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Sexual Orientation Disparities in Substance Misuse: The Role of Childhood Abuse and Intimate Partner Violence Among Patients in Care at an Urban Community Health Center

Sari L Reisner^{1,2}, Kathryn L Falb³, Aimee Van Wagenen¹, Chris Grasso¹, and Judith Bradford¹

¹The Fenway Institute, Fenway Health, Boston, Massachusetts, USA

²Department of Society, Human Development, and Health, Harvard School of Public Health, Boston, Massachusetts, USA

³Chronic Disease Epidemiology, Yale School of Public Health, New Haven, Connecticut, USA

Abstract

This study examined disparities in lifetime substance misuse by sexual orientation among 2,653 patients engaged in care at an urban community health center in Boston, MA, as well as the potential mediating roles of childhood abuse <age 15 (CA) and intimate partner violence (IPV). Violence indicators were highly associated with substance misuse, as was identifying as a sexual minority compared to heterosexual. CA and IPV experiences partly explained disparities in substance abuse by sexual orientation with differences seen by sex. Clinicians should assess history of CA and IPV among sexual minorities presenting with a history of substance abuse disorders. The study's limitations are noted.

Keywords

Substance abuse; violence; sexual orientation; health disparities

Introduction

Substance abuse¹ represents a serious public health issue in the United States, with approximately 1 in 13 (7.7%) and 1 in 6 (17.8%) of adults reporting a lifetime problem abusing drugs (Compton, Thomas, Stinson, & Grant, 2007) or alcohol, respectively (Hasin, Stinson, Ogburn, & Grant, 2007). The annual economic cost of substance use has been estimated at \$149.2 billion for alcohol and \$18.7 billion for illicit drugs (National Center on Addiction and Substance Abuse at Columbia University, 2009). Families and communities

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The Fenway Institute, Fenway Health, Boston, MA 02215, USA; sreisner@fenwayhealth.org.

Contributors: Sari L. Reisner conceptualized the data analytic project and research hypotheses, conducted the data analysis, and drafted the manuscript. Kathryn L. Falb provided input on the research hypotheses and the statistical analyses, interpreted findings, and drafted the manuscript. Aimee Van Wagenen managed the literature searches and drafted the manuscript. Chris Grasso prepared the de-identified database for analysis. Judith Bradford designed the quality improvement survey project and protocol, monitored implementation of the study, and reported findings to management. All authors contributed to and have approved the final manuscript.

Declaration of Interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

¹The journal's style utilizes the category *substance abuse* as a diagnostic category. Substances are used or misused; living organisms are and can be *abused*. Editor's note.

bear additional economic costs, including healthcare and substance user treatment expenditures, the lost or impaired productivity of substance users, and the unquantifiable human costs in pain and suffering.

Substantial disparities in substance misuse have been documented by sexual orientation (Institute of Medicine [IOM], 2011). Sexual minorities, including lesbian, gay, bisexual, and other nonheterosexual people, have higher rates of lifetime substance misuse and dependence than heterosexuals (Cochran & Mays, 2000; Drabble, Midanik, & Trocki, 2005; Gilman et al., 2001; McCabe, Hughes, Bostwick, West, & Boyd, 2009). Previous research has drawn upon minority stress theories to understand increased rates of substance use and misuse in lesbian, gay, bisexual (LGB) communities, attributing elevated rates to added stressors that come with membership in a stigmatized minority group (e.g., exposure to violence and victimization across development, experiences of rejection/discrimination, internalized homophobia, and felt stigma or the constant expectation that one will be rejected/discriminated against) (Herek, Gillis, & Cogan, 2009; Meyer, 2003). Social stress theories on racial and economic health disparities discuss processes of “stress proliferation” (Pearlin, Schieman, Fazio, & Meersman, 2005), whereby eventful and/or chronic stressors give rise to and exacerbate other stressors experienced across the life course. This social stress perspective assumes that the relationship between status (i.e., a sexual orientation identity) and health inequalities (i.e., substance misuse) is mediated by variations in exposure to health-related stressors that occur during developmentally-specific periods (Pearlin et al., 2005). For example, the adverse effects of childhood stressors may be compounded by sexual minority specific stressors experienced in adolescence and young adulthood. Few studies to date have tested mechanisms which may account for disparities in substance use by sexual orientation (IOM, 2011). Empirical examination of mediating pathways—including exposure to childhood stress and subsequent revictimization—that may lead to increased risk² of adult substance misuse is urgently needed in sexual minority communities and has implications public health prevention and intervention efforts.

Studies have shown that experiences of violence victimization in childhood and adulthood are each positively associated with substance misuse (Bensley, Van Eenwyk, & Wynkoop Simmons, 2003; Coker et al., 2002; Kendler et al., 2000; Roberts, Fuemmeler, McClernon, & Beckham, 2008). Some have argued that childhood adversity, including physical and sexual abuse, sets in motion a cycle of subsequent revictimization and a host of other psychological and physical health consequences, including substance misuse (Noll, 2005; Polusny & Follette, 1995; Whiffen & Macintosh, 2005). Evidence supports a life course framework to explain how early experiences of victimization in childhood or adolescence influence long-term trajectories for future victimization and adult health outcomes (Macmillan, 2001; Pearlin et al., 2005). In this view, abuse in childhood is not experienced as a single harm, but instead triggers a cascade of harms during critical periods of cognitive, affective, and physical development. The result is “toxic sequelae”—a complex set of physical and mental health co-morbidities that reverberate across development (Fullilove, 2009).

²The reader is reminded that the concepts of “risk factors”, as well as “protective factors”, are often noted in the literature, without adequately noting their dimensions (linear, nonlinear; rates of development; anchoring or integration, cessation, etc.), their “demands”, the critical necessary conditions (endogenously as well as exogenously; from a micro to a meso to a macro level) which are necessary for either of them to operate (begin, continue, become anchored and integrate, change as de facto realities change, cease, etc.) or not to and whether their underpinnings are theory-driven, empirically-based, individual and/or systemic stakeholder-bound, based upon “principles of faith”, historical observation, precedents and traditions that accumulate over time, conventional wisdom, perceptual and judgmental constraints, “transient public opinion.” This is necessary to consider and to clarify if these term are not to remain as yet additional shibboleth in a field of many stereotypes, tradition-driven activities, “principles of faith” and stakeholder objectives.

Editor's note.

Childhood abuse (CA) is strongly associated with many adverse sequelae in adulthood, including psychiatric disorders (Molnar, Buka, & Kessler, 2001), suicide (Bebbington et al., 2009), worse physical functioning (Talbot et al., 2009), sexual dysfunction (Loeb et al., 2002), and HIV infection (Reisner, Falb, & Mimiaga, 2011). CA is also highly associated with subsequent violence, including re-victimization and experiences of intimate partner violence (IPV) (Briere & Elliott, 2003; Cannon, Bonomi, Anderson, Rivara, & Thompson, 2010; Daigneault, Hébert, & McDuff, 2009; Polusny & Follette, 1995; Welles, Corbin, Rich, Reed, & Raj, 2011), which have independently been associated with increased risk of substance abuse (Rees et al., 2011; Silverman, Raj, Mucci, & Hathaway, 2001).

Beginning in childhood and throughout adulthood, sexual minorities experience alarmingly high rates of victimization from multiple sources (Balsam, Rothblum, & Beauchaine, 2005; Friedman et al., 2011; Roberts, Austin, Corliss, Vander Morris, & Koenen, 2010; Rothman, Exner, & Baughman, 2011). In a large, longitudinal cohort study, 30% of lesbians and 24% of bisexual women reported physical abuse victimization and 19% of lesbians and 20% of bisexual women reported sexual abuse occurring in childhood and adolescence (Austin et al., 2008). In a telephone probability sample of urban men who have sex with men, one-fifth reported childhood sexual abuse (Paul, Catania, Pollack, & Stall, 2001). Several studies have documented sexual orientation disparities in rates of CA (Austin et al., 2008; Balsam et al., 2005; Corliss, Cochran, & Mays, 2002; A. L. Roberts et al., 2010; Stoddard, Dibble, & Fineman, 2009; Tjaden, Thoennes, & Allison, 1999).

