



# Gender and Sexual Identities Predicting Patterns of Co-occurring Health Risks Among Sexual Minority Youth: a Latent Class Analysis Approach

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## Abstract

Behavioral health disparities (e.g., substance use, mental health) exist for gender nonconforming (GNC) and sexual minority youth; however, there is limited knowledge on disparities that may be unique among youth who identify as both a sexual and gender minority. This study utilized a diverse sample of GNC and cisgender sexual minority youth seeking crisis services to examine co-occurrence of behavioral health outcomes. Surveys were administered with youth (aged 12–24,  $N = 592$ ), and latent class analyses were applied. Two latent class regression models were conducted to examine how gender and sexual identity separately (independent effect; Model 1) and configurations of gender and sexual identity (Model 2) predicted class membership. Analyses resulted in a four-class solution: High All (17.6%), High Substance Use and Moderate Mental Health (10.6%), Low All (20.1%), and High Suicide and High Mental Health (51.7%). In our first model, youth who identified as GNC had 2.11 higher odds of being in the High Suicide and High Mental Health class compared to the Low All class; however, sexual identity was not a significant predictor. In the second model, individuals identifying as GNC gay or lesbian or GNC pansexual had 1.95 and 2.57 higher odds, respectively, of being in the High Suicide and High Mental Health class compared to the Low All class. Our study suggests the information on gender and sexual identities together are more helpful in identifying youth at risk for co-occurring negative health outcomes. Implications for prevention approaches are described.

**Keywords** Sexual identity · Gender identity · Co-occurring behavioral health risks

Many behavioral health disparities (e.g., substance use, mental health; Substance Abuse and Mental Health Services Administration 2019) exist for gender nonconforming (GNC; transgender, non-binary) and sexual minority (e.g., lesbian, gay, bisexual) youth when compared to their cisgender heterosexual peers (Goldbach et al. 2015; Marshall et al. 2017; Reisner et al. 2015). For example, research with GNC youth has found higher rates of suicidality, depression, posttraumatic

stress disorder (PTSD), and substance use compared to their cisgender peers (Bradford et al. 2013; Gamarel et al. 2014). A similar body of work with sexual minority youth found heightened rates of mental health, substance abuse, and suicidality outcomes compared to their heterosexual peers (Goldbach et al. 2015; Marshal et al. 2011).

Recent decades of research with gender and sexual minority youth have featured changes in addressing gender and sexual identities. Early research has been criticized for grouping gender minority youth (including transgender) with sexual minority (lesbian, gay, bisexual) youth, because this might cloud the unique factors that influence GNC health (Dean et al. 2000; Hughes and Eliason 2002). In response to this critique, researchers in the early 2010s began to examine sexual and gender minority (broadly defined) youth separately (Hendricks and Testa 2012; Marshal et al. 2011). Studies focusing on GNC youth have greatly expanded our understanding of gender minority-specific experiences, including gender-related discrimination, rejection, violence, non-affirmation of gender identity, and internalized transphobia, each linked to GNC youth health (Bradford et al. 2013;

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Gamarel et al. 2014). Indeed, linking these experiences of minority stress to behavioral health has been helpful in generating new prevention and early intervention programs (Gamarel et al. 2014; Hendricks and Testa 2012; Reisner et al. 2015).

A striking gap remains, however, in our understanding of youth who identify as both a sexual and gender minority. Indeed, some studies have reported that a very large proportion of GNC youth (50–70%) also identify as a sexual minority, and studies that explore only one identity may lack an understanding of this important group (Kuper et al. 2012; Meier et al. 2013). To our knowledge, no study has investigated whether identifying as both a sexual and gender minority is uniquely associated with behavioral health outcomes. Thus, our current categorization may be over- or underestimating variation in psychopathology, with important implications for whether more specialized prevention approaches are needed.

## Crisis Service-Seeking Youth

Given the high rates of discrimination and mental health symptomology found among sexual and gender minorities, it is no surprise that these youth are more likely than their cisgender heterosexual peers to need crisis support (Ahuja et al. 2015; Bradford et al. 2013; Goldbach et al. 2015). In response, programs like The Trevor Project have emerged to serve lesbian, gay, bisexual, transgender, and queer youth, focused on crisis intervention for suicide, anxiety, fear, and trauma associated with gender or sexual minority identity; validation of their negative feelings and emotions; and issues of identity development (Goldbach et al. 2019).

However, given that a crisis contact only allows for a brief intervention, service providers must quickly and systematically employ valid and reliable risk assessments in order to build coping resources and make targeted referrals to services (Kalafat et al. 2007; King et al. 2003). Thus, we contend that understanding how identification with minority groups (gender and sexual) is associated with differing risk profiles could strengthen the crisis prevention system, with implications for screening, risk assessment, and appropriate referrals.

