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Psychiatric, Substance Use, and Structural Disparities Between Gay and Bisexual Men with Histories of Childhood Sexual Abuse and Recent Sexual Risk Behavior

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Abstract

Sexual minority men disproportionately experience childhood sexual abuse (CSA) compared to heterosexual men, resulting in greater risk of psychiatric and substance use diagnoses, sexual risk taking, and HIV acquisition later in life. However, little is known about psychiatric and substance use disparities between gay and bisexual men who have experienced CSA. We recruited a purposive convenience sample in Boston and Miami, involving self-report and clinical interview data from 290 sexual minority men (*M* age = 38.0 years) who reported CSA, defined as unwanted sexual contact before 13 years of age with an adult or person five years older, or unwanted sexual contact between 13 and 16 years of age with a person 10 years older (or any age with the threat of force or harm). We compared those who self-identified as gay ($n = 199$) versus bisexual ($n = 64$) on demographic and structural variables (i.e., government benefits, unstable housing, and neighborhood crime) as well as psychiatric and substance use diagnoses. Across 15 unique diagnoses, three were more common in bisexual men than gay men in unadjusted models: bipolar disorder (OR = 2.90, 95% CI: 1.01–8.34), obsessive compulsive disorder (OR = 2.22, 95% CI: 1.01–4.88), and alcohol use disorder (OR = 1.86, 95% CI: 1.03–3.38). Bisexual men were also more likely to meet criteria for "any substance use disorder" than were gay men (OR = 1.99, 95% CI: 1.10–3.59). However, when race, education, and income were included as covariates, the odds ratios reduced significantly (bipolar disorder: aOR = 1.98, 95% CI: 0.59–6.61; obsessive compulsive disorder: aOR = 1.56, 95% CI: 0.64–3.77; alcohol use disorder, aOR = 1.54, 95% CI: 0.80–2.98; any substance use disorder, aOR = 1.79, 95% CI: 0.93–3.45, respectively). Our results highlight the mental health needs, including problematic substance use, of bisexual men with histories of CSA, as well as the importance of accounting for potential confounding demographic variables that may influence disparities in mental health and substance use.

Keywords Bisexual · Gay · Trauma · Childhood sexual abuse · Sexual orientation

Introduction

Sexual minority men, including gay- and bisexual-identified men, are disproportionately affected by psychiatric problems including depression and substance use compared to heterosexual men (Bostwick et al., 2010; Chaudhry & Reisner, 2019; Kerridge et al., 2017; McCabe et al., 2009; Meyer, 2003). Additionally, both gay and bisexual men report greater exposure to childhood sexual abuse (CSA) and subsequent clinically significant psychiatric symptoms compared to heterosexual men (Roberts et al., 2010), which is also associated with sexual risk behavior (Boroughs et al., 2015a, 2015b) and experiencing sexual assault in adulthood (Balsam et al., 2011; Pantalone et al., 2015). However, there has been limited investigation of psychiatric challenges among trauma-exposed gay versus bisexual-identified men in the literature. Existing studies frequently collapse gay and bisexual men into one category (sexual minorities) and often compare them to a majority reference group (e.g., heterosexuals), which may mask important differences between sexual minority subgroups. Given the lack of research on trauma-exposed

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sexual minority men, especially bisexual men, it is important to examine potential differences in their mental health needs to inform the development of evidence-based treatments.

Childhood Sexual Abuse and Its Psychiatric Sequelae

Rates of childhood sexual abuse (CSA) are similar between gay- and bisexual-identified men, such that both are significantly elevated relative to heterosexual men. A recent nation-wide sample ($n = 2590$) estimated that 34.2% of MSM reported CSA (Bertolino et al., 2020), based on responses to questions adapted from the Adverse Childhood Experiences (ACE) assessment (Felitti et al., 1998), compared to estimates of approximately 5–8% of men in the general population (Finkelhor et al., 2013; Pereda et al., 2009) with a recent meta-analysis estimating the prevalence of CSA among gay and bisexual men to be 23.6% and 21.4%, respectively (Xu & Zheng, 2015). Literature indicates that sexual minority men with histories of forced childhood sexual experiences displayed higher levels of psychological distress, substance use, and HIV risk compared to those with histories of consensual- or no-sex in childhood (Arreola et al., 2008). In addition, history of CSA has been associated with increased odds of condomless anal sex and being HIV-positive (Bertolino et al., 2020) and has been identified as an important driver of the HIV disparities among sexual minority men (Mimiaga et al., 2009; O'Cleirigh et al., 2012).

Psychiatric and Substance Use Disparities

A common psychiatric outcome of CSA is the onset of posttraumatic stress disorder (PTSD), with approximately 30–50% of those with CSA histories experiencing PTSD and other mental health symptoms as adults (Hillberg et al., 2011; Myers et al., 2015). However, previous studies focused on whether the prevalence of PTSD differs between bisexual men compared to gay and heterosexual men have led to mixed results. One study using a representative U.S. sample found that gay as well as heterosexually-identified men reporting same-sex partners in their lifetime had a higher prevalence of PTSD than self-identified heterosexuals with no same-sex partners (Roberts et al., 2010). Other studies have found that bisexual individuals may have the same or lower prevalence of PTSD compared to gay or lesbian-identified individuals (Mustanski et al., 2010).

