for AUD, along with the mechanisms that drive it (e.g., stigma) and factors that mitigate it (e.g., community connection).¹⁷ Substantial work is needed to understand how experiences related to race/ethnicity and social class (among other social identities) may differentiate developmental differences in risk for AUD, and other indicators of health. Relatedly, reporting LGB-related discrimination may be complicated for people who hold multiple marginalized identities; it is often difficult to ascertain the degree to which an experience is related to one specific marginalized identity relative to another.^{59,60,63} Finally, owing to small sample sizes, differences between lesbian/gay and bisexual SMs could not be tested. Growing evidence suggests that SO-related disparities in alcohol use and other substances are more robust for bisexual relative to gay/lesbian adults and thus age-specific estimates may illuminate important differences for this subgroup (Appendix Figure 4 describes a TVEM model testing these differences; the authors caution on the generalizability of these findings given the low number of participants who occupy each age by sexual identity subgroup). Relatedly, likely because of power limitations, the 95% CIs for gay/bisexual men in sex-stratified analyses are wider than the 95% CI for women, which suggest that findings for women may be more reliable than those for men. Although not presented here due to power limitations, it is also important to consider the prevalence of alcohol-related disparities among those who are “unsure” of their sexual identity, as they may be susceptible to both similar (e.g., discrimination), but also unique (i.e., sexual self-concept ambiguity) SM-related stressors.^{33,47} Future research will need to replicate developmental findings presented here (and elsewhere²⁵) to substantiate the degree to which monosexual gay/lesbian and bisexual people, as well as people unsure of their sexual identity, differ in their risk for AUD across the life course.

CONCLUSIONS

There remains a dearth of SM-specific prevention and intervention strategies to address excessive alcohol use in this population.^{64,65} Findings presented here illustrate the need for greater developmental understanding of SO-related disparities in alcohol abuse, and the differential effect of known mechanisms (e.g., discrimination) across the life course and strategies to address them. More generally, the application of life-course perspectives and analogous methods may reveal important periods and mechanisms of risk for heavy alcohol

use for this population. These types of studies may be uniquely important for understanding alcohol use among SM people, in particular, given their considerable health inequities, but also the rapid social progress that they have experienced in the last 3 decades. Hopefully, future work framed by life course perspectives will help researchers and practitioners to better understand how rapid social changes translate to improved population health for SM people.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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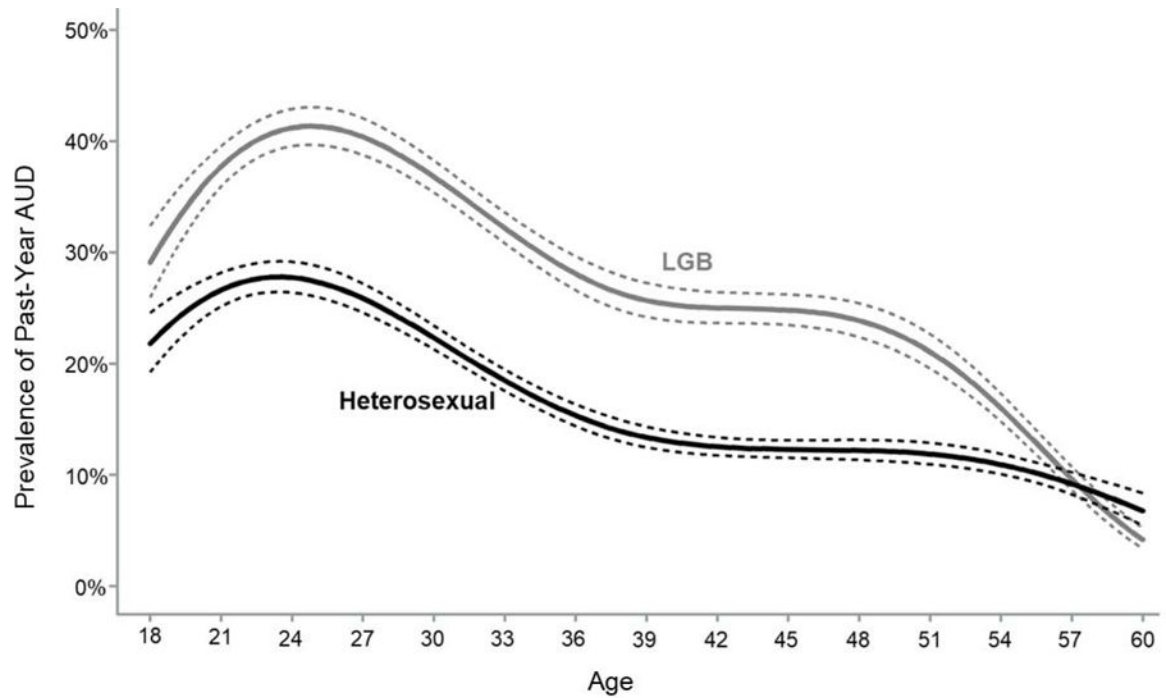


Figure 1.

