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Lifetime victimization, hazardous drinking and depression among heterosexual and sexual minority women

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Abstract

Purpose—Substantial research documents sexual-orientation-related mental health disparities, but relatively few studies have explored underlying causes of these disparities. The goals of this paper were to (1) understand how differences in sexual identity and victimization experiences influence risk of hazardous drinking and depression, and (2) describe variations across sexual minority subgroups.

Methods—We pooled data from the 2001 National Study of Health and Life Experiences of Women (NSHLEW) and the 2001 Chicago Health and Life Experiences of Women (CHLEW) study to compare rates of victimization, hazardous drinking, and depression between heterosexual women and sexual minority women (SMW), and to test the relationship between number of victimization experiences and the study outcomes in each of five sexual identity subgroups.

Results—Rates of each of the major study variables varied substantially by sexual identity, with bisexual and mostly heterosexual women showing significantly higher risk than heterosexual women on one or both of the study outcomes. Number of victimization experiences explained some, but not all, of the risk of hazardous drinking and depression among SMW.

Conclusions—Although victimization plays an important role, sexual-minority-specific stressors, such as stigma and discrimination, likely also helps explain substance use and mental health disparities among SMW.

Keywords

Sexual identity; victimization; hazardous drinking; depression

A growing body of research findings documents the disproportionately high rates of substance use and psychological distress experienced by sexual minorities compared with their heterosexual counterparts.¹⁻⁸ Meta-analyses have shown that the odds of alcohol- or substance-use disorders and depression among sexual minorities are at least two times as high as those of heterosexuals, and that mental health disparities—especially those related to alcohol use—are often more pronounced among sexual minority women (SMW) than among sexual minority men.^{5, 6, 9}

The most commonly posited explanation for mental health disparities among sexual minorities is social stress—specifically minority stress.^{1, 7, 10-12} The minority stress perspective describes how social stressors such as stigma, discrimination and marginalization of sexual minorities contribute to internalized homophobia, reluctance to disclose minority orientation and isolation that require adaptation efforts over and above that experienced by individuals in the general population. Such adaptive efforts, in the absence of adequate coping or social support resources, may result in externalizing responses (e.g., substance use/hazardous drinking) and/or internalizing responses (e.g., depression).

Although minority stress is an intuitively obvious contributor to sexual-orientation-related health disparities, such stress may be compounded by other traumatic or stressful events experienced across the lifespan. Abuse, violence and victimization experiences are universally viewed as major life stressors and have been consistently linked with long-term adverse mental health consequences, including hazardous drinking and alcohol use disorders and depression in studies of the general population.¹³⁻¹⁹ With very few exceptions, studies have found higher rates of sexual and physical abuse among SMW than among heterosexual women.^{2, 20-22}

Despite growing evidence of the impact of specific traumatic experiences on mental health, relatively little is known about the combined effects of such stressors experienced across the lifespan.^{14, 23-27} Even less is known about the impact of cumulative stress on the health of sexual minorities. Given previous findings suggesting that SMW report multiple forms of lifetime victimization (both in childhood and in adulthood), as well as findings from general population research that point to the cumulative impact of multiple adverse life experiences on risk for substance use and negative mental health outcomes, it is important to understand whether SMW experience more types of victimization across the lifespan than do heterosexual women. In addition, because victimization in childhood (before age 18) may occur in close proximity to first awareness of same-sex orientation and/or may complicate the sexual identity development process, it is possible that childhood victimization is more strongly associated with negative outcomes than is adult victimization among SMW. Alternately, given the temporal proximity of adult victimization these experiences may have a greater impact. Such information may provide important clues for understanding the mental health disparities observed among sexual minorities.

Most research on SMW's health has combined samples of lesbian, bisexual and other SMW (e.g., mostly heterosexual/mostly straight women), a practice that can obscure differences in risk across sexual minority subgroups. Studies that have analyzed data separately for these

subgroups have generally found substantial within-group variations. Bisexual women, in particular, have been found to be at especially high risk for alcohol misuse and negative mental health outcomes.^{1, 7, 8, 28-31} In addition, several recent studies have found that women who identify as “mostly/mainly heterosexual/straight” also appear to be at higher risk than exclusively heterosexual women for a range of health-risk behaviors and physical and mental health concerns.³²⁻³⁴

We hypothesized that (1) SMW will report more types of lifetime victimization and will be more likely to report hazardous drinking and depression than exclusively heterosexual women; (2) greater number of types of victimization will be positively associated with both hazardous drinking and depression; and (3) SMW will remain at higher risk than exclusively heterosexual women for hazardous drinking and depression after controlling for number of types of lifetime victimization. In addition, we expected to find variation in victimization experiences and in the study outcomes across the four sexual minority subgroups (mostly heterosexual, bisexual, mostly lesbian and exclusively lesbian). Because research with SMW has yet to directly compare the impact of childhood versus adulthood victimization on health outcomes, we also conducted exploratory analyses of the relationships between the study outcomes and childhood victimization only, adult victimization only, and both childhood and adult victimization.

Methods

Study samples and interviews

In an effort to overcome the challenges of obtaining samples with sufficient numbers of sexual minority subgroup respondents, we pooled data from two studies conducted in 2001 that used similar study methods and interview questionnaires—a strategy recommended by the Institute of Medicine Committee on Lesbian, Gay, Bisexual and Transgender Health Issues and Research Gaps and Opportunities.³⁵

National Study of Health and Life Experiences of Women (NSHLEW)—The NSHLEW is a 20-year longitudinal study of drinking and problem drinking that surveyed nationally representative samples of adult U.S. women every five years between 1981 and 2001.³⁶ Statistical weighting adjusted for variations in non-response rates by sampling unit and by major demographic characteristics (age, ethnicity, education, and marital status) and for oversampling of heavier drinkers (4 or more drinks/week on average).

