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Short communication

Prevalence and clinical indices of risk for sexual and gender minority youth in an adolescent inpatient sample

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ABSTRACT

Objective: Rates of self-injurious thoughts and behaviors have increased in adolescents over the past two decades. Sexual and gender minority (SGM) youth report elevated rates of self-injurious thoughts and behaviors compared to heterosexual and cisgender youth. Studies of factors influencing suicide risk in SGM youth remain limited, however, and have largely been conducted in community or epidemiological samples.

Method: The present study aimed to address these limitations by examining the prevalence and clinical characteristics of sexual and gender minority youth in a sample of 515 youth admitted to an adolescent inpatient unit. In addition, the present study aimed to compare rates of self-reported self-injurious thoughts and behaviors, adverse early childhood experiences, and rates of rehospitalization in sexual and gender minority compared to non-sexual and gender minority youth.

Results: Results show that nearly 40% of the sample identified as sexual and/or gender minority. Sexual minority youth reported higher rates of suicidal ideation ($t = -6.19$, $p < .001$), higher rates of prior suicidal behavior ($Chi^2 = 27.44$, $p < .001$) and non-suicidal self-injury ($Chi^2 = 48.09$, $p < .001$), and greater numbers of adverse childhood experiences ($t = -3.99$, $p < .001$); gender minority youth reported higher rates of suicidal ideation ($t = -3.91$ $p = .001$). There were no group differences for SGM youth in rates of rehospitalization in the 6-months following initial admission. These results held when controlling for sex assigned at birth and current depression status in multi-variate analyses.

Conclusions: The study illuminates the importance of assessing SGM status in clinical care and highlights the need to evaluate sexual and gender minority specific risk factors for self-injurious thoughts and behaviors in youth.

1. Introduction

Suicide is the second leading cause of death among adolescents in the United States (Heron, 2018). Furthermore, rates of emergency department visits for self-injurious thoughts and behaviors (SITBs) have doubled in the past decade (Plemmons et al., 2018), and psychiatric hospitalizations are on the rise. Sexual and gender minority (SGM) youth experience elevated rates of SITBs compared to non-SGM individuals (Marshal et al., 2013; Marshal et al., 2011; Testa et al., 2012; Testa et al., 2017). Data from a 2017 CDC survey suggests that, in the prior 12 months, 23.0% of gay, lesbian, and bisexual youth attempted suicide, compared with 5.4% of heterosexual youth (Kann et al., 2018). In addition, the 12-month prevalence of suicide attempts (SAs) was 34.6% among transgender youth, compared to 9.1% in cisgender females and 5.5% in cisgender males (Kann et al., 2018). Further, in a recent meta-analytic review, rates of non-suicidal self-injury (NSSI) in SGM were significantly higher than non-SGM youth (Liu et al., 2019).

Research also indicates that SGM individuals experience elevated rates of stigma, victimization, and social isolation, which likely contribute to increased rates of SITBs (Meyer, 2003; Baams et al., 2015). For SGM youth already experiencing mental health symptoms, adverse childhood experiences (ACEs) may further exacerbate risk for SITBs. Studies of factors influencing suicide risk in SGM youth remain limited, however, and have largely been conducted in community or epidemiological samples (Marshal et al., 2011; Peters et al., 2020). This is a notable limitation given that risk for SITBs is most elevated in

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psychiatric samples, and in light of emerging evidence that indices of suicide risk in community samples may not generalize well to clinically acute populations (Yen et al., 2013). Thus, there is an urgent need to assess and evaluate indices of risk for clinical SGM populations.