Age-specific prevalence rates of past-year alcohol use disorder between heterosexual and sexual minority adults.

Note: Non-overlapping CIs reflect statistically significant differences between heterosexual and lesbian, gay, and bisexual adults for a given age year. Among heterosexual, weighted prevalence of past-year alcohol use disorder is 17%. Among lesbian, gay, and bisexual adults, weighted prevalence of past-year alcohol use disorder is 31%.

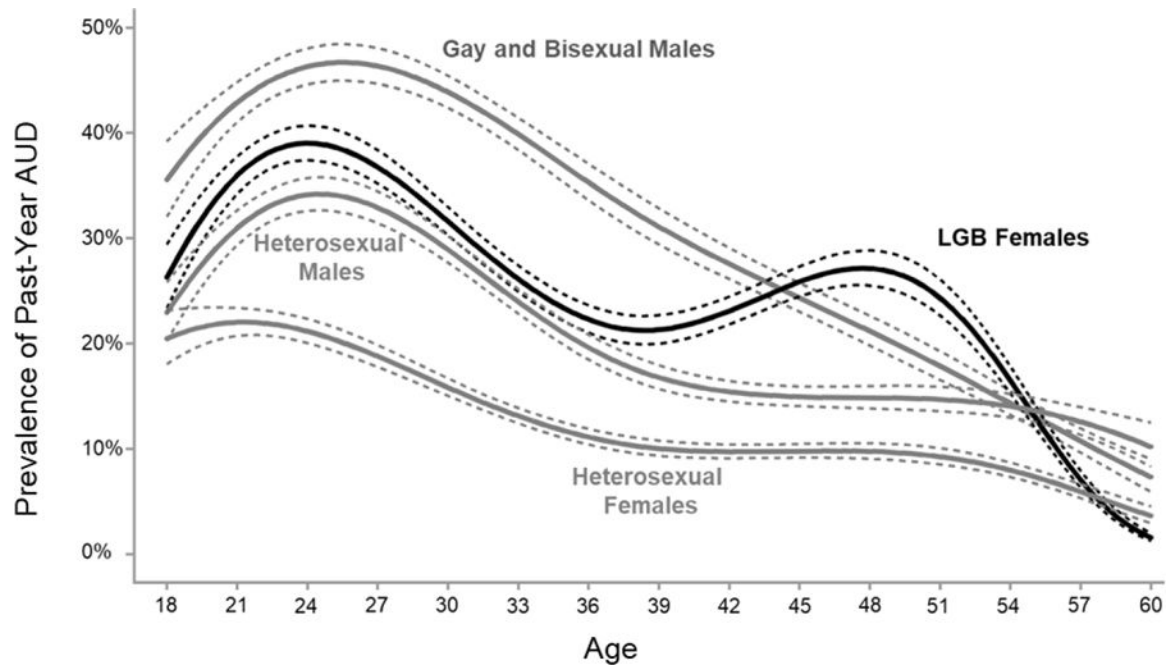


Figure 2.

Age-specific prevalence rates of past-year alcohol use disorder between heterosexual and sexual minority adults, stratified by sex.

Note: Overall weighted prevalence of alcohol use disorder: 32% among gay and bisexual men, 29% among lesbian/gay and bisexual females, 21% among heterosexual men, 13% among heterosexual females.