In the 2001 NSHLEW survey, female interviewers from the National Opinion Research Center conducted face-to-face computer-assisted personal interviews in participants’ homes or other private settings. The interviewers received extensive general and study-specific training. For potentially sensitive questions, including some of the questions about victimization experiences, participants were offered the option of reading the questions on the laptop computer screen and entering their responses privately on the computer. Chicago Health and Life Experiences of Women (CHLEW). The CHLEW is a 15-year longitudinal study that was designed to replicate and extend the NSHLEW with lesbian women in the greater Chicago metropolitan area. In 2000-2001, 447 English-speaking women, aged 18 and older, who self-identified as lesbian were recruited for the study using a broad range of

recruitment sources and strategies. We made strenuous efforts to maximize CHLEW sample representativeness by including subgroups of lesbians underrepresented in most studies of lesbian health (aged under 25 and over 50, high school education or less, racial/ethnic minority). The study was advertised in local newspapers, on Internet listservs, and on flyers posted in churches and bookstores and distributed to individuals and organizations via formal and informal social events and social networks. Other recruitment sources included clusters of social networks (e.g., formal community-based organizations and informal community social groups) and individual social networks, including those of women who participated in the study. Interested women were invited to call the project office where they completed a short telephone screening interview.

Potential participants were screened for eligibility with the question, “Understanding that sexual identity is only one part of your identity, do you consider yourself to be lesbian, bisexual, heterosexual, transgender, or something else?” Because the study’s original focus was on self-identified lesbians, women who reported any other sexual identity were not invited to participate. Despite this screening, when interviewed 11 CHLEW participants identified themselves as bisexual. In addition, one participant identified as “queer” and another preferred not to be labeled; these two participants are not included in the analyses presented here.

The CHLEW largely replicated the interview protocol used in the NSHLEW. Ninety minute, face-to-face interviews were conducted by trained female interviewers in the participants’ homes or other private settings. Questions about potentially sensitive topics such as physical and sexual abuse were located toward the end of the interview, when rapport was well established.

Procedures for obtaining informed consent and protecting confidentiality were approved by the Institutional Review Boards at the NSHLEW and CHLEW Principal Investigators’ home institutions.

Measures

NSHLEW and CHLEW interview questionnaires

The NSHLEW interview questionnaire included detailed questions about drinking patterns, drinking contexts, and drinking-related problems. Other questions asked about a range of possible antecedents, correlates, and consequences of drinking, such as childhood experiences, adult work and social roles, sexual experience, characteristics of close personal relationships, experiences of sexual and physical victimization, and physical and mental health. Questions, indexes, and scales were originally selected, wherever possible, from well-validated instruments, with some alcohol-related questions modified to increase their sensitivity to characteristics of women’s drinking. The interview questionnaire was pretested prior to each wave of data collection and refined over time to retain variables with the greatest predictive value. Additional information about the NSHLEW questionnaire can be found elsewhere.³⁶⁻³⁸

We used a slightly modified version of the longitudinal NSHLEW survey questionnaire in the 2001 (baseline) CHLEW study. Questions related to sexual orientation, developed previously in two focus groups with Chicago-area lesbians, were added to the NSHLEW.³⁹ *Sexual identity* was defined in both the NSHLEW and CHLEW by asking respondents how they defined their sexual identity. Response options were exclusively lesbian, mostly lesbian, bisexual, mostly heterosexual, and exclusively heterosexual.

Outcome Measures: Hazardous Drinking and Depression

We created a dichotomous *hazardous drinking* variable that reflected reports of two or more indicators of hazardous drinking. We combined responses to four 12-month indicators of hazardous drinking: (1) heavy episodic drinking, (2) intoxication, (3) adverse drinking consequences and (4) symptoms of potential alcohol dependence. Heavy episodic drinking was assessed using a question that asked about frequency in the past 12 months of consuming six or more drinks in a day. A similar question asked about frequency of subjective intoxication (“drinking enough to feel drunk—where drinking noticeably affected your thinking, talking, and behavior”). In addition, participants were asked about their lifetime and past-12-month experience of eight adverse drinking consequences (driving a car while high from alcohol; drinking-related accidents in the home; harmful effects of drinking on housework or chores, or on job or career opportunities; drinking-related problems with partner or children; and starting fights with partner or with people outside the family when drinking) and five symptoms of potential alcohol dependence (blackouts, rapid drinking, morning drinking, inability to stop drinking before becoming intoxicated, and inability to stop or cut down on drinking over time). We first summed and dichotomized responses to questions related to each indicator (any/none in past 12 months), producing an index ranging from 0 to 4. Because 12-month intoxication was reported by a large proportion of the sample, we used a cut-off of 2 or more of the four indicators as our definition of hazardous drinking.

Depression was assessed using questions and diagnostic criteria of the National Institute of Mental Health Diagnostic Interview Schedule.⁴⁰ Participants were asked about a variety of symptoms (e.g., decreased appetite, problems with sleeping, thoughts of death). Persistence of three or more symptoms for at least two weeks, accompanied by feeling sad, blue, or depressed or by loss of interest or pleasure in things usually cared about, was defined as a depressive episode. Analyses reported here dichotomized depressive episodes into none versus one or more in the previous 12 months.

Independent Variables: Lifetime Victimization Experiences

We assessed three forms of childhood victimization experienced prior to age 18: childhood sexual abuse, childhood physical abuse, and parental neglect. *Childhood sexual abuse* (CSA) was assessed using questions about eight types of sexual activities before age 18, ranging from exposure and fondling to anal and vaginal penetration. Sexual activities prior to 18 were defined as CSA based on Gail Wyatt's work: any intrafamilial sexual activity before age 18 that was unwanted by the participant, or that involved a family member 5 or more years older than the participant; or any extrafamilial sexual activity that occurred before age 18 and was unwanted, or that occurred before age 13 and involved another person five or

more years older than the participant.⁴¹ Responses were used to create a dichotomous variable indicating whether or not the participant reported experiences that met Wyatt's criteria.

