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A Quantitative Intersectional Exploration of Sexual Violence and Mental Health Among Bi+ People: Looking Within and Across Race and Gender

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Abstract

Young bisexual people report disparities related to mental health and sexual violence compared to their heterosexual and gay/lesbian peers. However, the majority of research in these areas does not employ an intersectional design, despite evidence that health outcomes vary by race and gender within bi+ populations. The goal of this paper is to provide an intersectionally- informed exploration of the prevalence of sexual violence among a diverse sample of 112 bi+ people age 18-26, as well as descriptive data on stigma, mental health, and social support. Most (82%) of participants reported at least once experience of sexual violence since the age of 16. Sexual violence was positively associated with sexual stigma, anxiety, depression, and suicidality. Nonbinary participants reported greater prevalence of violence, exposure to stigma, and worse mental health outcomes relative to cisgender participants. Nonbinary BIPOC participants reported higher levels of anxiety and depression than cisgender BIPOC participants.

Keywords

Bisexual, sexual violence, young adult, intersectionality

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Introduction

Research conducted since 2012 strongly indicates that bi+ people (i.e., those attracted to more than one gender) experience significant sexual violence disparities relative to both heterosexual people and gay/lesbian people (Chen et al., 2020; Walters et al., 2013). Further, research has demonstrated that rates of violence among bi+ people are positively associated with bisexual stigma and internalized heterosexism (Flanders et al., 2019; 2020; 2021; Salim et al., 2020), as well as negative mental health outcomes (Sigurvinsdottir & Ulman, 2015). However, research regarding bi+ people's experiences of sexual violence is less frequently investigated from an intersectional perspective, which has been evaluated as critical for the development of sexual violence intervention and prevention programming (McCauley et al., 2019). Because stigma, sexual violence, and mental health are experienced intersectionally, research must reflect that experience to understand how to prevent violence and support the health and wellbeing of bi+ people. The goal of this paper is to describe the prevalence of sexual violence among a diverse sample of bi+ people age 18-26, as well as to provide descriptive data on stigma, mental health, and social support. We build on these analyses to provide a nuanced understanding of how these factors differ, or are similar, across identity groups. Greater depth in understanding how these variables interrelate across different intersections of identity within bi+ communities is critical for the development of effective intersectional interventions to address sexual violence and mental health disparities.

Intersectionality and Health

Intersectionality theory, as developed by Black feminist scholars (e.g., Collins, 1990; Crenshaw, 1989), speaks to how structural intersections of power and oppression are experienced by an individual. Embodying multiple minoritized identities leads to a multiplicative experience of stigma, wherein, for example, biphobia, transphobia, and racism cannot be separated from one another for someone who identifies as a bisexual, nonbinary, Person of Color. Rather, biphobia is experienced as simultaneously gendered and racialized. As outlined by Bowleg (2012), intersectionality is essential within health research to obtain an accurate understanding of health disparities. Additive models of health inequity are insufficient, as intersectional stigma carries a qualitatively different burden related to health. The U.S. National Institutes of Health Sexual and Gender Minority Research Office (2019) has emphasized the importance of an intersectional perspective for understanding the health and health disparities experienced by bi+ populations in particular.

While the majority of intersectional health research is qualitative, scholars have argued for the importance of quantitative research, especially research that moves away from exclusively additive models (Bauer et al., 2021; Bowleg, 2012; Bowleg & Bauer, 2016). Bowleg and Bauer (2016), for example, demonstrate how the interpretation of health data can vary significantly if researchers report a series of statistical main effects, as opposed to interaction terms that combine the effects of two or more categories on an outcome. Since our goal is to accurately describe the prevalence of stigma, sexual violence, mental health, and social support within a sample of racially and gender diverse bi+ people, we adopt an intersectional perspective to assess similarities and differences across the outcomes within varying levels of one identity category, and also across multiple identities.

Bi+ Experience of Sexual Violence

Bi+ people experience high levels of sexual violence, and this is particularly the case for bi+ women. Data from the 2010-2012 National Intimate Partner and Sexual Violence Survey show that 68.8% of bisexual women reported a lifetime experience of any type of violent sexual contact, compared to 46.3% of lesbian women and 36.0% of heterosexual women (Chen et al., 2020). Further, 46.1% of bisexual women

reported a lifetime experience of rape, relative to 24.7% of lesbian women and 14.0% of heterosexual women (Chen et al., 2020). While the data are not separated by sexual identity, the U.S. Trans Survey reported that the highest rates of lifetime sexual assault were reported by nonbinary people (55%; James et al., 2016). Research findings reporting high rates of sexual violence among bi+ women and nonbinary people have also been found across multiple studies with smaller sample sizes (Anderson et al., 2019; Flanders, Anderson, et al., 2019; Flanders et al., 2020). Given the elevated rates of violence experienced by women and nonbinary people, we focus on bisexual women and nonbinary people in the current study.

In addition to sexual identity and gender, race and ethnicity are also significant predictors of increased vulnerability for sexual violence. Specifically, multiracial, Black, and Indigenous women report higher rates of lifetime sexual violence than white women (Black et al., 2010). Among trans and nonbinary people in the U.S. Trans Survey, Indigenous, multiracial, Middle Eastern, Black, and Latinx individuals reported higher than study average rates of lifetime sexual assault (James et al., 2016). Flanders et al. (2021) found that among young bi+ women and gender minoritized people, participants who identified as BIPOC (Black, Indigenous, and People of Color) reported significantly higher rates of sexual violence since the age of 16 compared to white participants. As such, both gender and race/ethnicity are important factors to consider in relation to sexual violence vulnerability among bi+ people, as are the intersections of those identities.