The current study had two primary aims. First, we aimed to describe prevalence statistics and clinical characteristics of a sample of adolescents hospitalized on a psychiatric inpatient unit, with a focus on youth identifying as SGM. We provide prevalence statistics, diagnostic information, and symptom measures of SITBs and ACEs in SGM youth. We examined rates of suicidal behavior (i.e. history of SA), and SI and NSSI, which are important clinical phenomena both independently and as indicators of risk for suicidal behavior. Second, we aimed to examine differences between SGM and non-SGM youth on these clinical indicators of risk and re-hospitalization in the 6-months post-discharge. Despite all youth in the sample experiencing elevated psychiatric problems, we hypothesized that SGM youth will report higher levels of SITBs near the time of hospitalization. In addition, we hypothesized that SGM youth will report higher levels of ACEs, and that SGM youth will have higher rates of re-hospitalization in the 6-months following initial hospitalization.

2. Methods

2.1. Participants

The current sample included 515 youth who completed an admission assessment on an adolescent psychiatric inpatient unit in the northeastern United States between December 2017 and February 2019. Youth were admitted if they were determined to be an imminent danger to themselves or others. The modal length of stay on the unit was nine days. Youth ranged from 11 to 18 years old ($M = 14.65$; $SD = 1.84$) and were largely non-Hispanic (75%). The majority of the sample was white (66.5%); 11.4% of the sample identified as Black, 1.6% as Asian, 0.2% as American Indian or Alaska Native, 0.2% as Hawaiian or Other Pacific Islander, 18.4% as other, 1.0% as unknown, and 0.6% declined to state.

2.2. Procedure

Data were collected as a part of an intake assessment battery including self-reported demographic data, sexual orientation, gender identity, early adversity, and SITBs, and interviewer-rated diagnostic information. Electronic medical records were reviewed six months post-discharge to identify psychiatric rehospitalizations within that time-period. This study was approved by the IRB at the institution in which this research was conducted.

3. Measures

3.1. Sexual orientation

Sexual orientation was assessed using a single item, "Do you consider your sexual orientation to be …" Response options included: heterosexual, gay/lesbian/homosexual, bisexual, not sure, other, or decline to state.

3.2. Gender identity

Gender identity was assessed using a single item, "What is your gender?" Response options included: male, female, transgender (male to female), transgender (female to male), transgender (do not identify as male/female), not sure, other, or decline to state.

3.3. Current DSM IV diagnoses

Psychiatric diagnoses were assessed using the *Children's Interview for Psychiatric Syndromes* (ChIPS) (Weller et al., 2000) a structured interview to determine DSM diagnoses for youth ages 6 to 18. The ChIPS modules included attention deficit hyperactivity disorder, conduct disorder, generalized anxiety disorder, major depressive disorder, obsessive compulsive disorder, oppositional defiant disorder, post-traumatic stress disorder, and social anxiety disorder. A mental health provider on the inpatient unit administered all interviews to youth at the time of their admission.

3.4. Adverse childhood experiences

Exposure to early adverse experiences was assessed using the *Adverse Childhood Experiences* (ACES (Anda et al., 2010)), a 10-item questionnaire that assesses exposure to stressful or traumatic events in childhood. The total number of adverse events endorsed (range from 0 to 10) was calculated and used in analyses. The ACEs questionnaire demonstrates good test-retest reliability and has been used in several studies examining mental health across the lifespan (Chapman et al., 2004; Dube et al., 2004; Dube et al., 2001).

3.5. Suicidal ideation

Suicidal ideation was assessed by the *Suicidal Ideation Questionnaire – Jr.* (SIQ-Jr.) (Reynolds and Mazza, 1999). The SIQ-JR is a 15-item self-report measure of frequency and severity of suicidal ideation in the past month. The measure demonstrates good test-retest reliability, internal consistency, and validity in adolescents (Reynolds and Mazza, 1999; Hill et al., 2020). The total score was used in analyses, and the measure demonstrated excellent reliability ($\alpha = 0.96$).