Childhood physical abuse (CPA) was measured by asking participants, "When you were growing up, were you physically hurt or injured by your parents or other family members?" Response options were never, rarely, sometimes, often and very often. Participants who reported being physically hurt or injured (any response other than 'never') were asked the follow-up question, "Do you feel that you were physically abused by your parents or other family members when you were growing up?" Yes or no responses to the follow-up question were used as a dichotomous measure of whether the participant had experienced CPA.

Parental neglect was assessed using the question, "thinking back to when you were about 10 years old, what were your parents' usual methods of disciplining you?" Response options were (1) explained why something was wrong; (2) put in 'time-out' or sent to room; (3) took away privileges or grounded; (4) neglected my basic needs (food, clothing, shelter, love); (5) shouted, yelled or screamed; (6) spanked with bare hand; (7) spanked or hit with belt, switch, or other object; and (8) beat up, punched, choked, or threw me down. Participants who indicated that their parent's usual method of discipline was neglect of their basic needs were categorized as experiencing parental neglect. Responses were dichotomized to reflect any versus no parental neglect.

We assessed three forms of adult victimization (experienced after age 18): adult sexual assault, adult physical assault, and intimate partner violence.

Adult sexual assault (ASA) was measured with the question "Since you were 18 years old was there a time when someone forced you to have sexual activity that you really did not want? This might have been intercourse or other forms of sexual activity, and might have happened with husbands, partners, lovers, or friends, as well as with more distant persons and strangers." Responses were dichotomized to reflect any versus no ASA.

Adult physical assault (APA) was assessed by asking, "Not counting experiences involving conflicts with your partner or unwanted sexual experiences, has anyone other than your partner attacked you with a gun, knife or some other weapon, whether you reported it or not?" and "Has anyone, excluding your partner, ever attacked you *without* a weapon but with the intent to kill or seriously injure you?" Affirmative responses to one or both of these questions were used to indicate any (versus no) APA.

Questions used to assess *intimate partner violence* (IPV) in the CHLEW asked participants whether their most recent partner ever "threw something at you, pushed you or hit you?" or "threatened to kill you, with a weapon or in some other way?" Follow-up questions asked whether these experiences had happened in the previous 12 months. In the 2001 NSHLEW, IPV was assessed using open-ended responses to a question that asked participants to describe the "most physically aggressive thing done to you during the last two years by someone who was or had been in a close romantic relationship with you". Each response was reviewed and coded into several categories. Responses most closely matching the two CHLEW questions described above were included in the current analyses. For example,

NSHLEW participants who used descriptors such as “pushed me”, “grabbed me”, “hit me”, “beat me”, “choked me”, and “kicked me” were coded as having experienced IPV. Although wording of the questions and the timeframes differed in the CHLEW and NSHLEW studies, the responses in each study provide an overall indicator of any versus no recent IPV experienced by participants.

We created a measure of cumulative victimization that summed the number of types of victimization experienced across the lifespan (CSA, CPA, parental neglect, ASA, APA, IPV; range 0-6). We also created dummy variables to indicate when in the life course the victimization occurred: childhood victimization only, adult victimization only, revictimization (both childhood and adult victimization) and neither childhood nor adult victimization, which served as the referent group.

Control Variables

In addition to age (coded into 10 ordinal categories), race/ethnicity (African American, Hispanic, White, other/multiple race/ethnicity) and education (high school or less, some college, college degree, graduate or professional degree), multivariate models also controlled for parental drinking problems. The measure of parental drinking problems was based on the question, “Did your [father/mother] ever have any problems due to [his/her] drinking, such as marriage or family problems, problems with the law, problems with work or health—any kind of problems related to [his/her] drinking?” Responses to separate questions about father and mother were combined and used to create a dichotomous indicator of any versus no parental drinking problems. Because the CHLEW study recruited participants from the Chicago metropolitan area it included only urban/suburban participants. The NSHLEW used a national probability sampling design, resulting in both urban/suburban and rural participants. Therefore we created an additional multinomial control variable that captured whether respondents were in the NSHLEW sample and lived in a rural area, in the NSHLEW sample and lived in an urban/suburban area, or in the CHLEW study (referent).

Data analysis

All analyses were design-based to account for the differential sample designs of the NSHLEW and CHLEW data sets. NSHLEW data were weighted to reflect selection probabilities and oversampling of heavier drinking women. The CHLEW cases were assigned weights of 1. We employed these weights for all analyses and also introduced variance adjustments to compensate for the NSHLEW's complex design using Taylor series linearization.⁴² In addition to descriptive analyses, we tested for significant differences in victimization, hazardous drinking and depression rates across the five sexual identity groups. We also estimated logistic regression models designed to examine associations among sexual identity, victimization and the study outcomes while introducing statistical controls for parental drinking and demographic characteristics.

Results

Table 1 summarizes descriptive information for all study variables including demographic and control variables, the hazardous drinking and depression outcome variables, the six

types of lifetime victimization, the scaled measure of number of victimization types, and the measures indicating when in the life course victimization occurred. Data are reported separately for the full sample and for each of the five sexual identity groups. Results of design-corrected F-tests of differences across the five sexual identity groups are also provided in Table 1. Estimates with non-overlapping 95% confidence intervals across sexual identity groups are identified using superscripts. Only subgroups with non-overlapping confidence intervals were considered significantly different from one another.

All design-corrected F-tests were significant, suggesting differences in all study variables across sexual identity groups. Exclusively heterosexual women were found to be older, on average, than women in each of the SMW subgroups. Exclusively heterosexual and mostly heterosexual women were more likely to be White than mostly and exclusively lesbian women, and lesbian and mostly lesbian women were more likely to be Hispanic than were exclusively heterosexual and mostly heterosexual women. Bisexual, mostly lesbian and lesbian women were more likely to have a college degree than were heterosexual women; lesbian and mostly lesbian women were also most likely to have earned a graduate or professional degree. Not surprisingly, given study designs, the majority of mostly lesbian and exclusively lesbian women were recruited as part of the CHLEW study, and all mostly and exclusively heterosexual women were recruited as part of the NSHLEW study. Exclusively heterosexual women were less likely than mostly lesbian and exclusively lesbian women to report that one or both of their parents had drinking problems.