Sexual minorities also experience high rates of victimization within intimate relationships. Studies document sexual orientation disparities in IPV (Balsam et al., 2005; Tjaden et al., 1999; Tjaden & Thoennes, 2000). Previous research has drawn upon minority social stress theories to understand the increased risk of IPV among LGB people (Balsam et al., 2005). Others have posited a disempowerment theory in which same-sex partners who feel inadequate in public contexts compensate by asserting power and control over their partners, which can escalate to IPV (McKenry, Serovich, Mason, & Mosack, 2006). In addition, and consistent with minority stress theories (Meyer, 2003), homophobia from internal or societal sources may place additional stressors on the relationship which may lead to increased risk of conflict. Same-sex partners may also feel pressure to subscribe to masculine-feminine roles within relationships whereby one person is more dominant than the other, reflecting broader societal gender norms, which could lead to increased risk of violence (Gillum & Difulvio, 2012).

While high rates of victimization in childhood and adulthood have been well documented in sexual minority populations, there has been less consideration of whether these violence pathways vary between sexual minorities and heterosexuals, including whether differences in these exposures might account for sexual orientation disparities in substance abuse. A recent study showed a relationship between childhood sexual abuse and IPV among sexual minority men (Welles et al., 2011) and others have examined the relationship between CA and HIV infection and risk-taking behavior among sexual minority men (Arreola, Neilands, Pollack, Paul, & Catania, 2008; Catania et al., 2008; Mimiaga et al., 2009; Stall et al., 2003). A longitudinal, study of lesbians showed that, consistent with the patterns in heterosexual women, childhood sexual abuse in lesbians is associated with a heightened risk of lifetime alcohol abuse (Hughes, Johnson, Wilsnack, & Szalacha, 2007). However, there appears to be considerable variation across sexual orientation subgroups, as well as by sex, in the association between types of victimization and substance use (Hughes, McCabe, Wilsnack, West, & Boyd, 2010; Hughes, Szalacha et al., 2010). A study examining lesbian and bisexual women, found that CA mediated the excess tobacco and alcohol use in adolescence that was observed relative to heterosexual women (Jun et al., 2010).

Common weaknesses of previous studies are samples that consist of sexual minorities only, which limits investigation to within group differences. Such studies can demonstrate, for example, that LGBs who experience CA are more likely to experience revictimization compared to LGBs who did not experience CA. Without a heterosexual comparison group, studies do not allow testing of between-group differences, which are essential for understanding mental health disparities by sexual orientation (Schwartz & Meyer, 2010). Another common weakness of previous research is that studies lump all sexual minority people together and compare them to heterosexual people (e.g., sexual minority versus not sexual minority) (IOM, 2011). The current study captures gay/lesbian, bisexual, and other nonheterosexual sexual orientation identity which allows for more nuanced examination of sexual orientation subgroup differences.

Guided by a life course framework (Pearlin et al., 2005), the aims of this study were threefold: (1) document disparities in substance abuse by sexual orientation identity in a sample of community health center patients; (2) examine CA and IPV victimization in relation to substance abuse; (3) test whether CA and IPV may account for disparities in lifetime history of substance abuse by sexual orientation. Following minority social stress theory, we hypothesized that individuals with a sexual minority orientation would have higher odds of lifetime substance abuse compared to heterosexuals. We also anticipated that CA would be positively associated with substance abuse, as well as with IPV, and that these violence indicators would partially account for disparities in substance abuse by sexual orientation (see Figure 1).

Methods

Participants and Procedures

The Community Health Center Core Data Project was a survey of patients engaged in medical care at Fenway Community Health Center (FCHC) in Boston, Massachusetts from 2001–2002 and was initially conceived as a quality improvement initiative to inform FCHC's practice and improve patient care. During a 12-month period, all patients were invited at intake to complete a self-report, paper-pencil one-page questionnaire. At intake, a client services representative invited patients to voluntarily complete an anonymous survey to help FCHC improve programming and clinical care. The survey was designed with input from FCHC providers to collect information about experiences and health concerns believed to be important for sexual and gender minorities who make up a large proportion of FCHC patients (Mayer, Mimiaga, VanDerwarker, Goldhammer, & Bradford, 2007). A total of 3,103 patients completed the survey (age range 18 to 71 years old, mean age = 31.7; 65.3% male; 77.5% White non-Hispanic; 45.6% gay/lesbian, 42.6% heterosexual, 5.3% bisexual, 6.5% other nonheterosexual).

The study team consulted with the Manager of Research Compliance at FCHC to determine whether the study was eligible for IRB review. As the objective of the project was to improve clinical care and not contribute to generalizable knowledge, the project was determined to be a quality improvement activity and not research (Department of Health Education and Welfare, 1979; National Bioethics Advisory Commission, 2001). The present study used de-identified data, as defined by the Privacy Rule (U.S. Department of Health and Human Services (DHHS), 2002), previously collected data from the Core Data Project. The de-identified data set did not directly or indirectly contain identifiable information and as such this study was determined to be research not involving human subjects, and therefore not eligible for IRB review.

Measures

Outcome: Lifetime Substance Abuse—Patients were asked about lifetime substance abuse history using a single, binary (yes/no) screener of problematic substance abuse: “In your lifetime, have you ever felt you had a problem with substance use?” No prior psychometric information was available for this item. We assessed the initial validity using a binary indicator of any lifetime substance use (36.2% of the sample reported ever using one or more of the following: alcohol, cocaine, heroin, injection drug use, or other recreational drugs). Convergent validity of the lifetime substance abuse outcome was supported by the strong positive association with participant report of any lifetime substance use (OR = 4.46; 95% CI = 3.60, 5.52; $p < .0001$). Using the dichotomous measure of any lifetime substance use, the sensitivity of the item was 65.8% and the specificity was 69.9%. The Kappa (measure of agreement) was fair ($K = 0.25$; 95% CL = 0.21, 0.28; $p < .0001$) (Cohen, 1968).

Social Disparities: Sexual Orientation

Sexual Orientation: Sexual orientation was assessed using a single item (Sexual Minority Assessment Research Team (SMART), 2009). Response options were: homosexual (gay/lesbian), bisexual, heterosexual (straight), not sure/undecided, and prefer not to say. Sexual orientation was categorized as gay/lesbian, bisexual, other nonheterosexual orientation, or heterosexual.

Mediators: CA and IPV

Childhood Abuse (CA): CA <age 15 was assessed with a binary, single item question: “Were you ever abused as a child (under 15 years old)?” This item is similar to other instruments used to screen for abuse in clinical settings (Basile, Hertz, & Back, 2007). Because this item asked about experiences of CA >age 15, this exposure was assumed to occur temporally prior to IPV and substance abuse items.

Intimate Partner Violence (IPV): A single, binary (yes/no) screening item captured IPV: “Have you ever been slapped, punched, kicked, beaten up, or otherwise physically or sexually hurt by your spouse (or former spouse), a boyfriend/girlfriend, or some other intimate partner?” While there are few brief IPV screening tools with established psychometric properties (Rabin, Jennings, Campbell, & Bair-Merritt, 2009), this single-item measure is similar to other screening instruments commonly used to assess IPV in clinical settings (Basile et al., 2007; McFarlane, Parker, Soeken, & Bullock, 1992).

Covariates—Covariates included age, sex, race/ethnicity, and educational attainment. Age was a continuous measure and calculated from year of birth in 2001. Patients were asked to indicate their sex as male, female, or transgender. Sex was categorized as male/female. Patients who indicated they self-identified as transgender were excluded from analyses due to small sample size ($N = 36$). Race was coded as White (non-Hispanic), Black (non-Hispanic), Latino/Hispanic, and other race/ethnicity. Education was coded as low (high school diploma/GED or less), moderate (some college), or high (college degree or postgraduate/professional degree).

Statistical Analyses

Data Analytic Sample—SAS® 9.2 was used to analyze data, where statistical significance was determined at the alpha 0.05 level. The data analytic sample consisted of 2,653 nontransgender participants (85.5% of original survey sample) who had complete data on all variables included in the analysis. An analysis of missing data did not find significant differences by variables included in the data analysis. Missingness was assumed to be missing at random (Allison, 2001).

Stratification by Sex—Sex differences in CA, IPV, and substance abuse were examined. In multivariable models adjusted for age, race/ethnicity, sexual orientation, and educational attainment (models not tabled), female patients had an increased odds of CA (aOR = 1.33; 95% CI = 1.06, 1.67; $p = .013$) and IPV (aOR = 2.17; 95% CI = 1.66, 2.85; $p < .0001$) compared to male patients. No significant sex differences were found in lifetime substance abuse (aOR = 0.93; 95% CI = 0.72, 1.19; $p = .55$). Moderation by sex was found in the relation between IPV and substance abuse (female $\times$ IPV; $p = .02$), but not found for the relation between CA and substance abuse (female $\times$ CA; $p = .79$). The relation between IPV and substance abuse was stronger among females (aOR = 5.74; 95% CI = 3.54, 9.29; $p < .0001$) than it was among males (aOR = 3.23; 95% CI = 2.35, 4.44; $p < .0001$). Given these initial findings, and prior longitudinal research demonstrating significant sex differences in substance use (Corliss, Rosario, Wypij, Fisher, & Austin, 2008; Corliss et al., 2010), all subsequent analyses are presented for male ($N = 1,777$) and female ($N = 876$) patients separately.