## The Current Study

To address both methodological and theoretical limitations, the current study examined patterns of co-occurring behavioral health symptoms including both mental health (i.e., PTSD, depression, and suicidal ideation and attempt) and substance use (alcohol, marijuana, and prescription drug misuse) patterns in cross-sectional data from cisgender and

GNC sexual minority youth aged 12–24 years. In addition, the sample comes from sexual minority youth accessing crisis services, who may present higher rates of suicidality, substance use, and mental health symptoms. Relying on latent class analyses, we hypothesized that analyses would reveal at least two distinct classes of individuals (those at low and high risk), as youth may contact crisis service for varied reasons and with different endorsements of behavioral health risks (Hypothesis 1).

We also tested two models to examine how gender and sexual identities predict emergent class membership using latent class regression, which parameterizes the relationship between the class variable and predictors using multinomial logistic regression equations. In the model examining the independent effects of gender and sexual identities as predictors of class membership, we hypothesized that GNC youth would be more likely to be in a high-risk class compared to their cisgender counterparts, regardless of their sexual identities (Hypothesis 2). Guided by recent literature on rejection of the gender binary and an increasing acceptance of variance and diversity of gender experiences among sexual minority youth, we used configurations of gender and sexual identities as predictors of class membership (e.g., cisgender gay or lesbian, cisgender bisexual, GNC pansexual) (Brownlie 2006; Pyne 2014). Identifying how these configurations are associated with different risk classes has implications for focused crisis intervention with these groups, addressing their unique needs.

## Methods

### Participants and Procedures

The current study was approved by the affiliated university's institutional review board. Participants were from a national sample of youth (aged 12–24) recruited from an LGBTQ youth-focused suicide crisis prevention service provider during an 18-month period (September 2015 to April 2017). After crisis contact with the organization, eligible individuals were transferred to an automated survey to provide demographic and contact information. Eligibility criteria included (a) non-heterosexual identity, (b) between the ages of 12 and 24, and (c) consent or assent to participate. Of those referred to the demographic survey, 2008 participants were found eligible and contacted for study participation. Overall, 33% of referred youth completed the baseline survey ( $n = 657$ ; for procedural details, see Rhoades et al. 2018). All participants completed a brief suicide risk assessment before survey participation, and those at imminent risk (ideation, plan, and method to execute in 48 h) were immediately connected to a suicide crisis counselor. However,

participants referred to the crisis counselor also had the opportunity to return to the survey if they desired at the end of their crisis call. Participants received a US\$15 gift card after completion of the survey. Sixty-five responses were excluded due to duplicate response or because participants identified as cisgender and straight or selected “decline to answer” or “not listed here” for sexual identity, and thus could not be re-categorized to one of our eligible categories. The total sample size for analysis was 592.

## Measures

**Demographic Control Variables** All models controlled for participant age and race and ethnicity (with White as the reference group). We also controlled for lifetime experiences of minority stress to ensure variation in behavioral health risks was not due to experiences of minority stress. To assess minority stress, we used the 54-item Sexual Minority Adolescent Stress Inventory. The total scale demonstrated excellent reliability (scale  $\alpha = 0.98$ ).

**Gender and Sexual Identities** Gender identity categories were male, female, transgender male, transgender female, genderqueer, questioning, do not know, and other. Sexual identity categories were gay, lesbian, bisexual, queer, pansexual, straight, questioning, asexual, and other.

**Categorizing Gender and Sexual Identities** Given the smaller cell sizes, gender identity was dichotomized as cisgender (cisgender male and cisgender female) and GNC (transgender, genderqueer, questioning, and other). Similarly, sexual identity was re-categorized in four categories: gay or lesbian, bisexual, pansexual, and other (queer, questioning, asexual). Grouping of sexual identities was based on sexual behavior and attraction to one or more sexes or genders. For example, gay or lesbian identities refer to individuals with sexual attraction or behavior with a same-sex person, whereas pansexual refers to attraction or behavior with another person regardless of their sex and gender.

**Categorization Across GNC and Sexual Minority Youth** Configurations of gender and sexual identities were created based on recategorized gender (cisgender and GNC) and sexual (gay or lesbian, bisexual, pansexual, and other) identities. These configurations were created to (a) acknowledge that youth may hold both sexual and gender minority identities and (b) understand what configurations are associated with higher risk. The configurations were cisgender gay or lesbian, cisgender bisexual, cisgender pansexual, cisgender other, GNC gay or lesbian, GNC bisexual, GNC pansexual, and GNC other.

**Mental Health Disorder Symptoms and Substance Use** Symptoms of PTSD were measured using the abbreviated PTSD civilian checklist, which contains six items about past-month responses to stressful life experiences. Items feature an introductory clause of “How much have you been bothered by:” followed by specific experiences such as “feeling distant or cut off from other people?” and “repeated, disturbing memories, thoughts, or images of a stressful experience from the past?” Participants responded on a Likert scale with response options ranging from 1 (*not at all*) to 5 (*extremely*). Scores were summed (range = 5–30), with a clinical cutoff point of 14 or higher indicating probable PTSD (Lang and Stein 2005).