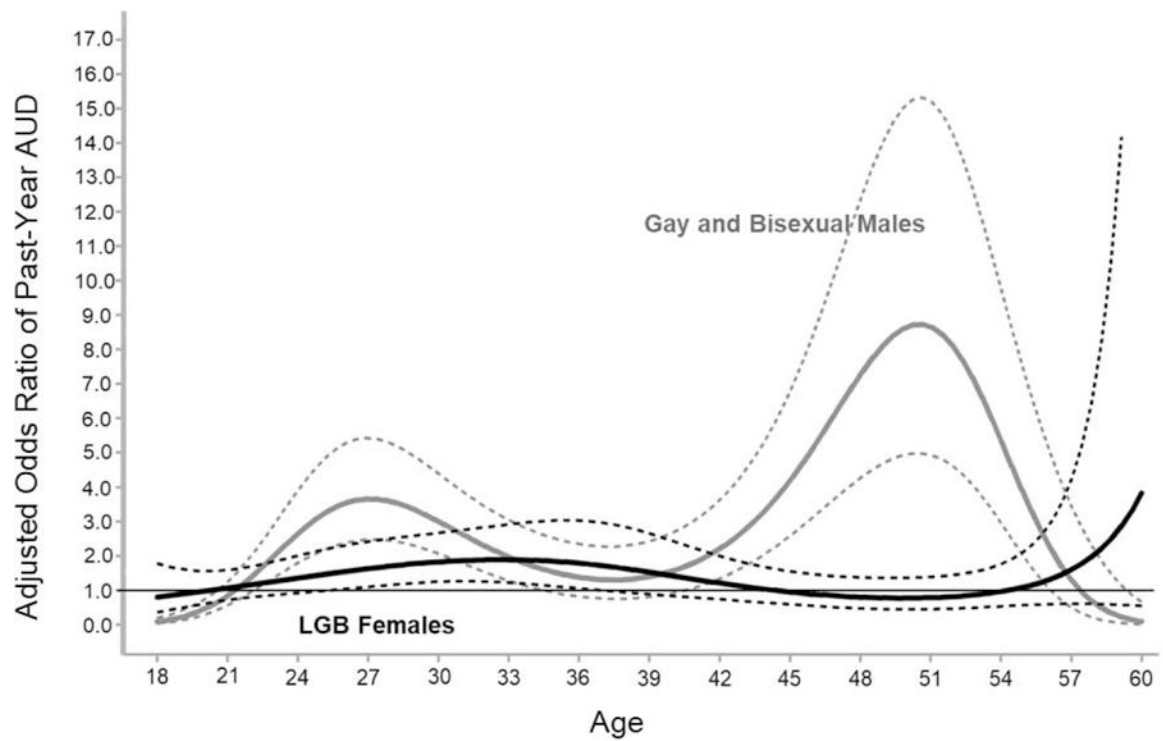


Figure 3.

Age-specific associations between past-year alcohol use disorder and past-year lesbian, gay, and bisexual-related discrimination among lesbian, gay, and bisexual adults, stratified by sex.

Note: Weighted AOR from traditional logistic regression testing past-year alcohol use disorder between lesbian, gay, and bisexual and heterosexual (ref) males AOR=2.05 (95% CI=1.32, 3.16) and between lesbian, gay, and bisexual and heterosexual (ref) females AOR=1.24 (0.84, 1.82). Model adjusted for race/ethnicity.

Table 1.

Weighted Characteristics of Sample by Sexual Orientation and Sex (N=28,090)

Characteristics	Heterosexual (n=27,040)			Lesbian, Gay, and Bisexual (n=1,050)		
	Total, %	Males, % (n=12,025)	Females, % (n=15,015)	Total, %	Males, % (n=398)	Females, % (n=652)
Past-year alcohol use disorder						
Yes	16.6	20.8	12.5	30.2	31.5	29.3
No	83.4	79.2	87.5	69.8	68.5	70.7
Past-year discrimination						
Yes	N/A	N/A	N/A	37.5	41.2	34.8
No	N/A	N/A	N/A	62.5	58.8	65.2
Age, years						
18–30	30.1	31.0	29.3	47.0	37.2	54.2
31–40	22.0	21.9	22.0	20.6	20.2	20.8
41–50	24.1	23.7	24.5	16.4	20.1	13.7
51–60	23.8	23.3	24.2	16.1	22.6	11.3
Race/Ethnicity						
White	62.5	63.1	61.8	64.2	69.2	60.5
Black	12.6	11.9	13.3	14.9	11.6	17.4
Hispanic	17.0	17.5	16.4	15.9	14.4	16.9
Other	8.0	7.5	8.5	5.0	4.8	5.2
Marital status						
Married/Partnered	58.1	57.8	58.4	30.8	27.1	33.5
Separated/Divorced	13.6	11.7	15.5	11.3	8.9	13.0
Widowed	1.4	0.6	2.1	0.9	0.3	1.2
Never married	26.9	29.9	24.0	57.1	63.7	52.3
Education						
High school/GED or less	37.1	40.5	33.7	33.8	28.8	37.6
Some college or higher	62.9	59.5	66.3	66.1	71.2	62.4
Annual household income, \$						
<20,000	19.1	17.7	20.4	26.7	21.5	30.6
20,000–34,999	17.5	16.9	18.0	19.9	18.8	20.7
35,000–69,999	28.0	28.6	27.5	27.6	31.3	24.9
70,000	35.5	36.9	34.1	25.8	28.4	23.9

Note: 30% of sexual minority males are bisexual; 63% of sexual minority females are bisexual.