In addition to PTSD, evidence indicates that other sexual orientation-based psychiatric disparities exist. Some evidence suggests that clinically significant psychiatric symptoms are strongest for those who are bisexual compared to other sexual orientations (Semlyen et al., 2016). For example, evidence indicates that bisexual men report higher depressive symptomology and higher odds of self-harm and suicidality relative to gay men (Dyer et al., 2013; Marshal et al., 2011). Further, a recent meta-analysis determined that bisexual men and women reported the highest proportions of suicidal ideation or intent compared to both heterosexual- and gay-identified respondents (Salway et al., 2019). Another recent meta-analysis indicated that bisexual men and women had similar or higher rates of depression and anxiety compared to gay men and lesbian women and higher rates compared to heterosexuals (Ross et al., 2018). Findings from this study are similar to other meta-analytic (Plöderl & Tremblay, 2015; Semlyen et al., 2016) and review (Feinstein & Dyar, 2017) studies. Notably, these meta-analyses excluded studies involving populations where one might expect the mental health burden to be exaggerated (e.g., trauma-exposed populations). In sum, despite substantial evidence of sexual orientation-related disparities in mental health, especially among bisexual individuals, it remains unclear if these findings extend to trauma-exposed populations. Given the psychiatric sequelae of trauma, it is important to examine the extent to which gay versus bisexual trauma-exposed men differ in psychiatric diagnoses.

While sexual minority men have also been shown to report more substance use than heterosexual men, evidence indicating differences between bisexual and gay-identified men's substance use has been mixed. In a synthesis of the literature, Green and Feinstein (2012) concluded that bisexual men tend to report elevated substance use behaviors compared to gay and heterosexual men. For example, one analysis of national survey data from the Youth Risk Behavior Survey indicated that young men who have sex with both men and women were more likely to report cocaine use than young men who have sex exclusively with either men or women (Mustanski et al., 2014). However, in relation to alcohol dependence, while bisexual-identified men have been found to have higher rates of alcohol dependence compared to heterosexual-identified men, their rates were similar to gay-identified men (McCabe et al., 2009). Notably, when looking at bisexual behavior rather than identification, behaviorally bisexual men had higher rates of substance dependence relative to behaviorally gay men (McCabe et al., 2009).

Differences in drug use between gay- and bisexual-identified men differ by type of drug; however, these results are also mixed. In one study of older gay and bisexual men, bisexual men reported more cigarette, crack, cocaine, and heroin use compared to gay men, but less use of crystal methamphetamine, poppers (nitrate inhalants), and erectile dysfunction medications (Brennan-Ing et al., 2014). In an earlier study, bisexual men were found to use fewer club drugs (i.e., cocaine, ketamine, ecstasy, methamphetamine, and GHB) compared to gay men (Halkitis et al., 2009). Notably, differences in substance use by sexual orientation have been shown to emerge well before young adulthood (Corliss et al., 2010; Marshal et al., 2008). In adolescence, the odds of substance

use among sexual minority adolescents is nearly two times that of heterosexual adolescents and over three times when looking at bisexual adolescents specifically versus heterosexual adolescents (Marshal et al., 2008).

The predominant conceptual framework for understanding the psychiatric and substance use disparities experienced by sexual minority men is minority stress theory, which suggests that sexual minorities experience unique stress related to their stigmatized identities and that this stress contributes to mental health and substance use problems (Meyer, 2003). However, unlike gay men, some literature indicates that bisexual men experience minority stress from both heterosexual and gay communities, resulting in higher levels of minority stress among bisexual men (e.g., experiences of prejudice, stigma, and discrimination; Feinstein & Dyar, 2017; Meyer, 2003; Van Doan et al., 2019). Emerging literature indicates that minority stress may be especially complex for bisexual men, as well as bisexual women, as they may experience heterosexism from the heterosexual community as well as monosexism (the belief that one can or should only be attracted to one gender/sex) and binegativity (negative attitudes toward bisexuality) from both the heterosexual and gay communities (Dyar & Feinstein, 2018). Notably, existing literature examining the causes of the elevated rates of substance use among bisexual men compared to gay and heterosexual men has been mixed (Green & Feinstein, 2012).

Structural Disparities

While sexual orientation-related disparities exist in the realm of mental health and substance use, less research has focused on structural variables such as income and housing status. Data from three national surveys (i.e., the 2000 Census, the 2002 National Survey of Family Growth, and the 2003 and 2005 California Health Interview Surveys) suggest that same-sex couples are more likely to live in poverty than heterosexual married couples (Albelda et al., 2009). Additionally, data indicate that bisexual people are more likely to live in poverty and utilize government benefits (e.g., the Supplemental Nutrition Assistance Program [SNAP]) to supplement income or meet other subsistence needs relative to gay or lesbian individuals (Albelda et al., 2009; Badgett et al., 2013). Data from the Behavioral Risk Factor Surveillance System composed of over 10,000 sexual minority men and women found that socioeconomic disadvantage was a key contributor to health disparities between bisexual, heterosexual, and gay respondents (Gorman et al., 2015). Further, evidence suggests that the mental health differences we see as a function of sexual orientation are lessened as educational attainment rises (Barnes et al., 2014). Being socioeconomically or structurally disadvantaged represents an intersecting marginalized status that may be associated with greater psychiatric disparities (Hatzenbuehler et al., 2013).