Multivariable Models—Sex-stratified bivariate logistic regression models were fit to identify the variables that were significantly associated with a lifetime history of substance abuse, including potential confounding variables. Multivariable logistic regression models stratified by sex were then fit to test mediational hypotheses. Model 1 regressed substance abuse history (yes/no) on sexual orientation. Model 2 regressed substance abuse history (yes/no) on CA. Model 3 regressed substance abuse history (yes/no) on IPV. Model 4 regressed substance abuse history (yes/no) on CA and IPV. All models included sexual orientation, and were controlled for age, race/ethnicity, and educational attainment. A SAS macro (Hertzmark, Pazaris, & Spiegelman, 2009) was used to quantify mediational effects (Percent of Exposure Effect, PEE; synonymous with a statistical test of indirect effects) and compare the estimates between models with and without mediators (Lin, Fleming, & De Gruttola, 1997).

Results

The sample characteristics are presented in Table 1 ($N = 2,653$), stratified by sex as well as by sexual orientation.

Substance Use, CA, and IPV By Sex

Overall, 17.1% of the sample reported a history of substance misuse. Nearly one in five patients (19.9%) reported having experienced CA <age 15 and over one in 10 patients (12.9%) reported IPV. A higher proportion of patients who were abused in childhood reported IPV, compared to patients who had not experienced CA (31.8% vs. 8.2%; $p < .0001$). Among males, 20.3% reported CA and among females 19.1% reported CA. IPV was reported by 12.2% of males and 14.3% of females.

Among males, having a sexual minority orientation was significantly associated with increased odds of CA (Model 1A) and IPV (Model 2A) (see Table 2). In addition, among all male patients who reported CA had 4.49 times the odds of experiencing IPV compared to those that did not experience such abuse (Model 2B). Among females, having a lesbian or bisexual sexual orientation was each associated with an increased odds of CA relative to heterosexuals (Model 1A). There were no differences in IPV by sexual orientation (Model 2A). Among all female patients, those who reported CA had 3.63 times the odds of IPV compared to those who did not report such early life abuse (Model 2B).

Disparities by Sexual Orientation

Table 3 (males) and Table 4 (females) present multivariable models treating substance use as an outcome. As anticipated, in Table 3 Model 1A, among males, identifying as gay compared to heterosexual was associated with an increased odds of substance misuse (aOR = 1.72; $p < .05$) when treating substance misuse as an outcome. For females, identifying as lesbian or bisexual, compared to heterosexual, was associated with an increased odds of substance history (Table 4 Model 1B; aOR = 2.24; $p < .05$).

Explanatory Models: CA and IPV

Sex-stratified multivariable models assessing the role of CA and IPV in substance misuse are presented in Table 3 (Models 2A–4A for males) and Table 4 (Models 2B–4B for females). Figure 2 graphically presents the fitted models for males and Figure 3 for females. Table 5 quantifies mediational effects and shows results from tests of indirect effects.

Childhood Abuse—Among males, in Table 3 Model 2A, CA was added to Model 1 and was found to be highly associated with having a substance misuse history (aOR = 3.20; $p < .0001$). Evidence of mediation was seen such that the association of being gay vs. heterosexual and substance misuse was attenuated when CA was added to the model (aOR = 1.72, $p = .0009$ in Model 1A and aOR = 1.45, $p = .03$ in Model 2A). As shown in Table 5, CA accounted for approximately one-third of the relation between being gay vs. heterosexual and substance use (PEE = 33.58%; $p = .004$). For females, in Model 2A, when CA was added to the model, CA was highly associated with lifetime substance misuse, slightly attenuated the coefficient for lesbian women (aOR = 2.24, $p = .002$ in Model 1B and aOR = 2.09, $p = .005$ in Model 2B), and rendered nonsignificant the substance misuse disparity for bisexual women (aOR = 2.29, $p = .03$ in Model 1B and aOR = 1.92, $p = .10$ in Model 2B). However, as shown in Table 5, this indirect effect did not reach statistical significance at the alpha 0.05 level.

Intimate Partner Violence—Table 3 Model 3A and Table 4 Model 3B regressed substance misuse on IPV. IPV was highly associated with substance misuse history for both males and females. Evidence of mediation was supported for males, with approximately one-third of the sexual-orientation substance misuse disparity explained by IPV (PEE = 38.91%; $p = .009$). This pathway was not supported for female patients.

Childhood Abuse and Intimate Partner Violence—Table 3 Model 4A (males) and Table 4 Model 4B added both CA and being hurt by a partner to the regression model. Evidence of mediation was seen for males (Table 5) such that CA and IPV jointly explained 57.94% of the sexual-orientation disparity in lifetime substance misuse. In addition, the relationship between CA and substance misuse history was partially accounted for with the addition of revictimization in the form of subsequent experience of IPV (CA coefficient reduced from aOR = 3.20 in Model 2A to aOR = 2.68 in Model 4A; see Table 5 PEE = 14.99; $p = .0002$). There was also evidence that CA mediated the relation between sexual orientation and revictimization; between 13%–25% ($p < .05$) of the sexual orientation and IPV association was accounted for by CA experiences.

There was no similar evidence of mediation for female patients by sexual orientation. However, as with males, IPV was a significant mediator of the relation between CA and substance misuse for all females (PEE = 36.80%; $p = .02$).

Discussion

The present study documented that nearly one in five urban community health center patients engaged in care had a history of substance misuse. Consistent with previous studies, disparities in substance misuse histories were found by sexual orientation that varied across sexual minority subgroups (Cochran & Mays, 2000; Drabble et al., 2005; Gilman et al., 2001; McCabe et al., 2009). Gay-identified male patients had 1.7 times the odds of having a history of substance misuse, adjusting for age, race/ethnicity, and educational attainment, relative to their heterosexual counterparts. Among female patients, lesbian-identified women had 2.2 times the odds and bisexual women had 2.3 times the odds of lifetime substance misuse compared to heterosexual female patients. A higher proportion of bisexual male patients and those with other nonheterosexual identity reported substance misuse than heterosexual patients, but these differences were not statistically significant after accounting for covariates.

Our finding that male bisexual patients did not have statically significant differences in substance misuse history compared to male heterosexuals is inconsistent with previous research in which a pattern of higher levels of problematic substance use among bisexuals has emerged (Green & Feinstein, 2011). Our analyses were exceptionally well-powered for lesbian/gay patients (power > 0.90 for both males and females). However, the low achieved power of analyses for bisexual males ($n = 76$; power = 0.40) may have masked our ability to detect differences among this group. We had a similarly small group of bisexual females ($n = 69$; power = 0.55); however, the pattern of elevated risk of substance use observed in previous research has been consistently much stronger in women than in men (McCabe, Hughes, Bostwick, & Boyd, 2005; McCabe et al., 2009) (e.g., stronger effect of bisexual identity on substance misuse for women than men).

Male sexual minorities had significantly higher odds of reporting CA and IPV than their heterosexual counterparts, consistent with other research (Balsam et al., 2005; Corliss et al., 2002; Rothman et al., 2011; Tjaden & Thoennes, 2000). However, we found that among female patients, lesbian and bisexual women had elevated rates of CA compared to heterosexuals, but not significantly higher rates of IPV. This finding is inconsistent with previous research that lesbian or bisexual women may be at increased risk for IPV victimization (Balsam et al., 2005). It is possible that lesbian and bisexual women in our sample differ than those recruited in previous research. For example, we had no data on whether IPV was experienced in same- or opposite-sex relationships. If the latter were the case, and our patient population was less likely to report ever being in an opposite-sex relationship than other studies, then our findings would not replicate those from a sample with a higher proportion of females reporting opposite-sex relationships (i.e., higher likelihood of exposure to IPV). Additional studies are needed to replicate findings and examine IPV among lesbian and bisexual women.

Our analyses also showed a strong association between experiences of CA and IPV victimization such that male patients who experienced such were over four times more likely to report IPV. Independent of such CA, male sexual minorities who were gay, bisexual, or other nonheterosexual orientations were statistically significantly more likely to report IPV victimization compared to heterosexuals. For female patients, such a pattern was not evident. Although CA was associated with almost four times higher odds of IPV, sexual orientation differences did not emerge independently of CA.