Symptoms of depression were measured using the Center for Epidemiologic Studies Depression Scale Short Form (CES-D-4), which contains four items assessing the frequency of depression symptoms during the past week. Items include “I felt lonely” and “I had crying spells.” Participants responded on a Likert scale with response options ranging from 0 (*rarely or none of the time [less than 1 day]*) to 3 (*most or all of the time [5–7 days]*). Scores were summed (0–12), with a clinical cutoff point of 4 or higher indicating probable depression (Melchior et al. 1993).

Suicidal thoughts and attempts were measured with items adapted from the Columbia–Suicide Severity Rating Scale and the Suicide Behaviors Questionnaire-Revised (Osman et al. 2001; Posner et al. 2011). An adapted item from the former assessed presence of any lifetime suicide attempt (“Have you ever tried to kill yourself?”) and lifetime suicidal ideation (“Have you had any thoughts about killing yourself?”).

Alcohol, marijuana, and prescription drug misuse were measured using three self-reported items. Items asked participants if they had misused each substance (e.g., “In the past 30 days, have you used: Prescription drugs without a doctor’s prescription or used more of the drug or took the drug more often than prescribed?”) in the past month. Response options were 1 (*yes*) and 0 (*no*). Binge drinking was measured by asking, “During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?” Response options were 0 days, 1 day, 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, and 20 or more days. For the current study, binge drinking was recoded as dichotomous to represent any binge drinking (coded as 1) or no binge drinking (coded as 0).

## Analytic Plan

To address our first hypothesis, we conducted latent class analysis to assess heterogeneity across behavioral health and substance use items. This technique identifies groups or classes of individuals in a sample using observed categorical data. To extract emergent classes, we used the manual three-step

approach (Nylund-Gibson et al. 2014) in Mplus version 8.0 (Muthén and Muthén 2010). We estimated models for one- to five-class solutions. To determine the best-fitting model, we used reductions in negative two log likelihood, Akaike information criterion, Bayesian information criterion, and sample size-adjusted Bayesian information criterion and non-significant Vuong-Lo-Mendell-Rubin likelihood ratio test (VLRT), Lo-Mendell-Rubin adjusted likelihood (LRT) ratio test, and bootstrapped likelihood ratio test (BLRT; Nylund et al. 2007).

Once the best-fitting model was determined, we conducted latent class regression, which parameterizes the relationship between the class variable and predictors using multinomial logistic regression equations. Specifically, we examined how gender and sexual identities predicted class membership. Model 1 used traditional gender and sexual identity categorization as independent predictors of class membership. Model 2 used configurations of gender and sexual identities as predictors of class membership, with cisgender gay or lesbian as the reference group. Missing data were less than 6% across all items. We used the full information maximum likelihood estimator in Mplus for all analyses, which assumes data are missing at random and uses all data available for each participant.

## Results

### Sample Description

Table 1 contains demographic information. The average age of the participants was 16.7 years ( $SD = 3.1$ ), with most identifying as White (75.3%;  $n = 444$ ). In terms of sexual identity, 39.4% ( $n = 233$ ) of the sample identified as gay or lesbian, followed by other identities (26.2%;  $n = 155$ ), bisexual (17.2%;  $n = 102$ ), and pansexual (17.2%;  $n = 102$ ). Further, 55.4% ( $n = 328$ ) of participants identified as cisgender, whereas 44.6% ( $n = 264$ ) identified with GNC identities. When classifying across both sexual and gender minority statuses, participants identified as cisgender gay or lesbian (28.0%;  $n = 166$ ), cisgender bisexual (12.2%;  $n = 72$ ), cisgender pansexual (5.7%;  $n = 34$ ), cisgender other (9.5%;  $n = 56$ ), GNC gay or lesbian (11.3%;  $n = 67$ ), GNC bisexual (5.1%;  $n = 30$ ), GNC pansexual (11.5%;  $n = 68$ ), and GNC other (16.7%;  $n = 99$ ).

Half of the youth (50.5%;  $n = 299$ ) reported having lifetime suicidal ideation, and 31.9% ( $n = 189$ ) had ever attempted suicide. Youth also reported, on average, 6.6 ( $SD = 3.5$ ) depressive symptoms and 20.2 ( $SD = 7.3$ ) PTSD symptoms. In terms of substance use, alcohol was the most frequently used (30.7%;  $n = 182$ ), followed by marijuana (17.1%;  $n = 101$ ) and misuse of prescription drugs (16.4%;  $n = 60$ ). Of those who endorsed alcohol use in the last 30 days, 53.3% ( $n = 97$ ) reported binge drinking.