Disparities experienced by bisexual individuals are further compounded by discrimination related to race, ethnicity, and other characteristics (Movement Advancement Project, 2016), as people of color are more likely to identify as bisexual (Gates & Newport, 2012). While there is a need to better understand the high rates of discrimination, poverty, and health disparities among bisexual people (Movement Advancement Project, BiNetUSA, & Bisexual Resource Center, 2014), there is a dearth of research that examines the prevalence of demographic and structural disadvantage as a function of sexual orientation, particularly comparing gay- versus bisexual-identified men with histories of trauma. This gap in the literature prevents us from fully understanding the psychiatric needs of gay versus bisexual-identified men with histories of CSA and how they may relate to demographic and structural disparities.

The Current Study

The present study is the first we are aware of to compare clinically assessed psychiatric diagnoses among gay- and bisexual-identified men who reported histories of childhood sexual abuse and recent sexual risk behaviors. Given the high rates of CSA among sexual minority men, identified mental health disparities between gay- and bisexual-identified men, and the lack of literature assessing these disparities in trauma-exposed samples, this study examined the demographic, structural, and psychiatric diagnostic differences between gay- and bisexual-identified men who have experienced CSA. By comparing differences in demographics, structural disadvantage, and psychiatric disorders between gay versus bisexual-identified men, we will offer a more nuanced and detailed view of the mental health and structural needs of sexual minority men who have experienced CSA. Finally, by accounting for demographic and structural variables related to disadvantage (e.g., race, education, income) in our analyses focused on psychiatric disorders, we will advance our understanding of differences between gay and bisexual men's mental health and substance use.

Method

Participants

Data from 290 HIV-negative men who have sex with men were collected as part of the baseline assessment from a multi-site randomized clinical trial in Boston, MA and Miami, FL from 2011 to 2016. Of the total sample, 263 participants identified as gay or bisexual and were included in the current analyses. Of the 27 participants who were not included, 7 (2.4%) identified as straight or heterosexual, 14 (4.8%) reported being "not sure," and 6 (2.1%) reported

"other." All participants reported recent sexual risk behavior and a history of CSA before age 17 (defined below). Participants were recruited through advertising and outreach to bars, clubs, cruising areas, and community venues in addition to a variety of social media sites. Participants were a volunteer sample and were compensated $50 for completion of the assessment measures. To protect individuals' privacy and to minimize stigma associated with endorsing a history of CSA, recruitment efforts were combined with other ongoing studies and health promotion initiatives.

Procedure

Prior to the completion of the baseline assessment, prospective participants were screened by trained clinical staff using a structured questionnaire. Enrollment criteria included: (1) male sex assigned at birth; (2) aged 18 or older; (3) self-reported history of sex with men (or men and women); (4) reported unwanted sexual contact before 13 years of age with an adult or person five years older, or unwanted sexual contact between 13–16 years of age with a person 10 years older (or any age with the threat of force or harm; Kilpatrick, 1992; Leserman, 2005; Leserman et al., 1997, 1998, 2006); (5) reported more than one episode of unprotected anal or vaginal intercourse within the past three months with someone other than primary, HIV-uninfected partner(s); and (6) HIV-uninfected as confirmed via rapid testing. Further, participants were excluded if they had a clinically significant mental health diagnosis that would interfere with study participation and would require treatment outside of what could be provided in the context of the study (e.g., uncontrolled bipolar disorder). However, those with substance use disorders could participate and were referred for substance treatment as needed.

All participants completed a comprehensive diagnostic baseline assessment that included HIV and other STI testing, a psychiatric evaluation, and computer-based psychosocial assessments. Given that men may be reluctant to disclose a history of CSA (Easton et al., 2014) and the substantial evidence indicating that participants are more likely to disclose sensitive information via computer questionnaire compared to a face-to-face interview, computer-based assessment was used to obtain data on sexual partners and activities as well as demographic and structural variables (Des Jarlais et al., 1999; Metzger et al., 2000; Millstein, 1987; Navaline et al., 1994; O'Reilly et al., 1994; Turner et al., 1998; Wilson et al., 1985). All procedures were approved by the IRB at Fenway Community Health Center.

Measures

Demographics

Participants reported their self-identified sexual orientation, age, race, ethnicity, educational attainment, income, insurance status, relationship status, and number of sexual partners in the past three months. Age was treated as a continuous variable. Consistent with U.S. Census categories, we disaggregated race into White, Black, and other (including American Indian/Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, and unknown or not-reported) categories for analyses. Ethnicity was an additional dichotomous variable: Hispanic versus non-Hispanic. Education was disaggregated into four categories based on distribution: some high school or high school diploma/GED, some college, college degree (B.A. or B.S.) or some graduate school, and graduate degree.

Structural Variables

Government Benefits. Participants self-reported whether they received all or part of their annual income from government-sponsored programs (i.e., welfare, social security, or disability). Those who reported receiving all or part of their income from these programs were coded as 1, and this was conceptualized as a structural barrier.