About one-fourth (22.4%) of the pooled sample reported hazardous drinking (two or more indicators of hazardous drinking in the previous 12 months) and more than one-third (34.1%) met study criteria for 12-month depression. CSA (35.5%) and CPA (39.5%) were the most commonly reported types of lifetime victimization. Nearly one-fourth of the sample (22.4%) reported ASA (range 19.9% to 44.7% across groups). Given the shorter timeframe (1-2 years) used in our assessment of IPV, it is not surprising that rates of IPV (range 5.3% to 24.9%) tended to be lower than rates of the other two types of adult victimization (which were assessed by questions about experiences *since age 18*). Overall, rates of hazardous drinking, depression and each of the six types of victimization differed significantly by sexual identity groups. Exclusively heterosexual women were at lower risk for both hazardous drinking and depression, compared to each of the SMW subgroups. Exclusively heterosexual women also tended to have lower rates of each type of victimization, although specific differences with SMW subgroups varied by victimization type.

Number of victimization types.

Exclusively heterosexual women ($\bar{x}=0.94$) and mostly heterosexual women ($\bar{x}=1.23$) reported a lower mean number of types of victimization experiences compared to bisexual ($\bar{x}=2.22$), mostly lesbian ($\bar{x}=1.85$), and exclusively lesbian ($\bar{x}=1.93$) women.

Overall, women in the study were more likely to report childhood victimization only (32.3%) than adult victimization only (8.6%); just under one-quarter (24.1%) reported revictimization (both childhood and adult victimization). Bisexual (54.9%), mostly lesbian (42.2%) and exclusively lesbian (45.0%) women reported higher rates of revictimization than exclusively heterosexual women (16.7%). Exclusively heterosexual women (42.3%)

were significantly more likely than bisexual (2.9%), mostly lesbian (22.0%) and exclusively lesbian (12.5%) women to report that they never experienced childhood or adult victimization.

Multivariate Results

We tested a series of logistic regression models to examine the relative risk of hazardous drinking and of depression controlling for demographic characteristics and parental drinking. Our initial model (Model 1) included only sexual identity and the control variables. In Model 2 we added number of victimization types. In Model 3 we included the life stage variable indicators: childhood victimization only, adult victimization only and revictimization, controlling for covariates and using women who reported neither childhood nor adult victimization as the referent group.

Hazardous drinking

Results of Model 1 (Table 2) show that each of the four sexual minority subgroups was more than twice as likely as exclusively heterosexual women to report hazardous drinking. Odds were highest for the intermediate sexual identity subgroups, but differences were statistically significant only for the mostly heterosexual and bisexual women. Mostly lesbian and exclusively lesbian women did not differ significantly from exclusively heterosexual women in their risk of hazardous drinking. Younger age and parental drinking problems were positively associated with hazardous drinking.

In Model 2 (Table 2) we added the number of types of lifetime victimization. Results showed that the pattern of risk associated with sexual identity was similar to Model 1, suggesting that victimization experiences account for only part of the elevated rates of hazardous drinking observed among SMW. The number of victimization types was significantly associated with hazardous drinking for the sample as a whole, with a 20% increase in risk for each additional type of victimization reported (OR=1.20; CI=1.05-1.36).

To explore whether victimization in childhood or in adulthood might be more strongly associated with hazardous drinking we also tested models that separated experiences of childhood victimization only, adult victimization only, and revictimization. As shown in Model 3 (Table 2), adult victimization was significantly associated with hazardous drinking (OR=1.67; CI=1.01- 2.76), and women who reported experiencing both childhood and adult victimization had more than 2-fold higher odds of hazardous drinking (OR=2.2; CI=1.47-3.30). Victimization experienced only in childhood was not associated with higher odds of hazardous drinking (OR=1.01; CI=0.75-1.36)

Depression

Results of the initial model predicting the relative risk of depression (Model 1, Table 3) showed higher odds of depression for mostly heterosexual (OR=1.56) and bisexual (OR=2.90) women compared to the exclusively heterosexual referent group, but only bisexual women differed significantly from exclusively heterosexual women. Depression was significantly related to race, with blacks showing lower odds of depression than whites (OR=0.55; CI=0.38-0.80). Both urban and rural NSHLEW study indicator variables were

significantly associated with depression. That is, women in the NSHLEW, regardless of whether they resided in an urban/suburban or rural location, were at significantly lower risk of depression than were CHLEW respondents. Age and parental drinking odds were similar to those in the hazardous drinking models.

Adding number of types of victimization (Model 2, Table 3) attenuated the OR for depression among bisexual women (from OR=2.9 to OR=1.98), which was no longer statistically significant. In this model, the number of victimization types was significantly associated with depression (OR=1.68; CI=1.42-1.97). For each additional type of victimization reported the risk of depression increased by 68%.

In contrast to models predicting hazardous drinking based on when victimization occurred, models for depression showed that compared with women who reported no lifetime victimization, those who reported victimization in childhood only (OR=1.99; CI=1.31-3.02) had statistically higher odds of past-year depression. Women who reported both childhood and adult victimization were more than four times as likely as those who reported no lifetime victimization to meet study criteria for depression (OR=4.56; CI=2.60-7.99).

Discussion

Findings support our first hypothesis that SMW would report a greater number of victimization types. Indeed, SMW as a group were significantly more likely than exclusively heterosexual women to report each of the six types of lifetime victimization. As expected, rates of victimization, hazardous drinking and depression varied across the four sexual minority subgroups. Consistent with findings from national probability samples, women in the current study who identified as bisexual reported the highest rates of nearly all of the victimization types and the highest mean number of different types of victimization ($\bar{x}$ =2.22).^{2, 21} Rates of victimization and number of victimization types among mostly heterosexual women generally fell between those of exclusively heterosexual women and the other three sexual minority subgroups.