**Table 1** Characteristics of the sample ( $N = 592$ )

Variable	<i>M (SD) or n (%)</i>
Age	17.62 (3.1)
Race and ethnicity	
White	444 (75.3)
Latino or Hispanic	19 (3.2)
Native American or American Indian	20 (3.4)
Black or African American	59 (10.0)
Asian or Pacific Islander	44 (7.4)
Other	19 (3.2)
Sexual identity	
Gay	142 (30.0)
Lesbian	90 (15.2)
Bisexual	101 (17.1)
Queer	47 (7.9)
Pansexual	101 (17.1)
Questioning	48 (8.1)
Asexual	33 (5.6)
Other	30 (5.0)
Gender identity	
Cisgender male	150 (25.3)
Cisgender female	208 (35.1)
Transgender male	73 (12.3)
Transgender female	18 (3.0)
Genderqueer	52 (8.8)
Questioning	35 (5.9)
Do not know	12 (2.0)
Other	42 (7.1)
Mental health	
Depression	6.76 (3.5)
PTSD	20.19 (7.3)
Suicidality	
Attempts	189 (31.9)
Ideation	299 (50.5)
Substance use (last 30 days)	
Alcohol	182 (30.7)
Binge drinking	97 (16.4)
Marijuana	101 (17.1)
Prescription drugs misuse	60 (10.1)
Sexual minority stress (lifetime)	19.90 (8.6)

Means ranged from 0 to 12 for depression, 5 to 30 for PTSD, and 0 to 54 for sexual minority stress (lifetime). Lower scores on depression, PTSD, and minority stress indicate better mental health

### Class Enumeration

Results from our model assessing co-occurring behavioral health risk are presented in Table 2. The lowest adjusted Bayesian information criterion values were found for the four-class solution, whereas the first non-significant VLRT

**Table 2** Model fit indexes for latent class analysis

Classes	-2LL	AIC	BIC	aBIC	Entropy	VLMRT	<i>p</i>	LRT	<i>p</i>	BLRT	<i>p</i>
1	4793.51	4809.508	4844.577	4819.179							
2	4337.08	4371.082	4445.601	4391.632	0.906	456.427	.001	448.618	.001	456.427	.001
3	4162.25	4214.252	4328.224	4245.682	0.812	174.829	.001	171.838	.001	174.829	.001
4	<i>4118.55</i>	<i>4188.551</i>	<i>4341.973</i>	<i>4230.859</i>	<i>0.795</i>	<i>43.702</i>	<i>.001</i>	<i>42.954</i>	<i>.01</i>	<i>43.702</i>	<i>.001</i>
5	4091.94	4179.936	4372.811	4233.125	0.809	26.614	.47	26.159	.47	26.614	.001

Italics indicate best-fitting model

– 2LL negative 2 log likelihood, AIC Akaike information criterion, BIC Bayesian information criterion, aBIC sample-adjusted Bayesian information criterion, VLMRT Vuong-Lo-Mendell-Rubin likelihood ratio test, LRT Lo-Mendell-Rubin likelihood ratio test, BLRT Bootstrapped log likelihood ratio test

and LRT were found in the five-class solution, suggesting the four-class model was preferable. Figure 1 presents the item probability plot.

**Class 1: High All** This class represented 17.6% ( $n = 104$ ) of the total sample. Youth in this class had the highest probability of endorsing all items: suicidality (ideation: 74%; attempts: 60%), substance use (alcohol use: 100%; binge drinking: 62%; marijuana use: 55%; prescription drug misuse: 32%), and negative mental health outcomes (depression: 100%; PTSD: 99%).

**Class 2: High Substance Use and Moderate Mental Health** Individuals in this class represented 10.6% ( $n = 63$ ) of the sample. This class reported very little suicidality (ideation: 27%; attempts: 4%). However, these youth reported high probability of substance use (alcohol use: 100%; binge drinking: 52%; marijuana use: 34%; prescription drug misuse: 9%) and moderate negative mental health outcomes (depression: 59%; PTSD: 78%).

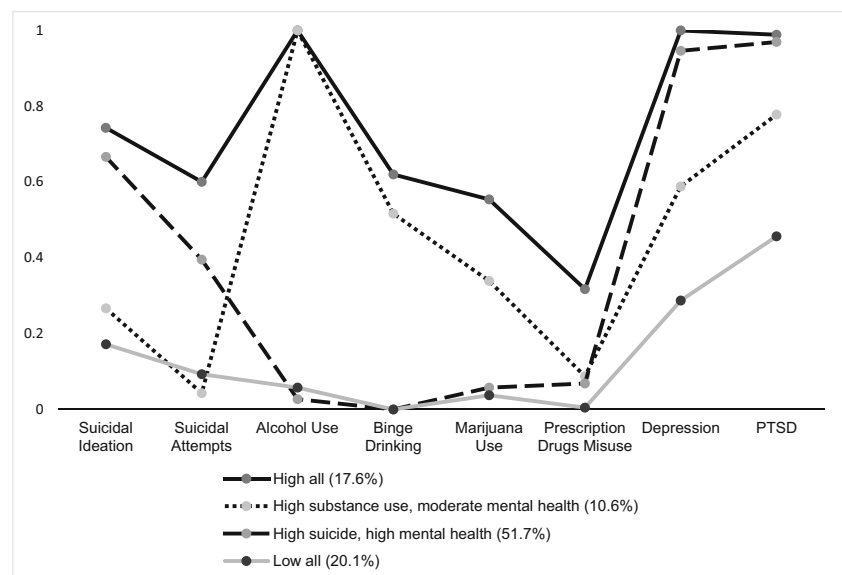
**Class 3: High Suicide and High Mental Health** This class represented 51.7% ( $n = 306$ ) of the sample. Individuals in this class reported low substance use (alcohol use: 3%; binge drinking: 0%; marijuana use: 6%; prescription drug misuse: 7%). They had higher suicidal (ideation: 67%; attempts: 34%) and mental health (depression: 95%; PTSD: 97%) outcomes.