Unstable Housing. Participants responded to three questions adapted from previous work done with housing status and HIV risk (Aidala et al., 2005): (1) "In the last six months, have you been homeless? By homeless, we mean sleeping in a car, public place not intended for sleeping, homeless shelter, single room occupancy (SRO) or welfare hotel or motel"; (2) "In the last six months, have you been in temporary or transitional housing (by temporary or transitional, we mean temporarily doubled up with family or friends, temporarily in someone else's home, in a halfway house with no other address, in drug treatment, or in jail)"; and (3) "For the past six months, have you had secure, permanent housing in an apartment, house, or group quarters?" Based on their answers to these three questions, participants were categorized as stably or unstably housed (i.e., those who were categorized as stably housed were labeled as such and others were categorized as unstably housed, including those who reported being homeless).

Neighborhood Crime. Participants responded to four questions from the crime subscale of the Neighborhood Environment Walkability Scale (Saelens et al., 2003), which assesses perceptions of neighborhood crime and safety. Questions assessed the degree to which participants agreed with the following statements (on a 4-point scale; 1 = "strongly disagree to 4 = "strongly agree"): "There is a high crime rate

in my neighborhood"; "The crime rate in my neighborhood makes it unsafe to go on walks during the day"; "The crime rate in my neighborhood makes it unsafe to go on walks at night"; and "My neighborhood is safe enough so that I would let a 10-year-old boy walk around my block alone in the daytime" (reverse coded item). This scale has demonstrated good reliability and validity (Saelens et al., 2003; Cronbach's alpha = 0.78). This variable was dichotomized using a median split due to a moderate positive skew of these data.

Psychiatric Diagnoses

All psychiatric diagnoses, with the exception of posttraumatic stress disorder (PTSD), were assessed using the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998), a widely used diagnostic instrument to determine psychiatric disorders in clinical populations. Notably, current psychiatric disorders were assessed as well as history of past major depressive disorder consistent with timeframes indicated in the DSM-IV. We assessed DSM-IV criteria for abuse and dependence separately for stimulants, opioids, sedatives/hypnotics/anxiolytics, hallucinogens, inhalants, marijuana, and alcohol for a period of the past 12 months. We also calculated two composite substance use variables: any alcohol use disorder (i.e., abuse or dependence) and any substance use disorder (i.e., abuse or dependence of any substance other than alcohol). PTSD was assessed using the SCID-IV for DSM-IV (SCID; First et al., 1996). Both the MINI and the SCID were administered as interviews with clinical staff who were training in clinical psychology (i.e., advanced doctoral students, doctoral interns, or post-doctoral fellows).

Statistical Analyses

Descriptive statistics (e.g., means, standard deviations (SD), frequencies) were used to examine characteristics of the full sample as well as those who identified as gay versus bisexual. We then compared the demographic variables (age, race, ethnicity, education, income, type of insurance, and relationship status), structural variables, and diagnoses between participants who identified as gay versus bisexual using independent *t*-tests and chi-square tests. Finally, we conducted logistic regressions to assess differences in odds of diagnoses without and with covariates (race, education, and income). Potential covariates were identified a priori (i.e., age, race, ethnicity, education, and income), of which three were selected based on identified significant differences between gay and bisexual men. In addition to the odds ratios, effect sizes were quantified using phi coefficients for chi-square tests and Hedges *g* for *t* tests due to unequal sample sizes.

Results

Sample Descriptives

The analytic sample included 263 participants (199 gay-identified and 64 bisexual-identified) who were predominantly White (69.9%) and Black (21.3%). Twenty-eight percent identified as Hispanic, independent of race. Additional descriptive statistics (education, income, insurance status, and relationship status) are presented in Table 1. There were two demographic differences across the two sites: a higher proportion of the sample from Miami identified as Hispanic (60.6%) compared to Boston (9.5%) and a higher proportion of the sample from Boston reported receiving government sponsored income benefits (37.9%) compared to those from Miami (19.1%; OR = 0.39, $p = 0.002$, 95%CI = 0.21–0.71). There were no other significant demographic differences by site, including in proportion of gay- versus bisexual-identified men.

Comparisons of Gay and Bisexual Men

Sexual Behavior

We further characterized the sample by looking at recent sexual behavior between gay-identified and bisexual-identified participants. We did not identify any significant differences in the number of male sexual partners in the past three months between gay-identified participants ($M = 7.8$, $SD = 7.7$, range = 1–60) and bisexual-identified participants ($M = 6.3$, $SD = 8.2$, range = 1–50; $t(261) = 1.37$, $p = 0.172$, $g = 0.19$). In contrast, as expected, we identified a significant difference in the number of female sexual partners in the past three months between bisexual-identified participants ($M = 2.3$, $SD = 3.3$, range = 0–15) and gay-identified participants ($M = 0.02$, $SD = 0.2$, range = 0–2; $t(261) = -991$, $p < 0.001$, $g = 1.41$). Seventy-two percent of the bisexual-identified participants reported having sex with women in the past three months compared to only 1.5% of gay-identified participants.