Bi+ Mental Health

Research on bi+ mental health over the past two decades has demonstrated that bi+ people's mental health is worse than the health of their heterosexual and gay/lesbian peers (Jorm et al., 2002; Ross et al., 2018). Bi+ cisgender women report consistently poor mental health outcomes, such as higher rates of anxiety, depression, posttraumatic stress disorder (PTSD), and suicidality (Alessi et al., 2013; Kerr et al., 2013; Pompili et al., 2014; Ross et al., 2018; Salway et al., 2019; Shearer et al., 2016; Steele et al., 2009). Compared to the literature on bi+ cisgender women, there is very little data on the mental health experiences of bi+ nonbinary people. Some researchers have found that sexual minoritized identities combined with a trans, nonbinary, or gender nonconforming identity, predicted an even greater mental health disparity than did sexual minoritized identity alone (Borgogna et al., 2019; Price-Feeney et al., 2020). Other research has identified that among young lesbian and bi+ people, identifying as trans or nonbinary was associated with poorer mental health symptoms relative to cisgender participants (Flanders et al., 2022).

Similarly, quantitative data published on the mental health experiences of bi+ people who identify as BIPOC are rare. Ghabrial and Ross (2018) found in their content analysis of LGBTQ mental health literature that only 7% of 324 mental health research articles that include bisexual participants reported on BIPOC bisexual mental health separate from that of white bisexual participants or BIPOC participants of other sexual identities. Work focused on bi+ BIPOC mental health has found that despite being a significant portion of LGBTQ people overall, bi+ BIPOC people face significant erasure, due to intersecting oppressions of bisexual erasure and colorblind racism, which has a negative impact on wellness (Gonzalez & Mosley, 2019; Mosley et al., 2019). That erasure aligns with what intersectionality scholars have called intersectional invisibility, wherein people who embody multiple marginalized identities are not viewed as central members of a community (Purdie-Vaughns & Eibach, 2008). In general, racism and biphobia experienced in LGBTQ community spaces, combined with heterosexism experienced in Communities of Color, can lead to lower social support and poorer mental health outcomes for bi+ BIPOC people (Flanders et al., 2019; Muñoz-Laboy et al., 2009). Flanders and colleagues (2022), for example, found that among a sample of young lesbian and bi+ people, participants who identified as BIPOC were more likely to report clinically significant mental health symptoms compared to white participants.

The Role of Stigma

In recent research with bi+ people, sexual stigma and biphobia have been consistent significant predictors of elevated reports of sexual violence (Flanders et al., 2019; 2021; Grove & Johnson, 2022), as well as poor mental health outcomes (Dyar & London, 2018; Feinstein & Dyar, 2017; Flanders, 2015; Salim et al., 2019). Martin-Storey and Fromme (2021) found that discrimination mediated the relationship between bisexual identity and increased dating violence (which included sexual violence) among a sample of young adults, while Salim et al. (2020) identified among a sample of bisexual women that negative bisexual experiences led to increased internalized heterosexism, which in turn predicted greater reported rates of verbal sexual coercion. In a study of over 500 diverse bisexual people (Watson et al., 2021) many participants reported binegativity connected to their experiences of sexual assault, such as stereotypes about hypersexuality and corrective rape. In a recent mixed-method study, Flanders et al. (2021) found that quantitatively, both negative bisexual experiences and sexual stigma were broadly associated with reports of sexual violence among bisexual people, and that qualitatively, participants perceived biphobia to be significantly related to their experiences of sexual victimization. Flanders and colleagues (2021) also found that intersectional support and discrimination were critical to understanding young bi+ people's experiences of violence, with participants discussing how exposure to intersectional discrimination led them to feel more vulnerable to sexual violence. Finally, a recent study conducted by Grove and Johnson (2022) found that exposure to biphobia led to significantly greater odds of experiencing sexual violence in the past year.

Prior qualitative research has found that among bi+ people, bisexual stigma is perceived to be a major detriment to their mental health (Flanders et al., 2015; Ghabrial, 2017; Ross et al., 2010). Various longitudinal studies have also found that among bisexual women, minority stressors and microaggressions related to bisexuality are associated with worse mental health outcomes (Dyar & London, 2018; Flanders, 2015; Salim et al., 2019). Bisexual women were also found to connect bisexual stigma to a decrease in sexual health, which they related to decreased mental health (Flanders et al., 2017). Additionally, sexual violence has been shown to predict a greater likelihood of reporting clinically significant mental health symptoms among bi+ women and nonbinary people (Flanders et al., 2022). As such, it is likely that stigma, sexual violence, and mental health are all interconnected among bi+ women and nonbinary people.

Taken together, the above evidence supports that bisexual stigma is perceived by bi+ people to be an important factor related to their experiences of sexual violence and mental health, as well as a statistically significant predictor of increased vulnerability for violence and poor mental health outcomes. While qualitative research has found intersectional stigma to have a central influence on how sexual violence is experienced by bi+ people who embody multiple minoritized identities (Flanders et al., 2021), there is less quantitative data available to describe how these experiences might generalize to a broader population of bi+ people. Such descriptive information is critical for developing informed violence intervention and prevention programming that speaks to the intersectional realities of many bi+ people, and in particular those who are most vulnerable to experiencing violence. Research further supports the necessity for such work, as bi+ people have been found to evaluate sexual violence interventions as less acceptable than heterosexual people (Anderson et al., 2022).

The Role of Social Support

Social support is a critical resource for supporting the mental health of LGBTQ youth overall (McDonald, 2018), as well as for young bisexual people specifically (Sheets & Mohr, 2009). However, the positive effects of social support are not homogeneously experienced across bi+ people. For instance, Pollitt et al. (2017) found that among cisgender bisexual youth, parental support led to lower rates of depression when male participants were experiencing identity disclosure stress, but the same was not true for female participants experiencing high levels of disclosure stress. Recent research has also demonstrated that experience

of anti-bisexual prejudice is associated with decreased social support, and in turn worse mental health outcomes (Woulfe et al., 2021). Among a sample of young bisexual People of Color, general social support was associated with lower feelings of sexual identity illegitimacy and internalized binegativity, and higher identity affirmation. However, connection to LGBT community was associated with both increased identity affirmation as well as internalized and perceived binegativity and feelings of illegitimacy (Flanders, Shuler, et al., 2019). In a qualitative study on bisexual community and belonging, Gonzalez and colleagues (2021) found that for participants of color, there were barriers to finding supportive bisexual community (e.g., racism and colonialism in LGBTQ+ and bisexual spaces), and participants expressed a desire to instead connect with communities of color that were welcoming to LGBTQ+ people.