**Class 4: Low All** This class represented 20.1% ( $n = 119$ ) of the sample and had the lowest probability of reporting suicidality (ideation: 17%; attempts: 9%), substance use (alcohol use: 6%; marijuana use: 4%; binge drinking: 0%; prescription drug misuse: 0%), and negative mental health outcomes (depression: 29%; PTSD: 46%).

### Predicting Class Membership by Gender and Sexual Identity

We used multinomial logistic regression to examine how gender and sexual identity predicted class membership. In our first model, we examined independent effects of gender and

**Fig. 1** Four-class solution for co-occurring behavioral health outcomes



sexual identity on class membership (Table 3). Results indicated that youth who identified as GNC had 2.11 higher odds of being in the High Suicide and High Mental Health class compared to the Low All class, after controlling for age, race and ethnicity, and minority stress. Sexual identity was not a significant predictor in the first model.

In our second model, we examined effects of configurations of gender and sexual identities on class membership (Table 4). Results indicated that youth who identified as GNC gay or lesbian or GNC pansexual had 1.95 and 2.57 higher odds, respectively, of being in the High Suicide and High Mental Health class compared to the Low All class. In addition, there was a moderate association between identifying as GNC bisexual (adjusted *OR* = 2.17, *p* = .08) and GNC other (adjusted *OR* = 1.74, *p* = .05) and being in the High Suicide and High Mental Health class compared to the Low All class. There were no other significant predictors of associations with other classes.

### Discussion

The current study sought to expand our understanding of how gender and sexual identities are related to different patterns of co-occurring health risks among sexual minority youth accessing crisis services. The study examined competing models assessing the independent effects of gender and sexual identity and configurations of gender and sexual identities to predict class membership. Current literature on gender and sexual minority adolescents is limited in describing characteristics of this population, particularly heterogeneity in behavioral health risk. In our sample, 44.6% of the sexual minority youth contacting a national LGBTQ crisis service provider reported GNC identities. Given the larger sample size and endorsement of various gender and sexual identities in this study, we could identify identity configurations and examine

their association with co-occurring health risks (suicidality, substance use, and mental health).

Our results suggest not gender identity but rather that the combination of sexual and gender identities is a more comprehensive predictor of health risks. Our model examining independent effects of gender and sexual identities found GNC status was associated with being in a class with high suicide and mental health risk, whereas sexual identity was not significantly associated with class membership. Although this finding is consistent with literature on suicidality and mental health among GNC adolescents, wherein higher rates of negative health outcomes are reported for GNC adolescents compared to their cisgender peers, prior studies did not provide a comprehensive examination of identities and their association with health risks (Reisner et al. 2015; Toomey et al. 2010).

Our model featuring configurations of gender and sexual identities provided crucial information about our participants and their health risks. We found that identifying as GNC pansexual or GNC gay or lesbian was associated with being in a high suicide and high mental health class compared to other categories. Hence, only examining the independent effect of gender and sexual identities provides incomplete information, and identifying as GNC is associated with being a member of a High Suicide and High Mental Health group. However, modeling with configurations of gender and sexual identities helped identify youth at risk for co-occurring negative health outcomes by using information on both gender and sexual identities.

### Theoretical Contribution

An increasing body of research on gender and sexual identities is investigating their evolving nature and impact on well-being. Research with gender and sexual minorities has moved from grouping gender minority youth into single samples with sexual minority youth to examining them separately

**Table 3** Multinomial logistic regression model with independent effect of gender and sexual identities: odds of class membership compared to the Low All class

	High All <i>AOR</i> (95% CI)	High Substance Use and Moderate Mental Health <i>AOR</i> (95% CI)	High Suicide and High Mental Health <i>AOR</i> (95% CI)
Gender identity			
GNC	1.68 (0.95, 2.96)	0.94 (0.50, 1.77)	<i>2.11 (1.43, 3.11)</i>
Sexual identity			
Bisexual	1.03 (0.51, 2.10)	1.04 (0.50, 2.16)	1.03 (0.62, 1.70)
Pansexual	0.93 (0.41, 2.13)	0.82 (0.32, 2.09)	1.23 (0.71, 2.12)
Other	0.65(0.34, 1.25)	0.73 (0.36, 1.48)	0.82 (0.52, 1.31)