Demographic Characteristics

When we compared gay versus bisexual-identified participants on demographic, structural, and behavioral variables (see Table 1), we identified several significant differences. While we did not find a significant difference in age, we did identify a significant difference in race. Specifically, among gay-identified participants 74.9% identified as White and 16.6% identified as Black, whereas among bisexual-identified participants 53.1% identified as White and 35.9% identified as Black, $\chi^2(2) = 12.12$, $p = 0.02$, $\phi = 0.22$. We did not find

Table 1 Sample Characteristics for N = 263 gay- and bisexual-identifying men with histories of childhood sexual abuse

Variable *N* = 263	Total *n* (%)	Gay-identified *n* (%) *n* = 199	Bi-identified *n* (%) *n* = 64	
Age (mean (SD))	38.0 (11.7)	37.6 (11.6)	39.7 (11.4)	$t = -1.26$ (260), $p = .207$, $g = .18$
Race				
White	183 (69.9)	149 (74.9)	34 (53.1)	$\chi^2(2, n = 263) = 12.12$, $p = .002$, $\phi = .22$
African American	56 (21.3)	33 (16.6)	23 (35.9)	
Other	24 (9.1)	17 (8.5)	7 (10.9)	
Ethnicity				
Hispanic	73 (27.9)	58 (29.1)	15 (23.8)	$\chi^2(1, n = 262) = 0.68$, $p = .410$, $\phi = -.05$
Education				
≤ High school or GED	63 (24.0)	32 (16.2)	31 (48.4)	$\chi^2(3, n = 262) = 33.30$, $p < .001$, $\phi = .36$
Some college	97 (37.0)	74 (37.4)	23 (35.9)	
College/some grad	66 (25.2)	61 (30.8)	5 (7.8)	
school	36 (13.7)	31 (15.7)	5 (7.8)	
Gr*a*duate degree				
Income				
≤ $10,000	72 (27.4)	44 (22.1)	28 (43.8)	$\chi^2(3, n = 263) = 12.69$, $p = .005$, $\phi = .22$
$10,001-$20,000	63 (24.0)	48 (24.1)	15 (23.4)	
$20,001-$40,000	51 (19.4)	43 (21.6)	8 (12.5)	
≥ $40,001	77 (29.3)	64 (32.2)	13 (20.3)	
= *Insurance*				
Private	106 (49.3)	93 (56.4)	13 (26.0)	$\chi^2(2, n = 215) = 14.18$, $p = .001$, $\phi = .26$
Public	60 (27.9)	40 (24.2)	20 (40.0)	
None	49 (22.8)	32 (19.4)	17 (34.0)	
Relationship Status				
Single	162 (61.6)	130 (68.1)	32 (50.0)	$\chi^2(2, n = 255) = 11.42$, $p = .003$, $\phi = .21$
In relationship[a]	67 (26.3)	48 (25.1)	19 (29.7)	
Separated or	26 (10.2)	13 (6.8)	13 (20.3)	
Divorced				
Government Benefits[b]	82 (31.2)	28.6%	39.1%	OR = 5.13 (1.75–15.07), $p = .003$
Unstable Housing	22 (8.4)	7.5%	10.9%	OR = 2.80 (0.93–8.42), $p = .067$
Neighborhood crime	44 (44.4)	42.0%	55.6%	OR = 1.73 (0.62–4.84), $p = .298$
Number of male sexual partners in the past 3 months (mean (SD); range)	7.5 (7.8); 1–60	7.8 (7.7); 1–60	6.3 (8.2); 1–50	$t = 1.37$ (261), $p = .172$, g = 0.19
Number of female sexual partners in the past 3 months (mean (SD); range)	0.59 (1.91); 0–15	0.02 (0.17); 0–2	2.34 (3.31); 0–15	$t = -9.91$ (261), $p < .001$, g = 1.41

[a]Married, domestic partnership, in committed relationship.

[b]Data on structural disadvantage (i.e., government benefits, unstable housing, neighborhood crime) were only collected from ($N = 108$) who returned for a supplemental interview

a significant difference in the proportion who identified as Hispanic. We also found a significant difference related to education, with gay-identified participants reporting higher levels of education than bisexual-identified participants. Specifically, 16.2% of the gay-identified participants compared to 48.4% of the bisexual-identified participants reported having less than or equal to a high school education, $\chi^2(3) = 33.30$, $p < 0.001$, $\phi = 0.36$. Additionally, we identified a significant difference in income, with 43.8% of bisexual-identified participants reporting ≤ $10,000 annual income compared to 22.1% of the gay-identified participants, $\chi^2(3) = 12.69$, $p = 0.005$, $\phi = 0.22$. Proportions of types of insurance also significantly differed between gay- and bisexual-identified participants ($\chi^2(2) = 14.18$, $p = 0.001$, $\phi = 0.26$), with more gay-identified participants reporting private insurance (56.4%) compared to bisexual-identified participants

(26.0%), and more bisexual-identified participants reporting public (40.0%) or no insurance (34.0%) compared to gay-identified participants (24.2% and 19.4%, respectively).

Structural Barriers

In terms of structural barriers, the proportion of bisexual men receiving income via government assistance (39.1%) was significantly greater than that of gay-identified participants (10.9%; OR = 5.13, 95% CI = 1.75–15.07, $p = 0.003$). The difference in unstable housing between bisexual-identified men (10.9%) and gay-identified men (7.5%) was not significant (OR = 2.80, 95%CI = 0.93–8.42, $p = 0.067$). We did not find a significant difference between gay- and bisexual-identified men in terms of neighborhood crime.