Both SMW and exclusively heterosexual women were more likely to report childhood victimization only than to report adult victimization only. However, SMW—particularly bisexual, mostly lesbian and exclusively lesbian women—were more likely than exclusively heterosexual women to report victimization in both childhood and adulthood. Findings of high rates of revictimization among SMW were not surprising given that they have been shown to be substantially more likely than heterosexual women to report victimization in childhood, and given that childhood sexual abuse is one of the strongest predictors of revictimization.^{2, 4, 20, 21, 43}

Also consistent with our first hypothesis, substantially more SMW than exclusively heterosexual women reported hazardous drinking and depression. In bivariate analyses, bisexual women reported the highest rates of depression of the sexual identity groups (72.5% compared with rates ranging from 25.9% for exclusively heterosexual to 55.7% for exclusively lesbian women). In multivariate analyses controlling for demographic characteristics and parental drinking problems, bisexual women were almost three times as

likely as exclusively heterosexual women to report depression. The finding of high rates of depression and other forms of psychological distress among bisexual women has been reported elsewhere and is posited to be the result of higher levels of stigma and marginalization, and lower levels of social support, from both mainstream and gay/lesbian communities.^{1, 4, 30, 44} For example, in recent analyses of National Health and Nutrition Examination Survey data, participants who identified as bisexual had the poorest mental health and the lowest levels of social resources of all sexual orientation groups.⁽¹⁾ Further, Kertzner and colleagues found that bisexual identity was associated with disadvantage in social well-being, but that disadvantage was mediated by community connectedness.⁴⁵ We also found elevated rates of depression and hazardous drinking among women who identified as mostly heterosexual. Despite showing somewhat lower risk of lifetime victimization than the other three sexual minority subgroups, rates of hazardous drinking and depression among mostly heterosexual women were more in line with rates reported by lesbian and bisexual women than those reported by exclusively heterosexual women. These results are consistent with an emerging body of literature that highlights elevated health risk behaviors and adverse health outcomes among adolescent or adult women who identify as mostly heterosexual.^{21, 32, 34} Although reasons for mostly heterosexual women's heightened risk are poorly understood, it is possible that this group shares some of the same risk factors as bisexual women. For example, Corliss and colleagues found that mostly heterosexual women reported lower social support from both family and friends than did exclusively heterosexual women.³³ Similarly, Saewyc and colleagues found that mostly heterosexual adolescents scored lower on a family connectedness measure than did their exclusively heterosexual peers.⁴⁷

Results of multivariate analyses controlling for demographic characteristics and parental drinking problems showed that mostly lesbian women had higher odds of hazardous drinking than did exclusively heterosexual women, but not higher odds of depression. Odds for exclusively lesbian women did not differ significantly from those for exclusively heterosexual women on either hazardous drinking or depression, though the estimate for hazardous drinking was nearly significant. These findings differ from much of the existing literature which tends to report substantially higher rates of hazardous drinking and depression among lesbian than heterosexual women. However, almost no research has attempted to distinguish between mostly and exclusively lesbian identities.

These results highlight the importance of research that examines risk (and protective) factors across sexual minority subgroups and add to previous work that illustrates the potential negative impact of using restricted sexual identity response options or collapsing sexual identity subgroups in analyses.⁴⁸ More research is needed that explores the meaning of various sexual identity categories, especially the intermediate categories such as mostly heterosexual and mostly lesbian.

Results of the current study also provide strong support for our second hypothesis that the number of types of victimization would be positively associated with hazardous drinking and depression. As in other research examining the relationship between number of lifetime adversities or traumatic events and negative health outcomes, our results indicate a dose-response effect of victimization exposure.^{49, 50} For the sample as a whole, the odds of

hazardous drinking increased by 20% for each additional type of victimization reported. The associations were even stronger for depression, increasing by 68% for each additional type of victimization reported. Although studies have demonstrated the cumulative impact of multiple traumatic or victimization experiences on substance use and mental health outcomes among individuals in the general population, relatively few studies of sexual minorities have assessed multiple forms of victimization and fewer still have examined the relationships between multiple forms of victimization and health outcomes.⁵¹⁻⁵³

In support of our third hypothesis we found that adding number of victimization types only slightly attenuated the odds of hazardous drinking in each of the four sexual minority subgroups, suggesting that multiple forms of victimization account for only part of the elevated rates of hazardous drinking observed among SMW. Similarly, models predicting odds of depression showed only modest attenuation for three of the sexual minority groups (mostly heterosexual, mostly lesbian and exclusively lesbian women) when we added number of victimization types. For bisexual women, however, adding number of victimization types reduced the odds of depression from OR=2.9 to OR=1.98, suggesting that victimization may play a stronger role in depression among bisexual women than among women in other sexual minority subgroups.

The odds of hazardous drinking were significant only among women who reported experiencing adult victimization, either alone or in combination with childhood victimization. In contrast, our depression models showed that victimization during childhood only or when combined with victimization in adulthood were significantly associated with past-year depression. Risk of both depression and hazardous drinking were greatest among women who reported both childhood and adult victimization. These women were more than four times as likely as those who reported neither childhood nor adult victimization to meet study criteria for past-year depression and 2.2 times as likely to have experienced hazardous drinking. Inferring temporal order or making causal inferences about associations between adult victimization and hazardous drinking is difficult given that hazardous drinking is known to be both a cause and a consequence of adult victimization.¹ It is possible that adult victimization, being more proximal than childhood victimization, creates greater risk of hazardous drinking. It is also possible that causality operates in the opposite direction—with hazardous drinking leading to greater participation in situations that increase risk of sexual or physical assault.