Reference category was cisgender for gender identity and gay or lesbian for sexual identity. All models controlled for age, race and ethnicity, and minority stress (not shown for clarity). All odds ratios are in reference to the Low All class. Italics indicate the confidence interval does not include 1  
*AOR* adjusted odds ratio, *GNC* gender non-conforming

**Table 4** Multinomial logistic regression model with configuration of gender and sexual identities: odds of class membership compared to the Low All class

Identity	High All AOR (95% CI)	High Substance Use and Moderate Mental Health AOR (95% CI)	High Suicide and High Mental Health AOR (95% CI)
Cisgender bisexual	1.03 (0.45, 2.37)	0.94 (0.41, 2.18)	1.01 (0.56, 1.80)
Cisgender pansexual	0.90 (0.25, 3.25)	1.04 (0.28, 3.90)	1.17 (0.54, 2.50)
Cisgender other	0.53 (0.20, 1.38)	0.90 (0.38, 2.14)	0.78 (0.42, 1.47)
GNC gay or lesbian	1.49 (0.59, 3.79)	1.08 (0.41, 2.87)	<i>1.95 (1.02, 3.73)</i>
GNC bisexual	1.61 (0.48, 5.40)	1.50 (0.43, 5.25)	2.17 (0.90, 5.22)
GNC pansexual	1.52 (0.61, 3.77)	0.64 (0.24, 1.67)	<i>2.57 (1.33, 4.95)</i>
GNC other	1.14 (0.54, 2.43)	0.61 (0.26, 1.41)	1.74 (0.99, 3.06)

Reference category was cisgender gay or lesbian. All models controlled for age, race and ethnicity, and minority stress (not shown for clarity). All odds ratios are in reference to the Low All class. Italics indicate the confidence interval does not include 1

AOR adjusted odds ratio, GNC gender nonconforming

(Hendricks and Testa 2012; Marshall et al. 2017). However, these studies have missed an important group of individuals: those who hold both sexual and gender minority identities. We found that studying combined identities (gender and sexual) can provide more information on risk profiles of help-seeking youth than examining the independent effect of gender and sexual identities. These findings are consistent with the literature, which suggests an interdependence of gender and sexuality in how identities intersect and create double marginalization (Mizock and Hopwood 2016). Studies on fluidity in gender and sexual identities have indicated the need for better measurements to capture multiple dynamic interactions among attraction, expression, and identities in understanding their impact on well-being (Schudson et al. 2017).

Minority stress research with GNC youth has suggested GNC lends visibility to sexual minority status, thereby increasing the likelihood of adverse outcomes (Martin-Storey 2016; Reisner et al. 2015; Testa et al. 2015). This is consistent with work on gender non-conformity and sexual orientation, wherein GNC behaviors are more prone to result in distal stressors (prejudicial events and experiences of discrimination and violence), because gender minority identity is largely expressed and presented in the public sphere (Reisner et al. 2015; Testa et al. 2015). However, sexual orientation in large part is private and therefore may be masked from public experiences of harassment, bullying, and victimization (Gordon and Meyer 2007). Additionally, youth identifying as both gender and sexual minorities may experience heightened stressors wherein GNC behaviors may make their sexual orientation status public and immediate (Gordon and Meyer 2007; Sandfort et al. 2007). Hence, we believe further examination of the contribution of minority identity (gender and sexual) to minority stress and the mechanisms driving these relationships in this population is needed. Future studies are needed to understand these processes, as are more gender-variant analyses with larger samples.

## Prevention and Crisis Services

The study's findings have implications for crisis services with GNC and sexual minority youth. Our study found that a high proportion of youth accessing crisis services reported GNC identities. Many programs and practices directed toward sexual minority youth may not address issues faced by GNC youth or may not have knowledge to provide GNC-specific services. Crisis service providers need focused training on specific issues that affect GNC youth, such as gender identity dysphoria and development, hormones and affirmative surgeries, gender-based discrimination and harassment, coping strategies, and need for appropriate referrals.

Additionally, given that crisis contacts are brief, demographic information should be collected more effectively, and as our study suggests, information on both gender and sexual identities should be used to conduct additional risk assessments. For example, a youth identifying as pansexual and GNC with self-identified mental health concerns might need screening for suicidality, and vice versa. Early detection of health risks beyond self-identified risks and appropriate referrals may increase the positive impact of these crisis calls. Hence, more robust analyses with larger samples may result in identifying specific co-occurring risks among youth based on their gender and sexual identities and may help advance prevention work with at-risk groups through early detection of risks.