Psychiatric and Substance Use Diagnoses

Regarding clinically assessed psychiatric and substance use diagnoses, we identified relatively high rates of multiple diagnoses in the full sample (see Table 2). The proportion of the full sample that met criteria for a psychiatric disorder ranged from 6.0% for bipolar disorder to 58.9% for past major depressive disorder, and the proportion of the full sample that met criteria for a substance use disorder ranged from 2.7% for sedative use disorder to 31.9% or alcohol use disorder. We identified significant differences in the proportion of gay-identified versus bisexual-identified participants meeting criteria for bipolar disorder, OCD, alcohol use disorder, and any substance use disorder not including alcohol. However, these differences were no longer significant when race, education, and income were included as covariates. Specifically, in bivariate analysis, more bisexual-identified participants met criteria for bipolar disorder (11.3%) compared to gay-identified participants (4.2%; OR = 2.90; 95% CI: 1.01–8.39; $p = 0.049$). However, when race, education, and income were included as covariates, sexual orientation was no longer significantly associated with likelihood of meeting criteria for bipolar disorder (OR = 1.98; 95%CI: 0.59–6.61; $p = 0.267$). Additionally, in bivariate analysis, more bisexual-identified participants met criteria for OCD (19.7%) compared to gay-identified participants (9.9%; OR = 2.22, 95%CI: 1.01–4.99; $p = 0.048$). However, when the covariates were included, sexual orientation was no longer significantly associated with likelihood of meeting criteria for OCD (OR = 1.56; 95% CI: 0.64–3.77; $p = .325$). Finally, more bisexual-identified participants met criteria for alcohol use disorder (42.6%) and other substance use disorders (43.5%) compared to gay-identified participants (28.5% and 28.0%, respectively; OR = 1.86, 95% CI: 1.03–3.38; $p = 0.041$ and OR = 1.99, 95% CI: 1.10–3.59; $p = 0.023$, respectively). With the inclusion of race, education, and income as covariates, sexual orientation was no longer significantly associated with likelihood of meeting criteria for alcohol use disorder or other substance use disorder (OR = 1.54; 95% CI: 0.80–2.98; $p = 0.201$ and

Table 2 Comparisons between percentages of gay- vs. bisexual-identifying men meeting diagnostic criteria for psychiatric disorder with corresponding odds ratios derived from bivariate logistic

	Total	Gay ($n = 199$) (%)	Bisexual ($n = 64$) (%)	OR (95%CI)	p	Adjusted OR[b] (95% CI)	p
MDD (current)	78 (29.7)	29.5	34.4	0.80 (0.44–1.48)	.486	0.95 (0.49–1.87)	.886
MDD (past)	145 (58.9)	62.2	48.3	0.57 (0.31–1.03)	.060	1.34 (0.69–2.60)	.387
Dysthymia	21 (8.5)	7.4	11.9	1.68 (0.65–4.39)	.287	0.56 (0.18–1.57)	.254
Bipolar Disorder	15 (6.0)	4.2	11.3	2.90 (1.01–8.34)	.049	1.98 (0.59- 6.61)	.267
PTSD (current)	111 (42.2)	41.5	50.8	1.46 (0.82–2.60)	.200	1.04 (0.54–1.98)	.914
Panic Disorder	24 (9.1)	9.4	9.8	1.01 (0.46–2.21)	.975	0.90 (0.38–2.15)	.818
Social Phobia	47 (17.9)	9.9	11.3	1.24 (0.60–2.53)	.564	1.45 (0.65–3.25)	.367
OCD	31 (11.8)	9.9	19.7	2.22 (1.01–4.88)	.048	1.56 (0.64–3.77)	.325
GAD	70 (26.6)	27.2	29.5	1.11 (0.59–2.10)	.746	1.47 (0.73–2.98)	.282
Alcohol Use Disorder	81 (31.9)	28.5	42.6	1.86 (1.03–3.38)	.041	1.54 (0.80- 2.98)	.201
Any Substance Abuse/ Dependence[a]	57 (22.4)	28.0	43.5	1.99 (1.10–3.59)	.023	1.79 (0.93- 3.45)	.820
Stimulant Use Disorder	35 (13.3)	11.1	20.3	2.05 (0.97–4.36)	.062	2.34 (1.01- 5.45)	.049
Opiate Use Disorder	14 (5.3)	5.0	6.3	1.26 (0.38–4.16)	.705	1.36 (0.36–5.09)	.650
Marijuana Use Disorder	39 (14.8)	12.6	21.9	1.95 (0.94–4.03)	.072	1.45 (0.64–3.27)	.376
Sedative Use Disorder	7 (2.7)	3.5	0.0	0.00 (0.00–0.00)	.997	0.00 (0.00–0.00)	.997
Other Substance Use Disorder	15 (5.7)	5.5	6.3	1.14 (0.35–3.71)	.829	1.82 (0.49–6.75)	.371

[a]Not including alcohol.

[b]Adjusted for race, education, and income.