In addition, our social stress hypothesis that CA and IPV were explanatory factors in the relation between being gay/lesbian and substance misuse was supported among male patients, providing evidence of a pathway that may produce disparities by sexual orientation

for a subset of sexual minority men. However, less evidence was found in support of this pathway for females. These analyses document that CA and IPV are important correlates of substance misuse among sexual minority men and suggest that clinical treatment of substance use with this population may benefit from addressing these additional factors. Despite the clear need for substance user treatment³ services which are culturally sensitive to the specific needs of sexual minorities (Substance Abuse and Mental Health Services Administration, 2001), few such specialized services exist (Cochran, Peavy, & Robohm, 2007). Published reviews of the specialized substance user treatment services that do exist for sexual minorities do not address CA or IPV, suggesting that issues of victimization are not being systematically addressed (Cochran et al., 2007; Green & Feinstein, 2011). In addition, there is a clear relationship of CA and subsequent revictimization and interventions targeting individuals who experienced such abuse to promote healthy relationships may also reduce the burden of future substance misuse.

Study's Limitations

It is important to contextualize findings in light of several limitations. First, our measures of CA, IPV, and sexual orientation were single item proxies for latent constructs that have been measured in the literature with much more sophistication and precision (see Hulme, 2004; Laumann, Gagnon, Michael, & Michaels, 1994; Waltermaurer, 2005 for a review). Our measures lacked psychometric information and were crude in that they did not distinguish between physical, sexual, or emotional CA which may be important for understanding disparities by sexual orientation (Hughes, McCabe et al., 2010; Paul et al., 2001). Future research should consider the inclusion of additional survey items such as who perpetrated the abuse, what type of abuse was present, and other developmental determinants, such as duration and frequency of abuse. In relation to IPV, future studies should consider follow-up questions such as whether or not victimization occurred in same-sex relationships and at what age these events occurred to provide a more nuanced understanding of mediating mechanisms. Additional limitations are that experiences of early abuse are subject to recall bias (Williams, 1994), and potential underreporting due to the sensitive nature of substance use behaviors and experiences of victimization (Harrell, 1997; Szinovacz & Egley, 1995).

Second, the cross-sectional design of the study prohibits causal inferences although we did operationalize early abuse experiences before age 15 to capture earlier life experiences which presumably occurred temporally prior to onset of substance misuse. Further, we cannot account for unmeasured confounding. For example, gender nonconformity has been associated with having a minority sexual orientation (Mathy & Descher, 2009; Zucker et al., 2006), with experiences of violence and victimization (Conron, Hamby, Turner, &

³Treatment can be briefly and usefully defined as a unique, planned, goal directed, temporally structured, multi-dimensional change process, of necessary quality, appropriateness and conditions (endogenous and exogenous), which is *bounded* (culture, place, time, etc.) and can be categorized into professional-based, tradition-based, mutual-help based (AA, NA, etc.) and self-help ("natural recovery") models. There are no unique models or techniques used with substance users- of whatever types and heterogeneities- which aren't also used with non-substance users. Whether or not a treatment technique is indicated or contra-indicated, and its selection underpinnings (theory-based, empirically-based, "principle of faith-based, tradition-based, etc. continues to be a generic and key treatment issue. In the West, with the relatively new ideology of "harm reduction" and the even newer Quality of Life (QOL) and well-being treatment-driven models there are now a new set of goals in addition to those derived from/associated with the older tradition of abstinence driven models. Conflict-resolution models may stimulate an additional option for intervention. Each ideological model has its own criteria for success as well as failure. Treatment is implemented in a range of environments; ambulatory as well as within institutions which can include controlled environments Treatment includes a spectrum of clinician-caregiver-patient relationships representing various forms of decision-making traditions/models; (1) the hierarchical model in which the clinician-treatment agent makes the decision(s) and the recipient is compliant and relatively passive, (2) shared decision-making which facilitates the collaboration between clinician and patient(s) in which both are active, and (3) the "informed model" in which the patient makes the decision(s). Substance users, representing a heterogeneous group of people and patterns of use, continue to be treated in "specialized" programs which are distanced from the mainstream of the treatment of non-users—"normed treatment of normed diseases"—all-too-often manifest disparity in availability and delivery of needed services, utilize policies which are stakeholder—driven and not evidence-based and may be ethically-insensitive. Editor's note.

Finkelhor, Under review; D'Augelli, Grossman, & Starks, 2006; Gordon & Meyer, 2007), and with differences in substance use health behaviors (Pachankis, Westmaas, & Dougherty, 2011; Rosario, Schrimshaw, & Hunter, 2008). Third, the study sample consisted of patients enrolled in care at an urban community health center, and thus is not generalizable to those who receive care at other places or do not receive care at all. However, a strength of this sample is having data about a patient population to allow for research to directly inform clinical practice in this setting.

Conclusions

Findings have implications for providers working in community-based health centers, as well as for community-based researchers working in clinical settings. For example, clinicians should assess and routinely screen for histories of CA and IPV among sexual minorities presenting with substance abuse disorders⁴. Choo and colleagues (2010) recently examined IPV screenings by emergency room clinicians of an urban hospital and found a missed opportunity among patients who were diagnosed with substance use disorders, such that alcohol and drug use was actually associated with decreased odds of IPV screening. In addition, public health prevention programs that work to reduce CA and IPV may be effective avenues to reduce substance misuse and may be a means of reducing the disparities in substance misuse by sexual orientation. Future evaluations of such programs should include analyses that assess for differential effects by sexual orientation identity to replicate findings.

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References

- Allison, PD. Missing data. Thousand Oaks, CA: Sage; 2001.
- Arreola S, Neilands T, Pollack L, Paul J, Catania J. Childhood sexual experiences and adult health sequelae among gay and bisexual men: defining childhood sexual abuse. *Journal of Sex Research*. 2008; 45(3):246–252. Web of Science. [PubMed: 18686153]
- Austin SB, Jun HJ, Jackson B, Spiegelman D, Rich-Edwards J, Corliss HL, et al. Disparities in child abuse victimization in lesbian, bisexual, and heterosexual women in the Nurses' Health Study II. *Journal of Womens Health (Larchmt)*. 2008; 17(4):597–606. Web of Science.
- Balsam KF, Rothblum ED, Beauchaine TP. Victimization over the life span: A comparison of lesbian, gay, bisexual, and heterosexual siblings. *Journal of Consulting and Clinical Psychology*. 2005; 73(3):477–487. Web of Science. [PubMed: 15982145]
- Basile, K.; Hertz, M.; Back, S. Intimate partner violence and sexual violence victimization assessment instruments for use in healthcare settings: version 1. 2007. Retrieved March 15, 2012, from <http://www.cdc.gov/ncipc/pub-res/images/ipvandsvscreening.pdf>
- Bebbington PE, Cooper C, Minot S, Brugha TS, Jenkins R, Meltzer H, et al. Suicide attempts, gender, and sexual abuse: Data from the 2000 British Psychiatric Morbidity Survey. *The American Journal Of Psychiatry*. 2009; 166(10):1135–1140. Web of Science. [PubMed: 19723788]

⁴The reader is reminded that the medicalizing and associated diagnoses of types of psychoactive substance use and selected users is relatively recent and is a consensus-based taxonomy which is not empirically informed. Editor's note. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, 4th Ed.; American Psychiatric Association: Washington, DC, 1994.