Limitations

Although the study has important strengths, including a large and diverse sample of SMW and the use of well-tested measures, there are also limitations that should be considered when interpreting the results. First, the CHLEW sample was recruited using nonprobability methods and was limited to women who lived in the greater Chicago metropolitan area. Despite successful recruitment of women typically underrepresented in studies of sexual minority health (older, less educated, and racial/ethnic minority), we are unable to determine how well the sample represents SMW who live in Chicago or elsewhere, particularly those who live in rural areas. In addition, one-half of the bisexual women and the large majority of mostly lesbian and exclusively lesbian women in the study are from the CHLEW, a

community-based volunteer sample, whereas very few of the mostly or exclusively lesbian—but all of the mostly heterosexual and exclusively heterosexual women—are from the NSHLEW, a national probability sample. Despite combining two datasets, the numbers of bisexual and mostly heterosexual women in the study were relatively small. Small sample sizes can produce less precise estimates and have less power to detect differences. These factors, in addition to the fact that the NSHLEW study oversampled moderate to heavy drinkers (4 drinks/week), highlight the need for using caution in making comparisons across the sexual minority subgroups, especially comparisons relative to hazardous drinking. Thus, our pooling of data from the CHLEW and NSHLEW is both a strength and a limitation of the study. Our methods make it possible to compare a hard-to-reach sample with a general population sample—something that is generally difficult to accomplish. We acknowledge, however, that the sample variances estimated for the subgroups within the pooled sample—particularly the groups with small sample sizes—may be biased in unknown ways.

Measures included in the CHLEW and the NSHLEW are based on self-report and therefore may be biased by recall and social desirability. However, both the CHLEW and NSHLEW used a well-validated questionnaire designed to be sensitive to women's (including SMW's) lives and experiences. In addition, both studies employed highly trained female interviewers and a variety of methods to enhance rapport. These factors may have reduced the potential for biased responses.

Although measures used to assess victimization in the CHLEW and NSHLEW are well-validated, in the analyses presented here we used general indicators (any/no experience) for each of the six types of lifetime victimization. Detailed information about frequency and severity is available only for CSA; more limited information regarding frequency and severity is available for CPA and IPV. Given previous findings from our work and the work of others indicating that SMW report more severe experiences of childhood abuse than do heterosexual women, research is needed that compares a greater range of victimization experiences and adversities (e.g., discrimination, bullying or harassment, witnessing violence) as well as frequency and severity of victimization experiences among sexual minority and heterosexual women.^{20, 54, 55} We also recognize that the limitations of our measure of childhood neglect. Because it was embedded in a question that asked about forms of parental discipline rather than about a broader range of forms or reasons for neglect, rates of this form of childhood victimization may well be underestimated.

As noted in the description of measures, questions used to assess IPV differed in the CHLEW and NSHLEW. The CHLEW used closed-ended questions and asked about experiences of partner violence in the previous 12 months, whereas the NSHLEW used open-ended questions about experiences perpetrated by a current or former romantic partner during the past two years. The more restrictive definition of the perpetrator and the shorter time frame assessed in the CHLEW (i.e., most recent partner; past 12 months) would be expected to result in lower rates of IPV than if the timeframe had been longer and the potential perpetrators more inclusive. Thus, although rates of IPV among sexual minority women in this study are somewhat higher than those of the exclusively heterosexual women, the SMW's rates are likely underestimates of actual prevalence.

Findings from the study are based on cross-sectional data. As such, limitations related to inferences about causality and temporal order must be considered when interpreting results.

Implications and Future Directions

The high rates of hazardous drinking, depression and lifetime victimization among SMW are cause for concern. Results suggest that reducing or preventing victimization could substantially reduce sexual orientation-related health disparities among SMW.

An important step in the development of effective prevention strategies is understanding the mechanisms that underlie risk of victimization and the relationship between victimization and negative mental health outcomes among SMW. For some time authors have speculated that gender nonconformity may contribute to elevated rates of victimization among sexual minorities, yet very little research has been conducted to explore this hypothesized pathway. Recently, Roberts and colleagues found that childhood sexual, physical, and psychological abuse were more prevalent among women who scored in the top decile of childhood gender nonconformity compared with those below the median of nonconformity.⁵⁶ These authors conclude that gender nonconformity is an important indicator of increased risk of victimization during childhood—both among children who later identify as sexual minority and among those who later identify as heterosexual. Gender nonconformity has also been identified as a risk factor for sexual and physical violence perpetrated against adult women. The term “corrective rape” was recently coined to describe sexual violence that is used for the purpose of punishing and/or correcting perceived deviance from socially prescribed female gender roles.⁵⁷ To our knowledge no research has compared gender role nonconformity across sexual minority subgroups (most research has been conducted with gay men and lesbians using retrospective recall), so it is unclear whether and to what extent gender nonconformity may account for differences in rates of victimization across sexual minority groups.

Based on findings in the current study as well as in studies using probability sampling methods, bisexual women tend to be at greater risk than lesbian women for most types of lifetime victimization.^(2, 21) For example, Hughes and colleagues found that bisexual women were more likely than heterosexual women to report CSA, CPA, partner violence and non-partner violence, whereas lesbians differed from heterosexual women only in reports of CSA.²¹ More research with sufficiently large samples of bisexual women is needed to better understand factors that place this group of women at risk for victimization and how victimization is linked to negative mental health outcomes.

Findings of variations in risk across sexual minority subgroups in this study, and in several studies using national probability samples, suggest that prevention and intervention strategies aimed at reducing health disparities may be more effective if targeted toward specific sexual minority subgroups.^{2, 7, 21, 29} Given findings suggesting that bisexual and mostly heterosexual women have lower levels of social support, strategies aimed at increasing the visibility and acceptability of these identities (e.g., including these identity options in research studies of SMW and in history and physical assessments) should serve to increase group identity and a sense of belonging, and should promote greater social connectedness for these groups. Health care providers need to be aware of elevated rates of

victimization among SMW, as well as SMW's heightened risk of hazardous drinking and depression. In addition, they need to understand that risk profiles differ across sexual minority subgroups and be able to ask questions about sexual orientation beyond the simple (and standard) dichotomies of “gay vs. straight” or trichotomies of “lesbian, bisexual, heterosexual” to avoid misclassifying the risk status of SMW and missed opportunities for health education and counseling.