Additionally, people who have experienced sexual violence report varying levels of social support. In a mixed-method study of sexual minority women, many participants who experienced sexual violence also reported complicated feelings regarding disclosing about their experience of violence, especially if they were concerned about being blamed or worried that others would react negatively, such as dismissing or trivializing their experience (Hequembourg et al., 2021). If these types of concerns limit disclosure, it may prevent bi+ women and nonbinary people from accessing social support. This is particularly relevant to bisexual women, as prior research has found that bisexual women receive more negative social reactions to disclosure of sexual assault (Ullman, 2021), and people are significantly more likely to view bisexual women as promiscuous, which relates to being viewed as more responsible for being targeted for sexual violence (Dyar et al., 2021). Overall, while social support is a likely important source of resilience and mental health support, the relationship between social support and mental health may also be impacted by the experience of bisexual stigma, the source of social support, social reactions to disclosure of violence when sexual victimization occurs, and the level of distress experienced by bi+ people.

The Current Study

The goal of the current study is to provide intersectional quantitatively descriptive information about the experiences of sexual stigma, sexual violence, and mental health among a racially diverse sample of young bi+ women and nonbinary people. In doing so, we hope to contribute to a growing foundation of intersectional research that can support the development of programming to prevent violence and support the wellbeing of bi+ people. While our aim is to largely provide information to inform interventions, we do have the following hypotheses:

1. Nonbinary participants will report a significantly higher prevalence or mean scores of sexual violence, sexual stigma, depression, and anxiety, while reporting a significantly lower prevalence of social support compared to cisgender participants.
2. BIPOC participants will report a significantly higher prevalence or mean scores of sexual violence, sexual stigma, depression, and anxiety, while reporting a significantly lower prevalence of social support compared to white participants.
3. There will be a significant interaction between gender and race, where participants who identify as BIPOC and nonbinary will report a significantly higher prevalence or mean scores of sexual violence, sexual stigma, depression, and anxiety, while reporting a significantly lower mean score of social support compared to white and BIPOC cisgender participants as well as white nonbinary participants.
4. Sexual violence exposure will be positively related to experience of bisexual stigma, anxiety, depression, and suicidality, and negatively related to LGBT community connection and general social support.

Method

The data in this paper are baseline data from an ongoing longitudinal survey study on young bi+ people's experiences of sexual violence and well-being. Ethical approval was obtained at Mount Holyoke College.

Participants and Recruitment

A total of 115 bi+ women and nonbinary people age 18-26 were recruited and enrolled into the study. We focused on emerging adults (often considered those aged 18-25; Hochberg & Konner, 2020) due to the elevated rates of violence among young people (Walters et al., 2013). The recruitment and screening process as well as the participant demographics are described below. Surveys from three of the participants were missing the majority of their data, and as such were excluded from the analyses, resulting in a sample of 112.

Recruitment and screening process. We recruited participants from August through November 2019 via distribution of a recruitment flyer that contained a link to a screening survey. We circulated the flier through our professional networks to be posted on social media, and utilized paid advertisement through Facebook and Instagram. The flier advertised that we were recruiting participants for a study on young bisexual people's experiences of sexual and mental health, including experiences of sexual violence. People who were interested were directed to complete a brief screening survey (described below) to assess eligibility and ensure a diverse sample across race and gender. Inclusion criteria were that people 1) self-identified under the bi+ umbrella, 2) identified as women (cis and trans inclusive) or nonbinary, 3) were age 18-25 at the first point of contact with the research team, and 4) lived in the US or Canada.

A total of 932 individuals accessed the screening survey, with 889 meeting eligibility criteria, and 280 providing email addresses to be contacted by the research team to potentially enroll in the study. We then began a process of following up with individuals via email to invite them to enroll in the study with a goal of enrolling approximately 100 individuals, with relatively equal numbers of people who identified as BIPOC/nonbinary, BIPOC/cisgender, white/nonbinary, and white/cisgender.

Participant demographics. The average age of participants was 21.1 (S.D. = 2.2), and the majority identified as either bisexual or bisexual plus another sexual identity label, such as queer or pansexual, with 21 (18.7%) identifying with a plurisexual identity other than bisexual. A little over half of the participants identified as cisgender women (n = 66, 58.9%), and separately, over half of all participants were BIPOC (n = 66, 58.9%). Amongst BIPOC participants, racial and ethnic identities included Chinese (n =16), Latinx (n = 12), Black (n = 10), Indigenous, First Nations, Inuit, and/or Native American (n = 8), and Filipino (n = 7), among others. The total number of participants in each of our four categories were the following: BIPOC/nonbinary, n = 21; BIPOC/cisgender, n= 45; white/nonbinary, n = 24; and white/cisgender, n = 22. More information regarding participant demographics can be found in Table 1.

Materials

The materials for this study include a short screening survey to assess eligibility, a demographic form, and measures of sexual violence, bisexual stigma, mental health, and social support.

Screening and demographic form. Interested individuals completed the screening survey, which was provided through a link on the study advertisement materials. The screening survey asked whether participants identified under the bi+ umbrella, were age 18-25, and lived in the US or Canada. We also screened for whether participants identified as nonbinary and as BIPOC in order to ensure a diverse sample. The demographic form asked participants to report on their specific sexual identity, gender identity, racial and ethnic identity, population density, level of education, relationship status, and employment status.