OR = 1.79; 95% CI: 0.93- 3.45; $p = 0.82$, respectively). Notably, with the introduction of race, education, and income as covariates, sexual orientation became significantly associated with stimulant use disorder (OR = 2.34; 95% CI: 1.01–5.45; $p = 0.049$), while the association with sexual orientation was non-significant in bivariate logistic regression (OR = 2.05; 95%CI: 0.97–4.36; $p = 0.062$).

Discussion

In the current study, we documented disparities in diagnoses of bipolar disorder, OCD, alcohol use disorder, and other substance use disorders affecting bisexual men relative to gay men with histories of CSA and reported recent sexual risk behavior. We also found significant differences in demographic and structural variables between gay and bisexual men. When race, education, and income were accounted for, the differences in psychiatric diagnoses were no longer significant. Demographically, bisexual men were more likely to identify as Black and less likely to identify as White compared to gay men; however, they did not differ in Hispanic ethnicity or age. Additionally, bisexual men reported greater structural disadvantage than gay men, as evidenced by higher prevalence of annual income below $10,000, greater use of government benefits to supplement income, lower educational attainment, and higher prevalence of being uninsured or using public insurance. While our results were generally consistent with prior evidence that bisexual men report greater mental health and substance use burden than gay men (Semlyen, King, Varney, & Hagger-Johnson, 2016; Green & Feinstein, 2012), in our sample, these differences appear to be attributable to racial and socioeconomic disparities.

Psychiatric and Substance Use Diagnoses

The proportions of psychiatric diagnoses for the gay and bisexual men in our sample were larger than what has been documented in the general population (i.e., in nationally representative samples), yet are in line with what would be expected for those who have experienced CSA (Hillberg et al., 2011; Myers et al., 2015). For example, the one-year prevalence of PTSD is 3.5–4.7% in the general population in the U.S. and Canada (Goldstein et al., 2016), an estimated 3.0–6.3% of men exposed to traumatic events experience PTSD in their lifetime (Wolff et al., 2014), and sexual minorities are estimated to be at 1.6–3.9 times greater risk for developing PTSD (Roberts et al., 2012). In contrast, in the current sample, 42.2% met diagnostic criteria for PTSD. This is consistent with existing literature indicating that approximately 30–50% of those with CSA histories experience PTSD as adults (Hillberg et al., 2011; Myers et al., 2015).

As noted, the bisexual men in our sample were more likely to meet criteria for bipolar disorder, OCD, alcohol use disorder, and other substance use disorders compared to the gay men. Of note, the proportions of sexual minority men in our sample meeting criteria for these disorders were elevated relative to their prevalence in the general population. For example, whereas 2.8% of men in the U.S. are estimated to have bipolar disorder (Kessler et al., 2005; Neria et al., 2013), which has been associated with histories of trauma (Neria et al., 2008), 4.2% of the gay men and 11.3% of the bisexual men in our sample met criteria for bipolar disorder. Further, an estimated 1.2% of the general population are thought to have OCD (Ruscio et al., 2008, 2010), with some evidence indicating those with histories of trauma have elevated likelihood of developing OCD (Cromer et al., 2007; Fontenelle et al., 2012; Gershuny et al., 2008). In our sample, 9.9% of the gay men and 19.7% of the bisexual men met criteria for OCD. Estimates of alcohol and other substance use disorders range substantially in the literature. Some estimate that 7.6%-12.0% of men in the general population have alcohol use disorders (Merikangas & McClair, 2012; SAMHSA, 2018), with an increased risk for those who have been exposed to trauma (Walsh et al., 2014). This contrasts sharply with the 28.5% of gay men and 42.6% of bisexual men who met criteria for an alcohol use disorder in our sample. Relatedly, estimates of other substance use disorders also range in the literature; however, some estimate approximately 2–3% of the general population meet criteria for illicit substance dependence (Merikangas & McClair, 2012), which again sharply contrasts with the 28.0% of the gay men and 43.5% of the bisexual men who met criteria for any other substance use disorder in our sample. These high proportions of participants meeting criteria for psychiatric diagnoses are consistent with the literature indicating the negative psychiatric impact of CSA into adulthood (Hillberg et al., 2011).

Although we did not assess stigma-related stress, it is important to acknowledge that the unique stress associated with the stigmatization of bisexuality may contribute to disparities in psychiatric disorders among bisexual men. Bisexual people face unique forms of stigma-related stress (e.g., beliefs that bisexuality is a transitional stage, stereotypes that bisexual people are confused about their sexual orientation), and these stressors are associated with mental health and substance use problems (see Feinstein & Dyar, 2017). Although speculative, the disparities that we observed in our study may be related, at least in part, to bisexual-specific stigma. However, it will be important for future research to test this hypothesis. In regard to OCD in particular, given that the difference between gay and bisexual men became non-significant after adjusting for race, education, and income, it is possible that the initial difference we observed may reflect

racial and socioeconomic disparities in access to OCD treatment rather than sexual orientation (Williams et al., 2017a, 2017b).