3.6. Self-injurious behavior

History of suicide attempts and non-suicidal self-injury was assessed via items from the *Self-Injurious Thoughts and Behaviors Interview* (SITBI (Nock et al., 2007)), which captures the frequency and characteristics of a range of SITBs. Questions were asked via self-report through a computerized survey. Three items from the SITBI were used in analyses. Respondents were asked to indicate lifetime history (presence/absence) of NSSI, as well as the prior 12 month frequency of NSSI. Items included: (1) "Have you ever in your life done anything to purposefully hurt yourself without trying to die (for example, cutting or burning your skin)?" (yes/no), and (2) "About how many days in the past 12 months have you purposely hurt yourself without trying to die?" (0 days, 1–4 days, 5+days). A single item, (3) "Have you ever made an actual suicide attempt, where you were trying to kill yourself, even just a little?" was used to determine lifetime history (presence/absence) of SA. The measure has strong inter-rater and test-retest reliability, and good validity (Nock et al., 2007).

3.7. Psychiatric inpatient readmission

The presence or absence (yes/no) of rehospitalization on the psychiatric inpatient unit over the 6-months following data collection was assessed via electronic medical record review.

3.8. Data analytic plan

First, to characterize the clinical characteristics of SGM compared to non-SGM youth, we examined rates of DSM-5 diagnoses and mean scores on symptom measures. Second, to characterize demographic differences, we compared groups on sex assigned at birth, ethnicity, and race. Third, to examine whether SGM youth experience higher levels of clinical distress, we compared groups on measures of SITBs and ACEs. Lastly, we compared hospital readmission rates in the 6-months following the initial data collection period. T-tests were used to compare groups on continuous variables, and chi square tests were used to compare groups on dichotomous measures. Finally, linear and logistic

regression analyses were conducted to examine whether sexual minority status was a significant predictor of clinical risk indices when accounting for sex assigned at birth and current depression.

We collapsed youth across sexual minority (SM) and non-SM categories, and across gender minority (GM) and non-GM categories. For SM, we included youth who identified as gay/lesbian/homosexual, bisexual, or other. For non-SM, we included youth who identified as heterosexual. For GM analyses, we included youth who identified as transgender or other, and for non-GM, we included youth who identified as male or female. Sensitivity analyses revealed no change in the pattern of results when including youth who selected 'unsure' or 'decline to state' response options for sexual orientation and/or gender identity; therefore, results below do not include these youth.

4. Results

4.1. Descriptive statistics

Approximately half of the sample self-identified as heterosexual (51.7%; $n = 266$), and approximately one-third of the sample identified as a SM (24.3% identified as bisexual, $n = 125$; 7.4% identified as gay/lesbian/homosexual, $n = 38$; 2.9% identified as other, $n = 15$). The remainder of youth identified as unsure ($n = 55$; 10.7%) or declined to state ($n = 16$; 3.1%). A smaller proportion of youth identified as a GM in this sample. The majority of youth self-identified as female (57.5%; $n = 296$) or male (34.4%; $n = 177$). In contrast, 27 youth (5.2%) identified as transgender and 4 youth (0.8%) identified as other. The remainder of youth identified as unsure ($n = 7$; 1.4%) or declined to state ($n = 4$; 0.8%). Of SM youth, 20/178 (11.2%) identified as GM (transgender or other), and of GM youth, 20/31 youth (64.5%) identified as SM (bisexual, gay/lesbian/homosexual, or other).

In comparing rates of diagnoses between SM and non-SM youth, SM youth reported significantly higher rates of depression (79.8% SM vs. 62.2% non-SM), generalized anxiety disorder (57.7% vs. 34.5%), social anxiety disorder (22.6% vs. 14.3%), and post-traumatic stress disorder (31.5% vs. 19.0%). Groups did not differ on rates of any other diagnostic category. A similar pattern emerged for GM and non-GM youth. GM youth reported significantly higher rates of major depressive disorder (83.3% GM vs. 69.0% non-GM) and social phobia (30% vs. 17.3%). There were no differences between GM and non-GM youth on any other diagnostic category. In Tables 1a,1b,1c and 2a,2b,2c, we present findings comparing SGM youth and non-SGM youth on demographic variables. Both SM and GM youth were more likely to indicate their sex assigned at birth was female, compared to non-SM and non-GM youth. No other demographic differences were found.