- Bensley L, Van Eenwyk J, Wynkoop Simmons K. Childhood family violence history and women's risk for intimate partner violence and poor health. *American Journal of Preventative Medicine*. 2003; 25(1):38–44. Web of Science.
- Briere J, Elliott DM. Prevalence and psychological sequelae of self-reported childhood physical and sexual abuse in a general population sample of men and women. *Child Abuse & Neglect*. 2003; 27(10):1205–1222. Web of Science. [PubMed: 14602100]
- Cannon EA, Bonomi AE, Anderson ML, Rivara FP, Thompson RS. Adult health and relationship outcomes among women with abuse experiences during childhood. *Violence & Victims*. 2010; 25(3):291–305. Web of Science. [PubMed: 20565002]
- Catania JA, Paul J, Osmond D, Folkman S, Pollack L, Canchola J, et al. Mediators of childhood sexual abuse and high-risk sex among men-who-have-sex-with-men. *Child Abuse and Neglect*. 2008; 32(10):925–940. Web of Science. [PubMed: 18995903]
- Choo EK, Nicolaidis C, Jenkinson RH, Cox JM, McConnell KJ. Failure of intimate partner violence screening among patients with substance use disorders. *Academic Emergency Medicine*. 2010; 17(8):886–889. Web of Science. [PubMed: 20670328]
- Cochran BN, Peavy KM, Robohm JS. Do specialized services exist for LGBT individuals seeking treatment for substance misuse? A study of available treatment programs. *Substance Use and Misuse*. 2007; 42(1):161–176. Web of Science. [PubMed: 17366131]
- Cochran SD, Mays VM. Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the US population. *American Journal of Epidemiology*. 2000; 151(5): 516–523. Web of Science. [PubMed: 10707921]
- Cohen J. Weighted kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. *Psychological Bulletin*. 1968; 70(4):213–220. [PubMed: 19673146]
- Coker AL, Davis KE, Arias I, Desai S, Sanderson M, Brandt HM, et al. Physical and mental health effects of intimate partner violence for men and women. *American Journal of Preventive Medicine*. 2002; 23(4):260–268. Web of Science. [PubMed: 12406480]
- Compton WM, Thomas YF, Stinson FS, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry*. 2007; 64(5):566–576. Web of Science. [PubMed: 17485608]
- Conron KJ, Hamby S, Turner TA, Finkelhor D. Child gender expression and risk of victimization: Findings from the 2008 National Study of Children Exposed to Violence. Under review.
- Corliss HL, Cochran SD, Mays VM. Reports of parental maltreatment during childhood in a United States population-based survey of homosexual, bisexual, and heterosexual adults. *Child Abuse and Neglect*. 2002; 26(11):1165–1178. Web of Science. [PubMed: 12398854]
- Corliss HL, Rosario M, Wypij D, Fisher LB, Austin SB. Sexual orientation disparities in longitudinal alcohol use patterns among adolescents: Findings from the Growing Up Today Study. *Archives of Pediatrics and Adolescent Medicine*. 2008; 162(11):1071–1078. Web of Science. [PubMed: 18981356]
- Corliss HL, Rosario M, Wypij D, Wylie SA, Frazier AL, Austin SB. Sexual orientation and drug use in a longitudinal cohort study of U.S. adolescents. *Addictive Behaviors*. 2010; 35(5):517–521. Web of Science. [PubMed: 20061091]
- D'Augelli AR, Grossman AH, Starks MT. Childhood gender atypicality, victimization, and PTSD among lesbian, gay, and bisexual youth. *Journal of Interpersonal Violence*. 2006; 21(11):1462–1482. Web of Science. [PubMed: 17057162]
- Daigneault I, Hébert M, McDuff P. Men's and women's childhood sexual abuse and victimization in adult partner relationships: A study of risk factors. *Child Abuse & Neglect*. 2009; 33(9):638–647. [PubMed: 19811827]
- Department of Health Education and Welfare. The Belmont report: Ethical principles and guidelines for the protection of human subjects of research. 1979. Retrieved November 13, 2011, from <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html#xbound>
- Drabble L, Midanik LT, Trocki K. Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: Results from the 2000 National

- Alcohol Survey. *Journal of Studies on Alcohol*. 2005; 66(1):111–120. Web of Science. [PubMed: 15830911]
- Friedman MS, Marshal MP, Guadamuz TE, Wei C, Wong CF, Saewyc E, et al. A meta-analysis of disparities in childhood sexual abuse, parental physical abuse, and peer victimization among sexual minority and sexual nonminority individuals. *American Journal of Public Health*. 2011; 101(8):1481–1494. Web of Science. [PubMed: 21680921]
- Fullilove MT. Toxic sequelae of childhood sexual abuse. *The American Journal Of Psychiatry*. 2009; 166(10):1090–1092. Web of Science. [PubMed: 19797438]
- Gillum TL, Difulvio G. “There’s so much at stake”: Sexual minority youth discuss dating violence. *Violence Against Women*. 2012; 18(7):725–745. [PubMed: 22831848]
- Gilman SE, Cochran SD, Mays VM, Hughes M, Ostrow D, Kessler RC. Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. *American Journal of Public Health*. 2001; 91(6):933–939. Web of Science. [PubMed: 11392937]
- Gordon AR, Meyer IH. Gender nonconformity as a target of prejudice, discrimination, and violence against LGB individuals. *Journal of LGBT Health Research*. 2007; 3(3):55–71. [PubMed: 19042905]
- Green KE, Feinstein BA. Substance use in lesbian, gay, and bisexual populations: An update on empirical research and implications for treatment. *Psychology of Addictive Behaviors*. 2011; 26(2):265–278. Web of Science. [PubMed: 22061339]
- Harrell AV. The validity of self-reported drug use data: The accuracy of responses on confidential self-administered answered sheets. *NIDA Research Monographs*. 1997; 167:37–58.
- Hasin DS, Stinson FS, Ogburn E, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry*. 2007; 64(7):830–842. Web of Science. [PubMed: 17606817]
- Herek GM, Gillis JR, Cogan JC. Internalized stigma among sexual minority adults: Insights from a social psychological perspective. *Journal of Counseling Psychology*. 2009; 56:32–43. Web of Science.
- Hertzmark, E.; Pazaris, M.; Spiegelman, D. The SAS Mediate Macro. 2009. Retrieved September 15, 2011, from <http://www.hsph.harvard.edu/faculty/donnaspiegelman/files/mediate.pdf>
- Hughes T, Johnson TP, Wilsnack SC, Szalacha LA. Childhood risk factors for alcohol abuse and psychological distress among adult lesbians. *Child Abuse and Neglect*. 2007; 31(7):769–789. Web of Science. [PubMed: 17628667]
- Hughes T, McCabe SE, Wilsnack SC, West BT, Boyd CJ. Victimization and substance use disorders in a national sample of heterosexual and sexual minority women and men. *Addiction*. 2010; 105(12):2130–2140. Web of Science. [PubMed: 20840174]
- Hughes T, Szalacha LA, Johnson TP, Kinnison KE, Wilsnack SC, Cho Y. Sexual victimization and hazardous drinking among heterosexual and sexual minority women. *Addictive Behaviors*. 2010; 35(12):1152–1156. Web of Science. [PubMed: 20692771]
- Hulme PA. Retrospective measurement of childhood sexual abuse: A review of instruments. *Child Maltreatment*. 2004; 9(2):201–217. Web of Science. [PubMed: 15104889]
- Institute of Medicine [IOM]. *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Washington, D.C: The National Academies Press; 2011.
- Jun HJ, Austin SB, Wylie SA, Corliss HL, Jackson B, Spiegelman D, et al. The mediating effect of childhood abuse in sexual orientation disparities in tobacco and alcohol use during adolescence: Results from the Nurses’ Health Study II. *Cancer Causes and Control*. 2010; 21(11):1817–1828. Web of Science. [PubMed: 20640883]
- Kendler KS, Bulik CM, Silberg J, Hettema JM, Myers J, Prescott CA. Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry*. 2000; 57(10):953–959. Web of Science. [PubMed: 11015813]
- Laumann, EO.; Gagnon, JH.; Michael, RT.; Michaels, S. *The social organization of sexuality: Sexual practices in the United States*. Chicago, IL: University of Chicago Press; 1994.