Table 1. Baseline sample characteristics (n=112)

	mean	SD
Age (range: 18-26 years)	21.1	2.2
	n	%
Sexual Identity		
Bisexual only	40	35.7%
Bisexual+	51	45.5%
Other sexual identities beside bisexual	21	18.7%
Gender Identity		
Cisgender woman only	66	58.9%
Nonbinary	46	41.1%
Race/Ethnicity		
White only	46	41.1%
BIPOC	66	58.9%
Education		
Not completed 4-year college	77	69.4%
Completed 4-year college	34	30.6%
Employment		
No paid labor	55	49.1%
Part-time paid labor	39	34.8%
Full-time paid labor	18	16.1%
Geographic Area		
Rural	24	21.4%
Urban	81	72.3%
Not sure	7	6.3%
Relationship Status		
Single	54	48.2%
In relationship(s)	58	51.8%

Experiences of Bisexual Stigma. The 17-item Anti-Bisexual Experiences Scale (ABES; Brewster & Moradi, 2010) assesses binegative experiences (i.e., discrimination, stigma) related to bisexual identity from both heterosexual and gay/lesbian people and has a three-factor structure: instability stereotypes, sexual irresponsibility stereotypes, and general hostility factor. Frequency of experiences is measured using a 6-point Likert type scale from "1" for "never" to "6" for "almost all of the time." The items are summed to create a total. The original study found good factor structure, test-retest reliability, and discriminant and convergent validity, and excellent internal consistency reliability (α = .81-.94). A recent study on bi+ women found even higher internal consistency reliability (α = .95) for all subscales (Flanders et al., 2019). For the heterosexual response option, the Cronbach's alpha score for our sample was 0.94, and for the gay/lesbian response option it was 0.95.

Sexual violence measure. The Post-Refusal Sexual Persistence Scale (PRSPS; Struckman-Johnson et al., 2003) assesses the frequency of 19 sexual tactics through 19 items which form subscales for "sexual arousal," "emotional manipulation and deception," "exploitation of the intoxicated," and "physical force, threats, harm." In the PRSPS instructions, sex is broadly defined as "genital touching, oral sex, or intercourse." Response options included "0 times," "1 time," "2-5 times," "6-9 times," and "10+ times." The items are summed to create a total. Construct validity was demonstrated by analyzing written descriptions of sexual violence incidents in comparison to endorsed items (Struckman-Johnson et al., 2003). Anderson, Garcia, and colleague's (2021) study including bisexual, gay, and transgender-identified participants investigated test-retest reliability of sexual violence measures, demonstrating evidence of minimal to good reliability for the PRSPS (κ > .61 - .64, ICC = .86 - .92). Another study found good convergent (r = .70 - .88) and differential validity for sexual minority women and men (Anderson, Namie, et al., 2021).

Mental health measures.

Patient Health Questionnaire-9. The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) was originally developed as a primary care screener for depression. The PHQ-9 assesses depressive symptoms, providing a basis for the potential diagnosis of Major Depressive Disorder (MDD). It comprises nine items with responses on a 4-point Likert type scale measuring frequency of symptoms from "0" for "not at all" to "3" for "nearly every day." The items are summed to create a total. PHQ-9 scores range from 0 to 27 with cutoff scores of 5, 10, 15, and 20, representing mild, moderate, moderately severe, and severe levels of depressive symptoms, respectively. A systematic review of over 100 studies found the PHQ-9 to have good, well-established sensitivity and specificity for detecting depressive disorders (Kroenke et al., 2010). The PHQ-9 has been used with samples of gay men (Mao et al., 2009), Latina transgender women (Bazargan & Galvan, 2012), transgender and gender nonconforming youth (Moyer et al., 2019), and bisexual youth and adults (Ross et al., 2014). Among our sample, the Cronbach's alpha score was 0.91.

General Anxiety Disorder Scale-7. The 7-item Generalized Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006) was developed as a primary care screener for anxiety. The GAD-7 item response options measure the frequency of anxiety symptoms on a 4-point Likert type scale from "0" for "not at all" to "3" for "nearly every day." The items are summed to create a total. Scores range from 0 to 21 with cutoff scores of 5, 10, and 15, indicating mild, moderate, and severe symptoms of anxiety, respectively. A cutoff score of 10 was identified that optimized sensitivity (89%) and specificity (82%) with a negative predictive value (NPV) of 99%. Original study results from a nonclinical sample indicated the GAD-7 to be a reliable and valid measure of anxiety in the general population. The GAD-7 has been used in studies with gay, lesbian, and bisexual individuals (Rimes et al., 2018), and transgender and gender nonconforming youth (Moyer et al., 2019). Among our sample, the Cronbach's alpha score was 0.93.

Ask Suicide-Screening Questions. The 5-item National Institute of Mental Health's (NIMH) Ask Suicide-Screening Questions, or ASQ (Horowitz et al., 2012), is a brief suicide-risk screening tool measuring current and historical suicidal ideation, risk, and attempts. ASQ was recently validated for use among adults (sensitivity = 100%, 95% confidence interval; CI; [90, 100]; specificity = 89%, 95% CI [86, 91]; NPV = 100%, 95% CI [99, 100]; Horowitz, Snyder, et al., 2020), and youth ages 10-21 (sensitivity = 97%, 95% CI [82.78, 99.92]; specificity = 91%, 95% CI [88.40, 93.27]; NPV = 99.81%, 95% CI [98.93, 99.99]; Horowitz, Wharff, et al., 2020). We used the first four questions of the survey, as the fifth item is used to assess for acute imminent risk in a clinical setting. Participants who reported "yes" to any of the four suicide items were considered to have suicide risk.

Social support measures. The 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) measures social support from a significant other, support from family, and support from friends, with response items on a 5-point Likert type scale from "1" for "strongly disagree" to "5" for "strongly agree." The items are summed to create a total. In the original study, the MSPSS was found to

have good construct validity, good overall internal consistency reliability (α = .88), and good subscale internal consistency reliability for its three subscales: Significant Other (α = .91), Family (α = .87), and Friends (α = .85). It has been used with bisexual adult samples (Beaber, 2008; Hart et al., 2017) and lesbian, gay, bisexual, and transgender youth (Newcomb et al., 2014). Among our sample, the Cronbach's alpha score was 0.90.