Mean levels of SI, NSSI, and exposure to ACEs are presented in Tables 1a,1b,1c and 2a,2b,2c Overall, SGM youth reported clinically elevated mean levels of SI (scores > 30) at initial hospitalization, as well as high rates of NSSI and SAs prior to initial hospitalization. SGM youth also reported high mean levels of early adversity experiences.

4.2. Comparisons between groups

Independent samples t-tests comparing SM and non-SM youth on SI, past year NSSI frequency, and early adversity exposure are reported in Table 1a. Results highlight significant differences between groups, such that youth who identify as a SM report greater exposure to early adversity and higher levels of SI, but not higher NSSI frequency, at their index admission. Effect sizes for these group differences were small to medium. Chi square tests comparing SM and non-SM youth on history of

Table 1a
Chi square tests comparing sexual minority and non-sexual minority youth on demographic variables.

	SM youth n (%)	non-SM youth n (%)	Chi^2	*p*	Odds Ratio (CI)
Female sex at birth	158 (88.8%)	119 (44.4%)	88.09	<.001	9.76 (5.77–16.48)
Hispanic	42 (24.0%)	62 (23.7%)	.003	.953	1.01 (.65–1.59)
Non-white	55 (31.4%)	86 (32.9%)	.11	.739	.933 (.62–1.41)

Table 1b
Independent samples t-tests comparing sexual minority and non-sexual minority youth on symptom measures.

	SM youth mean (SD)	non-SM youth mean (SD)	t (df)	*p*	Cohen's *d*
ACEs	7.17 (3.62)	4.79 (3.52)	−3.99 (142)	<.001	.69
SIQ-JR	44.03 (26.13)	27.95 (27.31)	−6.19 (442)	<.001	.60
NSSI 12 month frequency	1.35 (.72)	1.20 (.64)	−1.50 (204)	.135	.20

Table 1c
Chi square tests comparing sexual minority and non-sexual minority youth on SITBs.

	SM youth n (%)	non-SM youth n (%)	Chi^2	*p*	Odds Ratio (CI)
NSSI history	138 (77.5%)	123 (46.24%)	43.086	<.001	4.01 (2.62–6.15)
SA history	122 (78.5%)	115 (43.23%)	27.44	<.001	2.86 (1.92–4.26)

SM = Sexual minority; ACEs = Adverse Early Experiences questionnaire; SIQ = Suicidal Ideation Questionnaire; NSSI = Non-suicidal self-injury; SA = suicide attempt.

Table 2a
Chi square tests comparing gender minority and non-gender minority youth on demographic variables.

	GM youth n (%)	non-GM youth n (%)	Chi^2	*p*	Odds Ratio (CI)
Female sex at birth	27 (87.1%)	298 (63.0%)	7.38	.007	3.96 (1.36–11.52)
Hispanic	8 (25.8%)	108 (23.3%)	.104	.747	1.14 (.50–2.64)
Non-white	10 (32.3%)	120 (32.5%)	.001	.980	.99 (.45–2.16)

Table 2b
Independent samples t-tests comparing gender minority and non-gender minority youth on symptom measures.

	GM youth mean (SD)	non-GM youth mean (SD)	t (df)	*p*	Cohen's *d*
ACEs	6.45 (3.23)	5.74 (3.73)	−0.61 (152)	.543	.20
SIQ-JR	53.32 (24.98)	33.59 (27.38)	−3.91 (502)	.001	.75
NSSI 12 month frequency	1.52 (.62)	1.23 (.69)	−1.72 (229)	.087	.44

Table 2c
Chi square tests comparing gender minority and non-gender minority youth on SITBs.

	GM youth n (%)	non-GM youth n (%)	Chi^2	*p*	Odds Ratio (CI)
NSSI history	22 (70.10%)	269 (56.87%)	2.37	.124	1.85 (.84–4.11)
SA history	17 (54.83%)	248 (52.43%)	.068	.795	1.02 (.53–2.86)

GM = Gender minority; ACEs = Adverse Early Experiences questionnaire; SIQ = Suicidal Ideation Questionnaire; NSSI = Non-suicidal self-injury; SA = suicide attempt.