Consistent with other studies of victimization among SMW, some, but not all, of the risk for hazardous drinking and depression in the current study was explained by victimization.^{2, 58} It is likely that stigma, discrimination and other forms of sexual minority stress account for a substantial amount of the disparities observed in the current study outcomes. This may be particularly true for hazardous drinking, given the somewhat less robust relationships between victimization and this study outcome. Research using more complex models is needed to better understand risk and protective factors associated with victimization as well as with hazardous drinking and depression.

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Table 1

Design-based descriptive statistics for study variables: Total sample and stratified by sexual identity.

	Total n=1573	Exclusively heterosexual n=1013	Mostly heterosexual n=72	Bisexual n=27	Mostly lesbian n=124	Lesbian n=326	Design- Corrected F-tests
<u>Demographic and Control Variables</u>							
Age [M (SE), range 18-94]	45.18 (1.21)	48.18 (1.28) ^a	36.91 (2.12) ^{b,c}	34.88 (2.04) ^{b,c}	34.64 (0.32) ^b	38.82 (0.35) ^c	***
Race/ethnicity [n (%)]							***
Non-Hispanic White	1080 (65.3)	782 (72.4) ^a	63 (85.2) ^a	16 (60.7) ^{a,b}	58 (47.0) ^b	157 (47.6) ^b	
Non-Hispanic black	265 (20.0)	127 (17.0) ^a	6 (10.8) ^a	6 (21.5) ^a	29 (23.2) ^a	93 (28.6) ^a	
Hispanic	170 (11.6)	76 (8.6) ^a	2 (3.2) ^a	3 (11.0) ^{a,b}	28 (22.4) ^b	59 (18.5) ^b	
Other race/ethnicity	58 (3.1)	28 (2.0) ^a	1 (0.9) ^{a,b}	2 (6.8) ^{a,b}	9 (7.4) ^b	17 (5.3) ^{a,b}	
Education (%)							***
High school or less	504 (37.0)	409 (45.1) ^a	16 (23.9) ^b	7 (24.9) ^{a,b}	15 (11.8) ^{a,b}	51 (15.3) ^{a,b}	
Some college	537 (31.9)	350 (32.5) ^a	37 (49.3) ^b	11 (38.1) ^{a,b}	35 (27.7) ^a	100 (30.9) ^a	
College degree (4 year)	292 (16.8)	157 (13.5) ^a	14 (19.4) ^{a,b}	6 (25.8) ^b	32 (26.2) ^b	82 (25.2) ^b	
Graduate/professional degree	238 (14.2)	95 (9.0) ^a	5 (7.4) ^a	3 (11.2) ^a	42 (34.4) ^b	93 (28.7) ^b	
<u>Study Identifier/Residence</u>							
Urban-NSHLEW	938 (59.9)	837 (79.3) ^a	64 (89.3) ^a	14 (33.3) ^b	5 (2.6) ^b	11 (2.3) ^b	
Rural-NSHLEW	187 (15.7)	175 (20.7) ^a	8 (10.7) ^a	2 (13.5) ^a	0 (0.0)	0 (0.0)	
CHLEW	447 (24.4)	0 (0.0)	0 (0.0)	11 (53.2) ^a	119 (97.4) ^b	315 (97.7) ^b	
Parental drinking problems [n (%)]	440 (27.2)	240 (22.3) ^a	24 (34.5) ^{a,b}	8 (23.1) ^{a,b}	46 (39.6) ^b	121 (39.5) ^b	***
<u>Study Outcomes</u>							
Hazardous drinking (2 indicators) [n (%)]	482 (22.4)	252 (16.7) ^a	39 (43.6) ^b	14 (42.7) ^b	57 (45.7) ^b	115 (35.1) ^b	
Depression (past year) [n (%)]	586 (34.1)	283 (25.9) ^a	33 (40.5) ^b	20 (72.5) ^b	67 (54.4) ^b	180 (55.7) ^b	***
<u>Victimization Types</u>							
Childhood sexual abuse [n (%)]	568 (35.5)	291 (26.5) ^a	32 (42.4) ^b	16 (59.0) ^b	67 (62.5) ^b	160 (55.5) ^b	***
Childhood physical abuse [n (%)]	607 (39.5)	326 (34.5) ^a	23 (29.5) ^a	11 (43.1) ^{a,b}	60 (48.6) ^{a,b}	184 (56.5) ^b	***
Childhood neglect [n (%)]	80 (4.6)	20 (1.9) ^a	3 (2.8) ^{a,c}	4 (19.7) ^b	12 (9.3) ^{b,c}	41 (12.4) ^{b,c,d}	***
Adult sexual assault [n (%)]	370 (22.4)	216 (19.9) ^a	22 (29.7) ^{a,b}	10 (44.7) ^{a,b}	32 (25.8) ^b	87 (27.2) ^b	*