The 8-item Connectedness to the LGBT Community Scale (Frost & Meyer, 2012) measures connection to the LGBT community by assessing how close participants feel to the LGBT community, how positive their connections have been, and if they felt their connections were rewarding and had problem-solving potential. The items are summed to create a total. The scale demonstrated good factorial, convergent, and discriminant validity, and good overall internal consistency reliability initially (α = .81), and over time (α = .73). Cronbach's alphas ranged from .75 to .88 across six gender identity and ethnoracial identity subgroups and from .64 to .80 when administered again one year later (Frost & Meyer, 2012). The Connectedness to the LGBT Community Scale has been employed with bisexual and transgender adults (Craney et al., 2018; Demant & Oviedo-Trespalacios, 2019; Lehavot et al., 2016), and sexual minority and nonbinary youth (Demant et al., 2018). Among our sample, the Cronbach's alpha score was 0.83.

Procedure

Participants in this study were sent a survey link to the baseline survey via email, and each participant was assigned a participant ID number to ensure that their responses were not connected to their name or email address. Upon accessing the survey link, individuals were first presented with the informed consent form. If they consented to participate, they progressed to the survey itself. If the survey was not already completed, participants were sent reminders to do so every two to three days for up to two weeks from when the initial email was sent out. The baseline survey was administered online through SurveyMonkey, and took approximately 30-45 minutes to complete. Participants were compensated 10 American or Canadian dollars depending on where they were based for completing the baseline survey. Participants in the US could choose whether to receive their compensation through a direct bank transfer or a gift card from Amazon US. Participants in Canada received their compensation through a gift card from a business of their choice.

Analytic Plan

We first collapsed demographic variables for analysis between groups. This included creating three sexual identity categories [bisexual only; bisexual+ (identified as bisexual as well as other sexual identities), or sexual identities besides bisexual], two gender categories (cisgender woman or nonbinary), two racial/ethnic categories (collapsed to non-Hispanic white only or BIPOC), as well as geographic area (rural or urban), level of education (collapsed to completed 4-year college or did not complete 4-year college), relationship status [collapsed to single or in relationship(s)], and employment (collapsed to full-time paid labor, part-time paid labor, or no paid labor).

Sexual identity-, gender identity-, and race/ethnicity-specific mean scores and standard deviations were calculated for sexual violence, depression, anxiety, LGBT community support, general social support, and stigma while prevalence of suicide risk was calculated. To test hypotheses 1 and 2, unadjusted t-tests and chi-square tests were used, as appropriate. Gender identity-by-race/ethnicity-specific estimates were also calculated for sexual violence, depression, anxiety, LGBT community support, general social support, stigma, and suicide risk. Pairwise comparisons of means using Tukey's adjustment for multiple comparisons as well as chi-square tests were used, as appropriate, to test hypothesis 3. Finally, pairwise correlation of all stigma, violence, mental health, and social support measures with continuous scores were estimated using Pearson's correlation and suicide-risk specific mean and standard errors were calculated for stigma,

violence, depression, anxiety, and social support measures and unadjusted t-tests were used to test hypothesis 4.

Results

Rates of sexual violence since the age of 16 were high among participants, with 92 (82.1%) individuals indicating they had some experience of sexual violence as measured by the PRSPS. Below we report how violence varied across identity, as well as exposure to bisexual stigma, mental health outcomes, and social support.

Describing Stigma, Violence, Mental Health and Social Support

Overall, participant-reported averages of sexual violence indicate that the majority of participants were exposed to more than one violence tactic, often multiple times, since the age of 16. There were no significant differences in average scores based on sexual identity category nor were there significant differences in average scores based on racial category. There was a significant difference based on gender identity, where nonbinary participants reported a significantly higher average (M = 17.1, SD = 1.9) compared to cisgender participants (M = 11.0, SD = 1.5, p = .015).

Participants reported being exposed to bisexual stigma, both from heterosexual and gay/lesbian people. The stigma encountered from gay and lesbian people was relatively similar across identity categories. Nonbinary people reported significantly more experiences of bisexual stigma perpetuated by heterosexual people (M = 53.5, SD = 2.8) compared to cisgender participants (M = 45.0, SD = 2.3, p = .018).

For mental health, across identity categories, participants on average reported symptoms indicative of moderate anxiety and depression. Nonbinary participants reported significantly higher depressive and anxiety scores than cisgender participants, and a greater proportion of nonbinary participants reported scores that met the clinical cut-points for an anxiety or depression diagnosis. Positive screenings for suicide risk were very high across all identity categories. Again, a greater proportion of nonbinary participants screened positively for suicide risk (75.6%) compared to cisgender participants (52.2%, p = .013).

Finally, participants reported relatively similar rates of LGBT community connection and general social support across identity groups. All descriptive information related to univariate identity categories can be found in Table 2.

Intersectional Experiences of Sexual Violence and Health

We next looked at whether there were differences across the outcome variables for the identity groups of nonbinary BIPOC participants, nonbinary white participants, cisgender BIPOC participants, and cisgender white participants. Overall, there were more similarities than differences. However, there were significant differences in mental health symptoms for BIPOC participants who were nonbinary compared to those who identified as cisgender. Nonbinary BIPOC participants reported significantly higher rates of depressive and anxiety symptoms relative to cisgender BIPOC participants. All intersectional descriptive data can be found in Table 3.

We calculated Cohen's d for effect size for the mean comparisons across the four groups, and found that for 90.5% of comparisons, the effect size was medium (d = 0.5) or larger. The mean comparisons with small effect sizes include depression between white women and nonbinary participants (d = 0.29), general social support between white women and BIPOC nonbinary participants (d = 0.24) as well as BIPOC women and white nonbinary participants (d = 0.17), and bisexual stigma perpetuated by heterosexual people between BIPOC and white nonbinary participants (d = 0.40). The lack of difference between these means should be interpreted cautiously, as we may be underpowered to identify small effects.