- Lin DY, Fleming TR, De Gruttola V. Estimating the proportion of treatment effect explained by a surrogate marker. *Statistics in Medicine*. 1997; 16(13):1515–1527. Web of Science. [PubMed: 9249922]
- Loeb TB, Williams JK, Carmona JV, Rivkin I, Wyatt GE, Chin D, et al. Child sexual abuse: Associations with the sexual functioning of adolescents and adults. *Annual Review of Sex Research*. 2002; 13:307–345.
- Macmillan R. Violence and the life course: The consequences of victimization for personal and social development. *Annual Review of Sociology*. 2001; 27:1–22. Web of Science.
- Mathy, RM.; Descher, J. *Childhood gender nonconformity and the development of adult homosexuality*. Abingdon Oxon, NY: Routledge Press; 2009.
- Mayer, KH.; Mimiaga, MJ.; VanDerwarker, R.; Goldhammer, H.; Bradford, JB. Fenway Community Health's model of integrated community-based LGBT care, education, and research. In: Meyer, IH.; Northridge, ME., editors. *The health of sexual minorities: Public health perspectives on lesbian, gay, bisexual and transgender populations*. New York: Springer; 2007. p. 693-716.
- McCabe SE, Hughes TL, Bostwick WB, West BT, Boyd CJ. Sexual orientation, substance use behaviors and substance dependence in the United States. *Addiction*. 2009; 104(8):1333–1345. Web of Science. [PubMed: 19438839]
- McCabe SE, Hughes TL, Bostwick W, Boyd CJ. Assessment of difference in dimensions of sexual orientation: Implications for substance use research in a college-age population. *Journal of Studies on Alcohol*. 2005; 66(5):620–629. Web of Science. [PubMed: 16331847]
- McFarlane J, Parker B, Soeken K, Bullock L. Assessing for abuse during pregnancy: Severity and frequency of injuries and associated entry into prenatal care. *Journal of the American Medical Association*. 1992; 267:3176–3178. Web of Science. [PubMed: 1593739]
- McKenry P, Serovich J, Mason T, Mosack K. Perpetration of gay and lesbian partner violence: A disempowerment perspective. *Journal of Family Violence*. 2006; 21:233–243. Web of Science.
- Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*. 2003; 129(5):674–697. Web of Science. [PubMed: 12956539]
- Mimiaga MJ, Noonan E, Donnell D, Safren SA, Koenen KC, Gortmaker S, et al. Childhood sexual abuse is highly associated with HIV risk-taking behavior and infection among MSM in the EXPLORE Study. *Journal of Acquired Immune Deficiency Syndrome*. 2009; 51(3):340–348. Web of Science.
- Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Survey. *American Journal of Public Health*. 2001; 91(5):753–760. Web of Science. [PubMed: 11344883]
- National Bioethics Advisory Commission. *Ethical and policy issues in research involving human participants*. Volume I: Report and Recommendations of the National Bioethics Advisory Commission. 2001. Retrieved November 25, 2011, from <http://bioethics.georgetown.edu/nbac/human/overvol1.pdf>
- National Center on Addiction and Substance Abuse at Columbia University. *Shoveling Up II: The Impact of Substance Abuse on Federal, State and Local Budgets*. 2009. Retrieved November 27, 2011, from <http://www.casacolumbia.org/articlefiles/380-ShovelingUpII.pdf>
- Noll JG. Does childhood sexual abuse set in motion a cycle of violence against women?: What we know and what we need to learn. *Journal of Interpersonal Violence*. 2005; 20(4):455–462. Web of Science. [PubMed: 15722501]
- Pachankis JE, Westmaas JL, Dougherty LR. The influence of sexual orientation and masculinity on young men's tobacco smoking. *Journal of Consulting and Clinical Psychology*. 2011; 79(2):142–152. Web of Science.
- Paul JP, Catania J, Pollack L, Stall R. Understanding childhood sexual abuse as a predictor of sexual risk-taking among men who have sex with men: The Urban Men's Health Study. *Child Abuse and Neglect*. 2001; 25(4):557–584. Web of Science. [PubMed: 11370726]
- Pearlin LI, Schieman S, Fazio EM, Meersman SC. Stress, health, and the life course: Some conceptual perspectives. *Journal of Health and Social Behavior*. 2005; 46(2):205–219. Web of Science. [PubMed: 16028458]

- Polusny MA, Follette VM. Long-term correlates of child sexual abuse: Theory and review of the empirical literature. *Applied and Preventive Psychology*. 1995; 4(3):143–166. Web of Science.
- Rabin R, Jennings J, Campbell J, Bair-Merritt M. Intimate partner violence screening tools: A systematic review. *American Journal of Preventative Medicine*. 2009; 36(5):439–445. Web of Science.
- Rees S, Silove D, Chey T, Ivancic L, Steel Z, Creamer M, et al. Lifetime prevalence of gender-based violence in women and the relationship with mental disorders and psychosocial function. *Journal of the American Medical Association*. 2011; 306(5):513–521. Web of Science. [PubMed: 21813429]
- Reisner SL, Falb KL, Mimiaga MJ. Early life traumatic stressors and the mediating role of PTSD in incident HIV infection among US men, comparisons by sexual orientation and race/ethnicity: Results from the NESARC, 2004–2005. *Journal of Acquired Immune Deficiency Syndrome*. 2011; 57(4):340–350.
- Roberts AL, Austin SB, Corliss HL, Vandermorris AK, Koenen KC. Pervasive trauma exposure among US sexual orientation minority adults and risk of posttraumatic stress disorder. *American Journal of Public Health*. 2010; 100(12):2433–2441. [PubMed: 20395586]
- Roberts ME, Fuemmeler BF, McClernon FJ, Beckham JC. Association between trauma exposure and smoking in a population-based sample of young adults. *Journal of Adolescent Health*. 2008; 42(3): 266–274. [PubMed: 18295135]
- Rosario M, Schrimshaw EW, Hunter J. Butch/Femme differences in substance use and abuse among young lesbian and bisexual women: Examination and potential explanations. *Substance Use and Misuse*. 2008; 43(8–9):1002–1015. [PubMed: 18649226]
- Rothman EF, Exner D, Baughman AL. The prevalence of sexual assault against people who identify as gay, lesbian, or bisexual in the United States: A systematic review. *Trauma Violence and Abuse*. 2011; 12(2):55–66.
- Schwartz S, Meyer IH. Mental health disparities research: The impact of within and between group analyses on tests of social stress hypotheses. *Social Science and Medicine*. 2010; 70(8):1111–1118. [PubMed: 20100631]
- Best practices for asking questions about sexual orientation on surveys. Los Angeles, CA: The Williams Institute (UCLA); 2009. Sexual Minority Assessment Research Team (SMART).
- Silverman JG, Raj A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *Journal of the American Medical Association*. 2001; 286(5):572–579. [PubMed: 11476659]
- Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul J, et al. Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health*. 2003; 93(6):939–942. [PubMed: 12773359]
- Stoddard JP, Dibble SL, Fineman N. Sexual and physical abuse: A comparison between lesbians and their heterosexual sisters. *Journal of Homosexuality*. 2009; 56(4):407–420. [PubMed: 19418332]
- Substance Abuse and Mental Health Services Administration. A provider's introduction to substance abuse treatment for lesbian, gay, bisexual, and transgender individuals. Rockville, MD: U.S. Department of Health and Human Services; 2001.
- Szinovacz ME, Egley LC. Comparing one-partner and couple data on sensitive marital behaviors: The case of marital violence. *Journal of Marriage and the Family*. 1995; 57(4):995–1010.
- Talbot NL, Chapman B, Conwell Y, McCollum K, Franus N, Cotesco S, et al. Childhood sexual abuse is associated with physical illness burden and functioning in psychiatric patients 50 years of age and older. *Psychosomatic Medicine*. 2009; 71(4):417–422. [PubMed: 19251869]
- Tjaden, P.; Thoennes, N. Extent, nature, and consequences of intimate partner violence: Findings from the national violence against women survey. 2000. Retrieved November 12, 2011, from <https://www.ncjrs.gov/pdffiles1/nij/181867.pdf>
- Tjaden P, Thoennes N, Allison CJ. Comparing violence over the life span in samples of same-sex and opposite-sex cohabitants. *Violence and Victims*. 1999; 14(4):413–425. [PubMed: 10751048]

- U.S. Department of Health and Human Services (DHHS). 45 CFR Part 160 and Subparts A and E of Part 164. 2002. Privacy Rule of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
- Waltermauer E. Measuring intimate partner violence (IPV): You may only get what you ask for. *Journal of Interpersonal Violence*. 2005; 20(4):501–506. [PubMed: 15722507]
- Welles S, Corbin T, Rich J, Reed E, Raj A. Intimate partner violence among men having sex with men, women, or both: Early-life sexual and physical abuse as antecedents. *Journal of Community Health*. 2011; 36(3):477–485. [PubMed: 21116698]
- Whiffen VE, Macintosh HB. Mediators of the link between childhood sexual abuse and emotional distress: A critical review. *Trauma Violence and Abuse*. 2005; 6(1):24–39.
- Williams LM. Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. *Journal of Consulting and Clinical Psychology*. 1994; 62(6):1167–1176. [PubMed: 7860814]
- Zucker K, Mitchell J, Bradley S, Tkachuk J, Cantor J, Allin S. The recalled childhood gender identity/gender role questionnaire: Psychometric properties. *Sex Roles*. 2006; 7:469–483.

Biographies

Sari L. Reisner, MA, is a Doctor of Science candidate in the Department of Society, Human Development, and Health at Harvard School of Public Health (HSPH) in Boston, MA concentrating in social and psychiatric epidemiology, quantitative methods, and child and adolescent health. His primary research interests: (1) developmental and social determinants of mental health across the life course for lesbian, gay, bisexual, and transgender populations; (2) application of new methodologies to study the health of marginalized populations; and (3) national and global transgender health. He is on faculty as an Associate Research Scientist at The Fenway Institute, Fenway Health in Boston, MA, USA.