## Limitations and Conclusions

This study had several limitations. The sample featured sexual minority youth contacting LGBTQ crisis services, who may present higher rates of suicidality, substance use, and mental health symptom. Because the study was cross-sectional, the results only indicate associations and not causality. All data

were self-reported; however, anonymity was ensured by not collecting any identifying information, which minimized response bias. Despite the large sample and proportion of GNC participants, some of configurations of gender and sexual identity had smaller group sizes. In addition, these results only apply to youth accessing crisis services and may not apply to general sexual minority youth. Furthermore, the literature has suggested a higher likelihood of continued suicidal ideation and reattempts among adolescents, which makes our sample a unique at-risk population—those availing crisis services (Witt et al. 2019). However limited, these results remain the most explicit examination of gender identity, sexual identity, and co-occurring behavioral health risk among youth to date.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** The study was approved by the affiliated university's institutional review board. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent or assent was obtained from all participants included in the study.

## References

- Ahuja, A., Webster, C., Gibson, N., Brewer, A., Toledo, S., & Russell, S. (2015). Bullying and suicide: The mental health crisis of LGBTQ youth and how you can help. *Journal of Gay & Lesbian Mental Health, 19*, 125–144. <https://doi.org/10.1080/19359705.2015.1007417>.
- Bradford, J., Reisner, S. L., Honnold, J. A., & Xavier, J. (2013). Experiences of transgender-related discrimination and implications for health: Results from the Virginia Transgender Health Initiative Study. *American Journal of Public Health, 103*, 1820–1829. <https://doi.org/10.2105/AJPH.2012.300796>.
- Brownlie, E. B. (2006). Young adults' constructions of gender conformity and nonconformity: A Q methodological study. *Feminism & Psychology, 16*, 289–306. <https://doi.org/10.1177/0959353506067848>.
- Dean, L., Meyer, I. H., Robinson, K., Sell, R. L., Sember, R., Silenzio, V. M., et al. (2000). Lesbian, gay, bisexual, and transgender health: Findings and concerns. *Journal of the Gay and Lesbian Medical Association, 4*, 102–151.
- Gamarel, K. E., Reisner, S. L., Laurenceau, J.-P., Nemoto, T., & Operario, D. (2014). Gender minority stress, mental health, and relationship quality: A dyadic investigation of transgender women and their cisgender male partners. *Journal of Family Psychology, 28*, 437–447. <https://doi.org/10.1037/a0037171>.
- Goldbach, J. T., Schrager, S. M., Dunlap, S. L., & Holloway, I. W. (2015). The application of minority stress theory to marijuana use among sexual minority adolescents. *Substance Use & Misuse, 50*, 366–375. <https://doi.org/10.3109/10826084.2014.980958>.
- Goldbach, J., Rhoades, H., Green, D., Fulginiti, A., & Marshal, M. (2019). Is there a need for LGBT-specific suicide crisis services? *Crisis, 40*, 203–208. <https://doi.org/10.1027/0227-5910/a000542>.
- Gordon, A. R., & Meyer, I. H. (2007). Gender nonconformity as a target of prejudice, discrimination, and violence against LGB individuals. *Journal of LGBT Health Research, 3*, 55–71.
- Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the minority stress model. *Professional Psychology: Research and Practice, 43*, 460–467. <https://doi.org/10.1037/a0029597>.
- Hughes, T. L., & Eliason, M. (2002). Substance use and abuse in lesbian, gay, bisexual and transgender populations. *Journal of Primary Prevention, 22*, 263–298.
- Kalafat, J., Gould, M., Munfakh, J., & Kleinman, M. (2007). An evaluation of crisis hotline outcomes, part 1: Nonsuicidal crisis callers. *Suicide and Life-threatening Behavior, 37*, 322–337. <https://doi.org/10.1521/suli.2007.37.3.322>.
- King, R., Nurcombe, B., Bickman, L., Hides, L., & Reid, W. (2003). Telephone counselling for adolescent suicide prevention: Changes in suicidality and mental state from beginning to end of a counselling session. *Suicide and Life-threatening Behavior, 33*, 400–411. <https://doi.org/10.1521/suli.33.4.400.25235>.
- Kuper, L. E., Nussbaum, R., & Mustanski, B. (2012). Exploring the diversity of gender and sexual orientation identities in an online sample of transgender individuals. *Journal of Sex Research, 49*, 244–254. <https://doi.org/10.1080/00224499.2011.596954>.
- Lang, A. J., & Stein, M. B. (2005). An abbreviated PTSD checklist for use as a screening instrument in primary care. *Behaviour Research and Therapy, 43*, 585–594. <https://doi.org/10.1016/j.brat.2004.04.005>.
- Marshal, M. P., Dietz, L. J., Friedman, M. S., Stall, R., Smith, H. A., McGinley, J., et al. (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *Journal of Adolescent Health, 49*, 115–123. <https://doi.org/10.1016/j.jadohealth.2011.02.005>.
- Marshall, Z., Welch, V., Thomas, J., Brunger, F., Swab, M., Shemilt, I., & Kaposy, C. (2017). Documenting research with transgender and gender diverse people: Protocol for an evidence map and thematic analysis. *Systematic Reviews, 6*, 35. <https://doi.org/10.1186/s13643-017-0427-5>.
- Martin-Storey, A. (2016). Gender, sexuality, and gender nonconformity: Understanding variation in functioning. *Child Development Perspectives, 10*, 257–262. <https://doi.org/10.1111/cdep.12194>.
- Meier, S. C., Pardo, S. T., Labuski, C., & Babcock, J. (2013). Measures of clinical health among female-to-male transgender persons as a function of sexual orientation. *Archives of Sexual Behavior, 42*, 463–474. <https://doi.org/10.1007/s10508-012-0052-2>.
- Melchior, L. A., Huba, G. J., Brown, V. B., & Reback, C. J. (1993). A short depression index for women. *Educational and Psychological Measurement, 53*, 1117–1125. <https://doi.org/10.1177/0013164493053004024>.
- Mizock, L., & Hopwood, R. (2016). Conflation and interdependence in the intersection of gender and sexuality among transgender individuals. *Psychology of Sexual Orientation and Gender Diversity, 3*, 93–103. <https://doi.org/10.1037/sgd0000157>.
- Muthén, L. K., & Muthén, B. O. (2010). *Mplus: Statistical analysis with latent variables: User's guide*. Los Angeles: Muthén & Muthén.
- Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*, 535–569. <https://doi.org/10.1080/10705510701575396>.
- Nylund-Gibson, K., Grimm, R., Quirk, M., & Furlong, M. (2014). A latent transition mixture model using the three-step specification.