Table 2. Estimates of sexual violence, mental health, social support, and stigma by sexual identity, gender identity, and race/ethnicity (n=112)

	Sexual Violence Score			**Depression Score**			**Anxiety Score**			**Suicide**		
	mean	(SD)	pa	mean	(SD)	pa	mean	(SD)	pa	n	%	pb
Sexual Identity												0.561
Bisexual only	10.6	(2.0)	ref	11.1	(1.1)	ref	10.4	(1.0)	ref	23	57.5%	
Bisexual+	14.0	(1.8)	0.211	12.9	(1.5)	0.358	11.1	(0.9)	0.59	31	60.8%	
Other sexual identities beside bisexual	17.3	(2.8)	0.053	12.4	(1.0)	0.338	12.2	(1.3)	0.277	15	71.4%	
Gender Identity			**0.015***			**0.012***			**0.003***			**0.013***
Cisgender woman only	11.0	(1.5)		10.7	(0.8)		9.7	(0.7)		35	52.2%	
Nonbinary	17.1	(1.9)		14.0	(1.0)		13.1	(0.9)		34	75.6%	
Race/Ethnicity			0.423			0.886			0.678			0.293
White only	14.6	(1.9)		12.1	(1.0)		11.3	(0.9)		31	67.4%	
BIPOC	12.6	(1.6)		11.9	(0.9)		10.8	(0.8)		38	57.6%	
	LGBT Community Score			**General Social Support Score**			**Stigma Score (Heterosexual)**			**Stigma Score (Gay or Lesbian)**		
	mean	(SD)	pa	mean	(SD)	pa	mean	(SD)	pa	mean	(SD)	pa
Sexual Identity												
Bisexual only	23.0	(0.7)	ref	60.5	(2.1)	ref	49.8	(3.0)	ref	34.8	(2.6)	ref
Bisexual+	24.4	(0.6)	0.155	60.1	(1.9)	0.894	46.1	(2.6)	0.358	33.2	(2.3)	0.642
Other sexual identities beside bisexual	23.9	(1.0)	0.482	63.2	(3.0)	0.457	51.3	(4.1)	0.764	34.5	(3.6)	0.946
Gender Identity			0.194			0.961			**0.018***			0.174
Cisgender woman only	23.3	(0.6)		60.7	(1.6)		45.0	(2.3)		32.3	(2.0)	
Nonbinary	24.5	(0.7)		60.8	(2.0)		53.5	(2.8)		36.6	(2.4)	
Race/Ethnicity			0.809			0.836			0.259			0.404
White only	23.7	(0.7)		60.5	(1.9)		50.8	(2.8)		32.5	(2.4)	
BIPOC	23.9	(0.6)		61.0	(1.6)		46.7	(2.3)		35.1	(2.0)	
boldface and * indicates statistically significant differences												
a calculated from unadjusted t-test												
b calculated from chi-square test												

Table 3. Gender-by-race/ethnicity-specific estimates of sexual violence, mental health, social support, and stigma (n=112)

	Sexual Violence Score		**Depression Score**		**Anxiety Score**		**Suicide**	
	mean	(SD)	mean	(SD)	mean	(SD)	n	%
Cisgender woman & white only	12.9	(2.7)	11.9	(1.4)	11.0	(1.3)	13	59.1%
Cisgender woman & BIPOC	10.1	(1.9)	**10.1***	**(1.0)**	**9.0***	**(0.9)**	22	48.9%
Nonbinary & white only	16.2	(2.6)	12.3	(1.4)	11.7	(1.2)	18	75.0%
Nonbinary & BIPOC	18.2	(2.8)	**16.1***	**(1.5)**	**14.7***	**(1.3)**	16	76.2%
	LGBT Community Score		**General Social Support Score**		**Stigma Score (Heterosexual)**		**Stigma Score (Gay or Lesbian)**	
	mean	(SD)	mean	(SD)	mean	(SD)	mean	(SD)
Cisgender woman & white only	22.4	(1.0)	58.6	(2.8)	47.1	(4.0)	29.3	(3.4)
Cisgender woman & BIPOC	23.8	(0.7)	61.7	(2.0)	43.9	(2.8)	33.1	(2.4)
Nonbinary & white only	24.8	(0.9)	62.1	(2.7)	54.3	(3.8)	35.4	(3.3)
Nonbinary & BIPOC	24.2	(1.0)	59.3	(3.0)	52.7	(4.1)	37.9	(3.5)

boldface and * indicate statistically significantly different means, calculated from Tukey pairwise comparisons

Relationships Across Outcomes

We performed a correlational analysis to assess relationships between the outcome variables of sexual violence, stigma, mental health, and social support. Reports of sexual violence were significantly and positively related to all of the other outcome variables with the exception of the social support variables, meaning that an increase in exposure to sexual violence was associated with an increase in bisexual stigma perpetuated by heterosexuals ($r = 0.42$, $p < .001$) and gay and lesbian people ($r = 0.25$, $p < .01$), as well as an increase in depressive symptoms ($r = 0.42$, $p < .001$), anxiety symptoms ($r = 0.40$, $p < .001$). Similarly, bisexual stigma was significantly positively correlated with mental health symptoms. While connection to LGBT community and general social support were positively correlated with one another ($r = 0.37$, $p < .001$), general social support was negatively associated with depressive symptoms ($r = -0.30$, $p = .01$) and anxiety symptoms ($r = -0.28$, $p < .01$), and LGBT community connection was positively associated with both depressive ($r = 0.21$, $p < .05$) and anxiety symptoms ($r = 0.21$, $p < .05$). All correlational results can be found in Table 4.

We conducted t-tests to assess the relationships between the binary variable of positive suicide risk screening with the other outcome variables. Participants who reported positive suicide risk screenings had significantly greater exposure to sexual violence ($t = 3.88$, $p < .001$) and bisexual stigma perpetuated by heterosexual people ($t = 2.61$, p .010), and significantly lower general social support ($t = -2.06$, $p = .042$).