Kathryn L. Falb, ScD, MHS, is a Postdoctoral Associate with the Yale School of Public Health. Her research interests include examining the social determinants of gender-based violence, evaluating structural interventions to improve the health of vulnerable populations, and the intersections of social epidemiology and human rights.

Aimee Van Wagenen, PhD, is an Associate Research Scientist at The Fenway Institute of Fenway Health in Boston, Massachusetts. She holds a PhD in sociology from Boston College. Her research interests center around understanding lesbian, gay, bisexual, and transgender (LGBT) health disparities, and she is particularly passionate about understanding the social networks and care needs of LGBT older adults.

Chris Grasso, MPH, is the Associate Director of Health Informatics and Data Services at Fenway Community Health Center and earned her Masters of Public Health Degree from Boston University in 2000. As Associate Director, she manages a team who is responsible for database development, data mining, storage, and reporting across the entire agency. Chris has over 15 years of informatics, data management experience and has worked with data in all shapes and sizes and is proficient in a number of software packages and programming languages. She is also a co-author on numerous published journal articles.

Judith Bradford, PhD, is the Director of the Center for Population Research in Lesbian, Gay, Bisexual and Transgender Health and Co-Chair of The Fenway Institute at Fenway Health in Boston, USA. As Director of the Survey and Evaluation Research Laboratory at Virginia Commonwealth University for 20+ years, she conducted more than 40 probability research studies and community-based initiatives with minority populations to assess health disparities and access to needed healthcare, using data from these studies to influence policy and practice. Dr. Bradford has been a mentor to doctoral students since 1988, providing research opportunities and chairing dissertations. She served as a member of the Consensus Committee for the 2011 Institute of Medicine's study, "The Health of Lesbian, Gay, Bisexual, and Transgender People."

Figure 1.
Conceptual model.

Figure 2.
Fitted conceptual model for male patients.

Figure 3.
Fitted conceptual model for female patients.

Table 1

Characteristics of the clinic sample ($N = 2,653$) stratified by sex (1,777 male and 876 female patients): Comparisons by sexual orientation (total $N = 2,653$).

	Males (N = 1,777)				Females (N = 876)					
	Gay N = 1065 (59.9) N (%)	Bisexual N = 76 (4.3) N (%)	Other nonheterosexual N = 92 (5.2) N (%)	Heterosexual N = 544 (30.6) N (%)	All males N = 1,777 (100.0) N (%)	Lesbian N = 237 (27.1) N (%)	Bisexual N = 69 (7.9) N (%)	Other nonheterosexual N = 63 (7.2) N (%)	Heterosexual N = 507 (57.9) N (%)	All females N = 876 (100.0) N (%)
Outcome										
History of substance Abuse	242 (22.7) ***	16 (21.1) *	18 (19.6) +	68 (12.5)	344 (19.4)	50 (21.1) ***	11 (15.9) *	9 (14.3) +	39 (7.7)	109 (12.4)
Exposure										
Any childhood abuse	258 (24.2) ***	26 (34.2) ***	24 (26.1) ***	53 (9.7)	361 (20.3)	62 (26.2) ***	25 (36.2) ***	14 (22.2) *	66 (13.0)	167 (19.1)
Mediator										
Intimate partner vViolence	180 (16.9) ***	13 (17.1) ***	10 (10.9) **	14 (2.6)	217 (12.2)	47 (19.8) **	12 (17.3)	9 (14.3)	57 (11.2)	125 (14.3)
Covariates										
Age (Continuous in years)	36.2 (9.1) ***	38.0 (13.1) ***	35.7 (12.6) ***	27.2 (9.3)	33.5 (10.5)	33.8 (8.6) ***	29.5 (8.2) **	29.7 (10.3) **	26.4 (8.7)	28.9 (9.3)
Race/Ethnicity										
White (Non-Hispanic)	910 (85.5)	59 (77.6)	67 (72.8)	409 (75.2)	1445 (81.3)	207 (87.3)	54 (78.3)	38 (60.3)	340 (67.1)	639 (73.0)
Black (Non-Hispanic)	43 (4.0) **	5 (6.6)	8 (8.7)	36 (6.6)	92 (5.2)	20 (8.4)	7 (10.1)	3 (4.8)	34 (6.7)	64 (7.3)
Latino/Hispanic	63 (5.9)	6 (7.9)	4 (4.4)	39 (7.2)	112 (6.3)	5 (2.1) **	1 (1.5)	4 (6.4)	43 (8.5)	53 (6.1)
Other race/Ethnicity	49 (4.6) ***	6 (7.9)	13 (14.1)	60 (11.0)	128 (7.2)	5 (2.1) ***	7 (10.1)	18 (28.6)	90 (17.8)	120 (13.7)
Educational attainment										
Low	103 (9.7) ***	18 (23.7)	18 (19.6)	96 (17.7)	235 (13.2)	12 (5.1) ***	3 (4.4) *	8 (12.7)	63 (12.4)	86 (9.8)
Middle	262 (24.6) ***	22 (29.0) *	26 (28.3) **	234 (43.0)	544 (30.6)	47 (19.8) ***	16 (23.2) **	25 (39.7)	192 (37.9)	280 (32.0)
High	700 (65.7)	36 (47.4)	48 (52.2)	214 (39.23)	998 (56.2)	178 (27.1)	69 (7.9)	63 (7.2)	252 (49.7)	510 (58.2)

Author Note: Separate unadjusted logistic regression models were fit, regressing each variable on sexual orientation. Binomial logistic regression models were fit for binary indicators (e.g., child abuse <age 15). Multinomial logistic regression models were fit for categorical variables (e.g., educational attainment). The referent for each sexual orientation comparison was heterosexual.

Wilcoxon rank sum tests (nonparametric alternative to t -test) were used for continuous variables.

Educational attainment: Low (High school diploma/GED), Middle (Some college), and High (College degree).

$p < .07$
+
 $p < .05$
*
**

 $p < .01$

 $p < .0001$

Table 2

Stratified multivariable logistic regression models by sex (1,777 male and 876 female patients) with each mediator as an outcome: (1) childhood abuse, and (2) intimate partner violence (total $N = 2,653$).

	Males ($N = 1,777$)						Females ($N = 876$)					
	Model 1A: Outcome childhood abuse			Model 2A: Outcome intimate partner violence			Model 1A: Outcome childhood abuse			Model 2A: Outcome intimate partner violence		
	aOR (95% CI)	p value		aOR (95% CI)	p value		aOR (95% CI)	p value		aOR (95% CI)	p value	
<i>Exposure</i>												
Any childhood abuse	–	–	–	–	–	–	–	–	–	–	–	–
<i>Theoretical predictor</i>												
Sexual orientation												
Heterosexual	Referent			Referent			Referent			Referent		
Gay/Lesbian	2.67 (1.90, 3.75)	<.0001		7.72 (4.33, 13.77)	<.0001		1.74 (1.14, 2.66)	.01		1.52 (0.94, 2.43)	.09	
Bisexual	3.98 (2.25, 7.07)	<.0001		6.37 (2.78, 14.62)	<.0001		3.55 (2.00, 6.32)	<.0001		1.77 (0.86, 3.61)	.12	
Other nonheterosexual	2.96 (1.68, 5.19)	.0002		4.16 (1.75, 9.88)	.001		1.75 (0.89, 3.42)	.10		1.10 (0.49, 2.48)	.81	
<i>Covariates</i>												
Age (Continuous in Years)	1.02 (1.01, 1.03)	.002		1.02 (1.01, 1.04)	.004		1.05 (1.03, 1.07)	<.0001		1.07 (1.04, 1.09)	<.0001	
Race/Ethnicity												
White (Non-Hispanic)	Referent			Referent			Referent			Referent		
Black (Non-Hispanic)	0.48 (0.25, 0.92)	.03		0.43 (0.18, 1.03)	.06		1.18 (0.63, 2.21)	.62		1.74 (0.92, 3.29)	.09	
Latino/Hispanic	1.04 (0.64, 1.69)	.88		0.78 (0.40, 1.52)	.47		1.16 (0.53, 2.51)	.71		0.66 (0.24, 1.80)	.42	
Other race/ethnicity	0.69 (0.40, 1.19)	.19		0.82 (0.41, 1.64)	.58		0.65 (0.34, 1.23)	.10		0.49 (0.22, 1.13)	.10	
Educational attainment												
High	Referent			Referent			Referent			Referent		
Middle	1.42 (1.08, 1.87)	.01		2.14 (1.53, 2.99)	<.0001		1.25 (0.67, 2.35)	.44		2.70 (1.69, 4.33)	<.0001	
Low	1.65 (1.15, 2.37)	.006		2.91 (1.89, 4.45)	<.0001		1.18 (0.78, 1.80)	.48		3.05 (1.58, 5.88)	.0009	

aOR = Adjusted odds ratio. 95% CI = 95% Confidence interval.