- Structural Equation Modeling*, 21, 439–454. <https://doi.org/10.1080/10705511.2014.915375>.
- Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The suicidal behaviors questionnaire-revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, 8, 443–454. <https://doi.org/10.1177/107319110100800409>.
- Posner, K., Brown, G. K., Stanley, B., Brent, D. A., Yershova, K. V., Oquendo, M. A., et al. (2011). The Columbia–suicide severity rating scale: Initial validity and internal consistency findings from three multisite studies with adolescents and adults. *American Journal of Psychiatry*, 168, 1266–1277. <https://doi.org/10.1176/appi.ajp.2011.10111704>.
- Pyne, J. (2014). Gender independent kids: A paradigm shift in approaches to gender non-conforming children. *Canadian Journal of Human Sexuality*, 23, 1–8. <https://doi.org/10.3138/cjhs.23.1.CO1>.
- Reisner, S. L., Greytak, E. A., Parsons, J. T., & Ybarra, M. L. (2015). Gender minority social stress in adolescence: Disparities in adolescent bullying and substance use by gender identity. *Journal of Sex Research*, 52, 243–256. <https://doi.org/10.1080/00224499.2014.886321>.
- Rhoades, H., Rusow, J. A., Bond, D., Lanteigne, A., Fulginiti, A., & Goldbach, J. T. (2018). Homelessness, mental health and suicidality among LGBTQ youth accessing crisis services. *Child Psychiatry & Human Development*, 49, 643–651. <https://doi.org/10.1007/s10578-018-0780-1>.
- Sandfort, T. G. M., Melendez, R. M., & Diaz, R. M. (2007). Gender nonconformity, homophobia, and mental distress in Latino gay and bisexual men. *Journal of Sex Research*, 44, 181–189. <https://doi.org/10.1080/00224490701263819>.
- Schudson, Z., Dibble, E., & van Anders, S. (2017). Gender/sex and sexual diversity via sexual configurations theory: Insights from a qualitative study with gender and sexual minorities. *Psychology of Sexual Orientation and Gender Diversity*, 4, 422–437. <https://doi.org/10.1037/sgd0000241>.
- Substance Abuse and Mental Health Services Administration. (2019). *Behavioral health barometer: United States* (Vol. 5). Rockville: HHS Publication <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/National-BH-BarometerVolume5.pdf>.
- Testa, R. J., Habarth, J., Peta, J., Balsam, K., & Bockting, W. (2015). Development of the gender minority stress and resilience measure. *Psychology of Sexual Orientation and Gender Diversity*, 2, 65–77. <https://doi.org/10.1037/sgd0000081>.
- Toomey, R. B., Ryan, C., Diaz, R. M., Card, N. A., & Russell, S. T. (2010). Gender non-conforming lesbian, gay, bisexual, and transgender youth: School victimization and youth adult psychological adjustment. *Developmental Psychology*, 46, 1580–1589. <https://doi.org/10.1037/a0020705>.
- Witt, K., Milner, A., Spittal, M. J., Hetrick, S., Robinson, J., Pirkis, J., & Carter, G. (2019). Population attributable risk of factors associated with the repetition of self-harm behaviour in young people presenting to clinical services: A systematic review and meta-analysis. *European Child & Adolescent Psychiatry*, 28, 5–18. <https://doi.org/10.1007/s00787-018-1111-6>.

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