Racial and Structural Differences

The racial differences identified in our sample are consistent with the extant literature. An early review suggested that Black men are more likely than men of other races/ethnicities to identify as bisexual or to be bisexually active (Millett et al., 2005). While more work is needed to understand these differences, some have suggested that the higher endorsement of bisexual compared to gay identity among Black men may be indicative of Black men being less likely to disclose their homosexual sexual orientation (Millett et al., 2005). Others have suggested that Black bisexual-identified men may be less likely to disclose their sexuality due to the complex competing demands of navigating ties to racial and cultural communities, which favor heterosexuality, and being alienated by racial prejudice from LGBT communities (Rosario et al., 2004).

The bisexual men in our sample were also more likely to live below poverty level and be dependent on government assistance for income and health insurance, which may contribute to the higher likelihood of experiencing psychiatric diagnoses. Evidence indicates that those living in poverty often experience structural violence, which refers to the ways in which the economic and political landscape of society can systematically and covertly cause physical harm and emotional distress to vulnerable individuals (DeVerteuil, 2015; Farmer, 2004). Discrimination at the structural level, such as structural violence, has been shown to negatively influence psychiatric outcomes in sexual minority individuals (Hatzenbuehler et al., 2010). Amendments to reduce structural discrimination have yielded decreases in health problems in sexual minorities (Hatzenbuehler et al., 2013), which may indicate that interventions to reduce poverty and the need for government assistance may improve the mental health of sexual minorities, including bisexual-identified men.

Limitations

The current findings should be considered in light of several limitations. First, as only a quarter of the sample (n = 64) identified as bisexual, with the rest identifying as gay (n = 199), we may have been underpowered to detect some significant differences. Furthermore, we did not have a heterosexual comparison group, therefore, we were unable to examine disparities between gay/bisexual and heterosexual men. That said, previous studies have examined such disparities (Bostwick et al., 2010; Chaudhry & Reisner, 2019; Kerridge et al., 2017; McCabe et al., 2009), and our goal was to examine differences between gay and bisexual men. Relatedly, existing epidemiological studies use varying methods to assess psychiatric disorders (e.g., Goldstein et al., 2016), some of which differ from the clinical assessments conducted in this study. In addition, the results are not generalizable beyond sexual minority men with histories of CSA. As all participants in this sample reported experiencing CSA, the prevalence of psychiatric disorders was likely elevated compared to a sample of gay and bisexual men who had not experienced CSA. Relatedly, our sample only included sexual minority cisgender men, and did not include transgender people despite rates of abuse among transgender individuals potentially being even higher than that of sexual minority cisgender men (Shipherd et al., 2011). Additionally, men with mental health diagnoses thought to interfere with study participation were excluded from the study (e.g., untreated bipolar disorder or psychosis), limiting the generalizability to those without untreated severe mental illness, potentially resulting in lower rates of psychiatric diagnoses.

Implications

Our results stress the importance of providing culturally competent mental health care for gay and bisexual men (Boroughs et al., 2015a; Mayer et al., 2008). Given emerging evidence that bisexual people continue to report worse mental health outcomes than gay and lesbian people even after receiving treatment (Beard et al., 2017), there is a clear need to understand how to best address the needs of bisexual people. Efficacious and evidence-based treatments interventions to treat mood, anxiety, and trauma-related disorders have been adapted for sexual minority men (Hart et al., 2020; Mimiaga et al., 2019; O'Cleirigh et al., 2019), some of which have explicitly focused on addressing minority stress by promoting adaptive reactions to stigma, drawing on one's resilience as a gay or bisexual man, and learning strategies for reducing internalized stigma and rejection sensitivity (Pachankis, 2014). However, it remains unclear if these interventions are efficacious for use with bisexual people in particular (Feinstein et al., 2019).

Recently, Israel et al. (2019) developed an online intervention to reduce internalized binegativity by guiding participants to re-evaluate and challenge negative stereotypes about bisexuality, to externalize negative messages they may have received about bisexuality, and to adopt affirming attitudes toward bisexuality. Compared to participants in the control condition, participants in the intervention condition reported lower internalized and anticipated binegativity as well as higher identity affirmation and positive affect. Given that minority stress is associated with negative health outcomes among bisexual individuals (Feinstein & Dyar, 2017), reducing internalized and anticipated binegativity may subsequently improve health. Notably, even with efficacious mental health treatments, discrimination and unmet structural

needs can limit treatment success. Thus, it is important to address discrimination and structural barriers at the individual level (e.g., increasing access to culturally competent providers and resources for food, housing, and insurance) and the societal level (e.g., working to reduce stigma and change discriminatory laws).

Conclusions

Our results provide support for previously identified disparities in psychiatric diagnoses among bisexual men relative to gay men, which in this sample were accounted for by racial and socioeconomic differences. Specifically, we found that bisexual men were more likely to be Black, have a high school education or less, have an annual income below poverty level, and to be reliant on government assistance for income and healthcare. This study emphasizes how demographic and structural differences interact with sexual orientation in perpetuating mental health and substance use disparities. Further, these results emphasize the importance of culturally competent comprehensive care for gay- as well as bisexual-identified individuals that consider intersecting identities. Future studies should continue to investigate structural and psychiatric disparities among gay and bisexual men with histories of trauma as well as these challenges among other minoritized populations (e.g., sexual minority women, transgender individuals).

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Declarations

Conflict of interest The authors declare their is no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of Fenway Health, Massachusetts General Hospital, and the University of Miami and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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