Table 3

Sex-stratified multivariable logistic regression models assessing mediation: Outcome lifetime history of substance abuse among male patients ($N = 1,777$).

Males (N = 1,777)								
	Model 1A		Model 2A		Model 3A		Model 4A	
	aOR (95% CI)	p value	aOR (95% CI)	p value	aOR (95% CI)	p value	aOR (95% CI)	p value
<i>Exposure</i>								
Any childhood abuse	–	–	3.20 (2.44, 4.19)	<.0001	–	–	2.68 (2.02, 3.55)	<.0001
<i>Mediator</i>								
Intimate partner violence	–	–	–	–	3.23 (2.35, 4.44)	<.0001	2.43 (1.74, 3.39)	<.0001
<i>Theoretical predictor</i>								
<i>Sexual orientation</i>								
Heterosexual	Referent		Referent		Referent		Referent	
Gay/Lesbian	1.72 (1.25, 2.37)	.0009	1.45 (1.04, 2.01)	.03	1.38 (0.99, 1.92)	.06	1.26 (0.90, 1.76)	.18
Bisexual	1.24 (0.65, 2.36)	.52	0.92 (0.47, 1.79)	.81	1.02 (0.52, 1.97)	.96	0.82 (0.42, 1.62)	.57
Other nonheterosexual	1.33 (0.72, 2.43)	.36	1.05 (0.56, 1.97)	.88	1.20 (0.65, 2.21)	.57	0.99 (0.53, 1.88)	.99
<i>Covariates</i>								
Age (Continuous in years)	1.04 (1.03, 1.05)	<.0001	1.04 (1.02, 1.05)	<.0001	1.04 (1.02, 1.05)	<.0001	1.04 (1.02, 1.05)	<.0001
<i>Race/Ethnicity</i>								
White (Non-Hispanic)	Referent		Referent		Referent		Referent	
Black (Non-Hispanic)	0.77 (0.44, 1.35)	.35	0.90 (0.51, 1.58)	.71	0.86 (0.49, 1.51)	.60	0.96 (0.54, 1.69)	.88
Latino/Hispanic	0.60 (0.33, 1.08)	.09	0.58 (0.32, 1.06)	.08	0.62 (0.34, 1.12)	.11	0.59 (0.32, 1.08)	.09
Other race/Ethnicity	0.45 (0.24, 0.85)	.02	0.46 (0.24, 0.89)	.02	0.45 (0.24, 0.87)	.02	0.47 (0.24, 0.92)	.03
<i>Educational attainment</i>								
High	Referent		Referent		Referent		Referent	
Middle	2.32 (1.76, 3.07)	<.0001	2.21 (1.66, 2.94)	<.0001	2.09 (1.57, 2.78)	<.0001	2.06 (1.54, 2.76)	<.0001
Low	2.39 (1.66, 3.45)	<.0001	2.20 (1.51, 3.20)	<.0001	2.07 (1.42, 3.00)	.0001	2.00 (1.37, 2.93)	<.0001

aOR = Adjusted odds ratio. 95% CI = 95% Confidence interval.

Sex-stratified multivariable logistic regression models assessing mediation: Outcome lifetime history of substance abuse among female patients ($N = 876$).

Table 4

Females (N = 876)								
	Model 1B		Model 2B		Model 3B		Model 4B	
	aOR (95% CI)	p value	aOR (95% CI)	p value	aOR (95% CI)	p value	aOR (95% CI)	p value
<i>Exposure</i>								
Any childhood abuse	–	–	2.56 (1.61, 4.06)	<.0001	–	–	1.80 (1.09, 2.99)	.02
<i>Mediator</i>								
Intimate partner violence	–	–	–	–	5.74 (3.54, 9.29)	<.0001	4.97 (3.02, 8.19)	<.0001
<i>Theoretical predictor</i>								
Sexual orientation								
Heterosexual	Referent		Referent		Referent		Referent	
Gay/Lesbian	2.24 (1.35, 3.70)	.002	2.09 (1.25, 3.50)	.005	2.10 (1.25, 3.54)	.005	2.05 (1.21, 3.46)	.008
Bisexual	2.29 (1.06, 4.92)	.03	1.92 (0.88, 4.19)	.10	2.11 (0.95, 4.72)	.07	1.90 (0.84, 4.30)	.12
Other nonheterosexual	1.87 (0.81, 4.36)	.15	1.79 (0.77, 4.13)	.18	1.86 (0.76, 4.55)	.17	1.85 (0.77, 4.45)	.17
<i>Covariates</i>								
Age (Continuous in years)	1.08 (1.05, 1.10)	<.0001	1.07 (1.05, 1.09)	<.0001	1.06 (1.04, 1.09)	<.0001	1.06 (1.04, 1.08)	<.0001
Race/Ethnicity								
White (Non-Hispanic)	Referent		Referent		Referent		Referent	
Black (Non-Hispanic)	1.74 (0.88, 3.42)	.11	1.74 (0.88, 3.47)	.11	1.42 (0.67, 2.98)	.36	1.47(0.70, 3.10)	.31
Latino/Hispanic	0.71 (0.24, 2.17)	.55	0.71 (0.23, 2.18)	.55	0.81 (0.26, 2.54)	.72	0.80 (0.26, 2.53)	.71
Other race/Ethnicity	0.25 (0.07, 0.83)	0.02	0.27 (0.08, 0.91)	.03	0.28 (0.08, 0.97)	.04	0.30 (0.09, 1.04)	.06
Educational attainment								
High	Referent		Referent		Referent		Referent	
Middle	1.92 (1.15, 3.20)	.01	1.94 (1.15, 3.27)	.01	1.48 (0.86, 2.55)	.16	1.55 (0.90, 2.67)	.12
Low	2.60 (1.28, 5.31)	.009	2.64 (1.29, 5.40)	.008	1.86 (0.88, 3.93)	.11	1.97 (0.93, 4.16)	.08

Table 5

Mediational effects: Percent of sexual orientation substance abuse relationship explained by hypothesized mediators (childhood abuse and intimate partner violence).

	Males (<i>N</i> = 1,777) Column A		Females (<i>N</i> = 876) Column B	
	Percent of effect	<i>p</i> value	Percent of effect	<i>p</i> value
<i>SO → CA → Substance Abuse</i>				
Gay/Lesbian	33.58 (10.00, 57.15)	.005	9.39 (−3.93, 22.72)	.167
Bisexual	Not an intermediary	–	22.79 (−9.25, 54.82)	.163
Other nonheterosexual	84.20 (−121.11, 289.50)	.422	8.64 (−16.04, 33.33)	.493
<i>SO → IPV → Substance Abuse</i>				
Gay/Lesbian	38.91 (9.94, 67.89)	.009	5.96 (−15.46, 27.38)	.585
Bisexual	91.02 (−210.51, 392.55)	.554	6.76 (−25.68, 39.20)	.683
Other nonheterosexual	34.98 (−57.33, 127.30)	.458	Not an intermediary	–
<i>SO → CA → IPV → Substance Abuse</i>				
Gay/Lesbian	57.94 (18.85, 97.02)	.004	9.93 (−13.42, 33.28)	.405
Bisexual	Not an intermediary	–	20.45 (−24.62, 65.51)	.374
Other nonheterosexual	Not an intermediary	–	<1.00% [^]	–
<i>SO → CA → IPV</i>				
Gay/Lesbian	13.02 (6.22, 19.82)	.0002	28.07 (−19.07, 75.21)	.243
Bisexual	22.19 (6.97, 37.40)	.004	46.67 (−21.56, 114.90)	.180
Other nonheterosexual	24.97 (3.80, 46.15)	.021	62.38 (−462.24, 586.99)	.816
<i>CA → IPV → Substance Abuse</i>				
CA	14.99 (7.22, 22.76)	.0002	36.80 (5.03, 68.56)	.023

The “percent of effect” (PEE) estimates the percentage of mediation (synonymous with a statistical test of indirect effects). The exact *p* value is the probability of rejecting a null hypothesis of zero PEE or no mediation by CA and IPV. The referent for each sexual orientation category is heterosexual.

SO = Sexual orientation

CA = Child abuse

IPV = Intimate partner violence

[^] PEE too small (<1%) to reliably estimate.