	Total	Exclusively heterosexual	Mostly heterosexual	Bisexual	Mostly lesbian	Lesbian	Design-Corrected F-tests
	n=1573	n=1013	n=72	n=27	n=124	n=326	
Adult physical assault [n (%)]	205 (12.1)	65 (6.3) ^a	7 (8.0) ^{a,b}	5 (19.9) ^{b,c}	42 (33.4) ^c	86 (26.5) ^c	***
Adult intimate partner violence [n (%)]	128 (7.0)	64 (5.3) ^a	10 (11.4) ^{a,b}	7 (24.9) ^b	11 (8.8) ^{a,b}	36 (10.7) ^{a,b}	***
Number Victimization Types [M (SE), range 0-6]	1.21 (.06)	0.94 (0.05) ^a	1.23 (0.14) ^a	2.22 (0.20) ^b	1.85 (0.13) ^b	1.93 (0.04) ^b	***
When in Life Course Victimization Occurred [n (%)]							
Neither childhood nor adulthood	502 (34.9)	418 (42.3) ^a	22 (32.5) ^{a,c}	1 (2.9) ^{b,c}	22 (22.0) ^c	34 (12.5) ^{b,d}	***
Childhood victimization only	452 (32.3)	294 (31.9) ^a	18 (27.7) ^a	5 (19.9) ^a	31 (30.4) ^a	102 (37.0) ^a	
Adult victimization only	133 (8.6)	98 (9.1) ^a	9 (14.9) ^{a,b}	4 (22.3) ^{a,b}	6 (5.4) ^{a,b}	15 (5.5) ^b	
Both childhood and adult victimization	397 (24.1)	191 (16.7) ^a	22 (25.0) ^{a,b}	14 (54.9) ^{b,c}	43 (42.2) ^{b,c}	125 (45.0) ^c	

Note: Means and percentages with different superscripts across rows have non-overlapping 95% confidence intervals. N's vary based on missing data.

Table 2

Design-based logistic regression models: Sexual identity differences in hazardous drinking.

Sexual Identity (Referent: Exclusively heterosexual)	Model 1	Model 2	Model 3
Mostly heterosexual	2.66 (1.43, 4.95)	** 2.58 (1.38, 4.82)	** 2.59 (1.41, 4.76)
Bisexual	3.06 (1.37, 6.82)	** 2.5 (1.04, 6.01)	* 2.24 (0.88, 5.71)
Mostly lesbian	2.96 (0.97, 9.03)	3.08 (1.00, 9.46)	* 3.07 (0.97, 9.70)
Exclusively lesbian	2.18 (0.86, 5.56)	2.09 (0.75, 5.82)	2.07 (0.68, 6.30)
Age	0.58 (0.53, 0.63)	*** 0.59 (0.54, 0.65)	*** 0.59 (0.54, 0.65)
Race/Ethnicity (Referent: Non-Hispanic white/other)			
Non-Hispanic black	1.05 (0.67, 1.64)	0.9 (0.58, 1.40)	0.93 (0.60, 1.45)
Hispanic	1.17 (0.61, 2.25)	1.17 (0.74, 1.83)	1.16 (0.74, 1.81)
Other	1.32 (0.84, 2.09)	1.33 (0.83, 2.13)	1.46 (0.87, 2.44)
Education	0.97 (0.85, 1.11)	0.98 (0.87, 1.10)	0.96 (0.86, 1.09)
Residence (Referent: CHLEW)			
Rural -NSHLEW	1.26 (0.48, 3.34)	1.5 (0.50, 4.49)	1.47 (0.47, 4.56)
Urban-NSHLEW	1.36 (0.57, 3.27)	1.59 (0.57, 4.47)	1.58 (0.55, 4.51)
Parental Drinking Problems (Referent: neither parent had drinking problems)	2.02 (1.51, 2.69)	*** 1.95 (1.47, 2.58)	*** 1.91 (1.45, 2.51)
Number Victimization Types		1.2 (1.05, 1.36)	**
When in Life Course Victimization Occurred (Referent: Neither childhood nor adulthood)			
Childhood victimization only			1.01 (0.75, 1.36)
Adult victimization only			1.67 (1.01, 2.76)
Both childhood and adult victimization			2.2 (1.47, 3.30)

Notes: N=1,414; OR=odds ratio; 95% CI=95% Confidence Interval.

* p < .05

**

p < .01

p < .001.

Table 3

Design-based logistic regression models: Sexual identity differences in depression.

Sexual Identity (Referent: Exclusively heterosexual)	Model 1	Model 2	Model 3
Mostly heterosexual	1.56 (0.92, 2.65)	1.53 (0.88, 2.65)	1.55 (0.90, 2.66)
Bisexual	2.9 (1.02, 8.23)	* 1.98 (0.68, 5.73)	2.07 (0.71, 6.01)
Mostly lesbian	0.55 (0.20, 1.52)	0.49 (0.17, 1.37)	0.57 (0.20, 1.64)
Exclusively lesbian	0.63 (0.23, 1.72)	0.42 (0.16, 1.12)	0.49 (0.18, 1.32)
Age	0.84 (0.78, 0.91)	*** 0.85 (0.79, 0.92)	*** 0.85 (0.79, 0.92)
Race/Ethnicity (Referent: Non-Hispanic white/other)			
Non-Hispanic black	0.55 (0.38, 0.80)	** 0.44 (0.27, 0.71)	** 0.47 (0.28, 0.77)
Hispanic	0.89 (0.59, 1.34)	0.87 (0.58, 1.32)	0.89 (0.58, 1.36)
Other	0.61 (0.32, 1.17)	0.46 (0.30, 0.70)	*** 0.5 (0.33, 0.78)
Education	0.94 (0.79, 1.12)	0.93 (0.79, 1.09)	0.92 (0.77, 1.10)
Residence (Referent: CHLEW)			
Rural - NSHLEW	0.15 (0.05, 0.44)	** 0.15 (0.05, 0.43)	** 0.16 (0.05, 0.48)
Urban - NSHLEW	0.17 (0.07, 0.46)	*** 0.17 (0.06, 0.44)	*** 0.19 (0.07, 0.51)
Parental drinking problems (Referent: neither parent had drinking problems)	1.66 (1.24, 2.21)	** 1.29 (0.96, 1.75)	1.32 (1.01, 1.72)
Number Victimization Types		1.68 (1.42, 1.97)	***
When in Life Course Victimization Occurred (Referent: neither childhood nor adulthood)			
Childhood victimization only			1.99 (1.31, 3.02)
Adult victimization only			1.76 (0.96, 3.21)
Both childhood and adult victimization			4.56 (2.60, 7.99)

Notes: N=1,415; OR=odds ratio; 95% CI=95% Confidence Interval.

* p < .05

** p < .01

*** p < .001.