Table 4. Correlation of sexual violence, mental health, social support, and stigma scores

	Sexual Violence Score	Depression Score	Anxiety Score	LGBT Community Score	General Social Support Score	Stigma Score (Heterosexual)	Stigma Score (Gay or Lesbian)
Sexual Violence Score	1.00						
Depression Score	**0.42*** **	1.00					
Anxiety Score	**0.40*** **	**0.77*** **	1.00				
LGBT Community Score	0.12	**0.21***	**0.21***	1.00			
General Social Support Score	-0.05	**-0.30****	**-0.28****	**0.37*** **	1.00		
Stigma Score (Heterosexual)	**0.42*** **	**0.36*** **	**0.29****	0.11	-0.18	1.00	
Stigma Score (Gay or Lesbian)	**0.25****	0.18	0.10	0.01	-0.15	**0.64*** **	1.00

boldface indicates statistically significant differences, * p<0.05, ** p<0.01, *** p<0.001

Discussion

Bi+ mental health is inextricably linked to stigma and sexual violence, and these relationships look different across diverse populations of bi+ women and nonbinary people. Overall, the majority of participants in the current study reported past experience of sexual violence and suicidality, as well as clinical levels of anxiety and depressive symptoms. Our first hypothesis was partially supported, as nonbinary participants reported significantly higher levels of sexual violence, anxiety, depression, suicide risk, and bisexual stigma perpetuated by heterosexual people compared to cisgender participants. However, nonbinary participants did not report significantly lower rates of social support, nor greater rates of bisexual stigma perpetuated by gay and lesbian people. These findings correspond to prior research that has identified high rates of sexual assault among nonbinary people (James et al., 2016), as well as high rates of depressive symptoms and suicidality relative to cisgender sexual minority youth (Price-Feeney et al., 2020). The current findings expand beyond prior research however, as they speak to the intersection of nonbinary and bi+ identity, two groups that report disparities relative to mental health and sexual violence. Even within a highly vulnerable group, i.e., bi+ young people, those who identify as nonbinary report significantly greater rates of sexual victimization, discrimination, and poorer mental health outcomes.

Our second hypothesis was not supported, as there were no significant differences between BIPOC and white participants across the outcome variables. However, Hypothesis Three was partially supported. BIPOC participants who identified as nonbinary reported significantly higher rates of anxiety and depressive symptoms relative to cisgender BIPOC participants. There were no significant differences between any other pair comparisons.

The lack of support for the second hypothesis does not align with prior work with young lesbian and bisexual women and nonbinary people, which found BIPOC participants were more likely than white participants to report poor mental health (Flanders et al., 2021). While we did not ask for context about events such as exposure to stigma, it could be that as these data were collected during the COVID pandemic, BIPOC participants were exposed to less racism if they were spending more time at home. The current findings do however provide greater information for the similarities and differences across intersectional groups, as we are unaware of any prior quantitative research that has investigated what mental health looks like across BIPOC bi+ people who identify as cisgender women or nonbinary. The identified differences across nonbinary participants, and particularly BIPOC nonbinary participants, reinforces the necessity for intersectional research to avoid intersectional invisibility, and NIH's stated concern for erasure of multiply marginalized groups within bi+ populations (NIH SGMRO, 2019; Purdie-Vaughns & Eibach, 2008).

Finally, Hypothesis 4 was again partially supported. Experience of sexual violence was positively correlated with bisexual stigma, anxiety, and depression. Further, participants with positive suicide risk screenings reported significantly higher sexual violence scores. However, sexual violence was not correlated with either measure of social support, contrary to our hypothesis. These findings bring attention to important relationships across these outcomes for young bi+ women and nonbinary people. Sexual stigma, as demonstrated in past research, is a necessary variable to consider in sexual violence and mental health research with bi+ people (Feinstein & Dyar, 2017; Flanders, Anderson, et al., 2019; Flanders et al., 2021; Ross et al., 2010), including bi+ people who identify as BIPOC and nonbinary. Further, sexual violence is significantly related to mental health outcomes among this population, and may be a critical mechanism by which stigma leads to poorer mental health outcomes.

It is also noteworthy that there were significantly positive correlations between LGBTQ+ community connection and both anxiety and depression, which indicates that greater connection to community is associated with higher anxiety and depression symptomatology. This is similar to other research which has found that, among bi+ people, general LGBTQ+ community involvement is associated with negative outcomes. For instance, bisexual young people of color have reported that greater LGBTQ+ community involvement is associated with increased internalized binegativity, which may be related to bisexual and intersectional stigma perpetuated within the broader LGBTQ+ community (Flanders et al., 2019; Lambe et al., 2017). However, these data are cross-sectional, so it is also possible that bi+ people are more likely to reach out to LGBQT+ community when they are experiencing higher levels of depression and anxiety. Longitudinal data are necessary to understand more about the directionality of this relationship.

Although it was not part of our study aims to test specific models of stress, our findings fit well with minority stress theory (Brooks, 1981; Meyer 2003; Meyer & Frost, 2013), which proposes that stigma, prejudice, and discrimination cause sexual minority people to experience more stress than their heterosexual peers, increasing their risk of mental and physical disorders. Our findings also fit the gender minority stress and resilience model (Testa et al., 2015), in which the adverse mental health outcomes of gender non-conforming and trans people are proposed to result from high and persistent rates of gender-related discrimination, rejection, and victimization, and gender non-affirmation (Testa et al., 2015).

Clinical Implications

We strongly recommend that health service providers note how structural influences, such as bisexual stigma, may impact the mental and sexual health of bi+ clients who have experienced sexual violence. This suggestion is supported by prior research that assessed multilevel intervention programming to address stigma among LGBTQ+ individuals more broadly (Cook et al., 2014). Further, as supported in research with young bi+ and lesbian people, an intersectional approach to sexual health and therapeutic practice is

critical to accurately understand the context of barriers and support to maintaining wellbeing among diverse bi+ women and nonbinary people (Flanders et al., 2021). For example, bi+ individuals may experience difficulty accessing social support, especially if they also identify as nonbinary. We recommend interventions use the gender minority stress and resilience model as well as an intersectional framework to design programs that are effective and inclusive. Many mental health interventions leverage group approaches which could provoke anxiety for bi+ and bi+ nonbinary individuals given the degree of stigma from heterosexual and lesbian/gay individuals reported by participants in this sample. Specialized bi+ specific groups are recommended to help bi+ people address their mental health and build social support, and should expect and include nonbinary individuals. We also recommend that when mixed sexual identity groups are offered, group leaders address group rules and procedures for stigma and discrimination at the outset to increase comfort and engagement from vulnerable bi+ members.

Limitations

While our primary goal with the current paper is to provide a detailed descriptive analysis of the relationships between sexual violence, stigma, mental health, and social support, a significant limitation of the data is that they are cross-sectional in nature. A second limitation relates to the measure of social support. Recent research has identified that social support and the experience of community and belonging might look different for bi+ people relative to gay and lesbian people, specifically that it can be more difficult to locate bi+ community, and that bi+ community belonging is not always accessed in broader LGBTQ+ community spaces (Gonzalez et al., 2021; McLaren & Castillo, 2020). As such, utilizing the LGBT community connection measure might not capture social support for bi+ people in the same way it does for other LGBTQ+ community members, and thus the negative relationship between social support and mental health in the current project may be an artifact of inaccurate measurement. That said, bi+ people, BIPOC queer and trans people, and nonbinary people have all expressed a lack of support from mainstream LGBTQ+ community spaces (Flanders et al., 2015; Ghabrial, 2017; McCormick & Barthelemy, 2021). Finally, we were limited in our capacity by the size of our sample, as we had finite funding and wanted to ensure all participants were compensated for their participation. As such we have excluded some bi+ groups that are also vulnerable for sexual violence and created forced homogeny. Specifically, none of the participants reported identifying as trans women (although they were eligible for the study), we specifically excluded trans men, and we asked participants to categorize themselves as white or BIPOC. Forcing a homogenized BIPOC variable erases the potential to observe difference in experience across minoritized racial and ethnic groups.

Future Research Directions

The current findings support the need for further intersectional research with bi+ communities on their experiences of stigma, sexual violence, mental health, and social support. Firstly, given the parallel disparities in sexual violence and mental health disparities experienced by bi+ people (Chen et al., 2020; Ghabrial & Ross, 2018; Salway et al., 2019), and the associations between these outcomes and bi+ stigma (Feinstein & Dyar, 2017; Flanders et al., 2021; Salim et al., 2019), the next stage of research should involve assessing the directionality between these variables. While cross-sectional data supports that stigma moderates the relationship between sexual violence and mental health (Flanders et al., 2022), longitudinal data are necessary to understand whether there is a potential causal relationship between these variables. Such a determination would then identify the most effective points to intervene, enabling the development of better intervention and prevention programs to reduce sexual violence and mental health disparities. We recommend future intervention-focused work incorporate the gender minority stress and resilience framework

which integrates easily with the intersectionality paradigm while providing an important focus on resilience and risk (Testa et al., 2015). Future research would also benefit from including greater specificity across identity. In particular, the current study did not include trans men, and although trans women were eligible, no participants identified as such, despite elevated vulnerability for sexual violence for these groups. Future research should include different or a greater number of gender identity categories to provide a more holistic understanding of the relationships between gender and sexual violence amongst bi+ people. Further, research that looks across more racial groups, as opposed to a homogenized BIPOC group, would be critical given differences in rates of sexual violence across different racial and ethnic groups.

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Supplemental Material

Supplemental material for this article is available online.

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Author Biographies

Corey E. Flanders, Ph.D., is an Associate Professor of Psychology and Education at Mount Holyoke College. Their research interests focus on issues of identity and health equity, particularly as they relate to the experiences of queer and trans people. They use qualitative and quantitative approaches together with community-based research principles to understand how structural, community and individual factors impact people's health and other lived experiences.

Mya Wright recently received her B.A. from Mount Holyoke College in Psychology and a minor in Statistics. Within her undergraduate career, she realized she had a passion for research that surrounded marginalized communities and held a yearning to amplify those voices and make sure they are heard. Upon this discovery, she worked alongside Dr. Flanders research lab and began to focus on identity development within queer populations and how intersectional identities such as individuals genders, race, religion, etc. impact their ability to synthesize their identity. Using both qualitative and quantitative data, she brings individuals experiences and individuality to the forefront of her research.

Saachi Khandpur is a senior at Mount Holyoke College, double majoring in psychology and politics with a certificate in reproductive health, rights, and justice. Her research interests focus on intersectional experiences of discrimination with a transnational lens, especially in relation to queer and South Asian people. She utilizes qualitative methods in accordance with community-based research principles to decolonize current literature, and create the groundwork for interventions rooted in realities.

Sara Kuhn (she/they; BFA, University of Utah; MLIS, University of British Columbia; College Teaching Certificate, University of North Dakota) is a clinical psychology doctoral student at the University of North Dakota. Her research interests center sexual violence prevention examining both perpetration of sexual violence and victimization. She is particularly interested in understanding bisexual and pansexual women's preferences for sexual violence prevention intervention programs.

RaeAnn E. Anderson (PhD, University of Wisconsin-Milwaukee, 2015) is currently an Assistant Professor in Clinical Psychology at the University of North Dakota. She completed her postdoctoral training at Kent State University and her bachelor's at the University of Kansas. Her research interests are: methodological issues in sexual violence research, basic behavioral processes in sexual victimization and sexual perpetration in order to inform sexual assault risk reduction and prevention programs, respectively.

Margaret Robinson is a member of Lennox Island First Nation who identifies as bisexual, two-spirit, and queer. Margaret works as an Associate Professor at Dalhousie University in her traditional territory of Mi'kma'ki, where she conducts research with sexual and gender minority people and holds the Tier 2 Canada Research Chair in Reconciliation, Gender, and Identity.

Nicole VanKim is an Assistant Professor of Epidemiology at University of Massachusetts Amherst. Her primary research area focuses on sexual orientation disparities in weight-related health, including nutrition, physical activity, weight status, and type 2 diabetes. A secondary research area explores mental health equity issues among diverse populations.