NSSI and SA (Table 1b) indicate that SM youth are significantly more likely to report a history of both NSSI and SA compared to non-SM youth.

Due to the small number of GM identified youth in this sample ($n = 31$), analyses comparing GM and non-GM youth on the clinical outcomes of interest are considered preliminary. Independent samples t-tests comparing GM and non-GM youth on recent SI, past year NSSI frequency, and early adversity exposure are reported in Table 2a. Results highlight significant differences between groups, such that youth who identify as a GM report elevated SI at the time of hospitalization. Chi square tests comparing GM and non-GM youth on history of NSSI and SA (Table 2b) indicate no significant differences between groups.

Finally, we compared SM and non-SM youth on rates of rehospitalization 6-months following initial data collection. Of youth who were re-hospitalized at least once in the 6-months following the initial data collection period ($n = 50$), 19/142 (13.4%) identified as SM and 31/224 (13.8%) as non-SM. Chi square analyses indicate there were no significant differences between groups ($Chi^2 = 0.016$; $p = .901$). The number of GM youth re-hospitalized in this time period was too small to conduct meaningful comparison between GM ($n = 2$) and non-GM ($n = 59$) youth. Post-hoc Benjamini-Hochberg tests indicated all bivariate results held after adjusting for multiple comparisons.

4.3. Multivariate analyses

To test whether our findings were maintained when we statistically adjusted for relevant demographic and clinical characteristics (i.e., SM status, sex assigned at birth, and current depression status), linear regressions were conducted for continuous outcomes identified as significant in group comparisons between SM and non-SM youth. Notably, SM status remained a significant predictor of SI severity ($F(3,341) = 75.75$, $p < .001$, $R^2 = 0.40$) and frequency of ACEs ($F(3,108) = 4.23$, $p = .007$, $R^2 = 0.11$) when SM status, sex assigned at birth, and current depression status were included in the model as independent variables. Logistic regressions were conducted for dichotomous outcomes identified as significant in group comparisons. Similarly, SM status remained a significant predictor of NSSI ($Chi^2(3) = 60.27$, $p < .001$, Nagelkerke $R^2 = 0.18$) and SA history ($Chi^2(3) = 85.85$, $p < .001$, Nagelkerke $R^2 = 0.25$) when SM status, sex assigned at birth, and current depression status were entered into the model. Depression was also a significant predictor in both models.

5. Discussion

The current study's aims were two-fold: to characterize the prevalence and clinical characteristics of SGM identification among psychiatrically hospitalized adolescents and to assess the relation between SGM status and clinical indicators of risk. We found that approximately 40% of psychiatrically hospitalized adolescents identify as SGM. Among these hospitalized adolescents, SGM youth evidenced significantly higher levels of risk, as compared to heterosexual and cisgender youth. Overall, SGM youth showed greater rates of SITBs, including higher severity of SI and greater likelihood of prior suicidal and non-suicidal self-injurious behavior, which is consistent with previous literature (Smithee et al., 2019; Liu, 2019). The current findings were maintained in multivariate analyses that included relevant participant characteristics, including SM status, sex assigned at birth, and current depression status, in the models. Results extend prior research to psychiatrically acute youth, showing that even among high clinical severity teens, SGM status is associated with greater SITB risk (Meyer, 2003; McLemore, 2016).

Consistent with prior research, we also found higher rates of childhood adversity among SGM youth, including developmental risk factors such as childhood abuse, neglect, and victimization. These ACEs likely contribute to health disparities later in life (Austin et al., 2016; Rothman et al., 2011; Friedman et al., 2011; Andersen and Blosnich, 2013). Future research examining ACEs specific to SGM youth will be important to inform intervention for these high-risk youth. Additionally, the minority stress model provides a framework for explaining elevated risk for suicidality and related mental health outcomes in SM individuals and has been extended to examine minority stress processes in GM individuals (Meyer, 2003; Testa et al., 2015). This model can be used to inform future research examining minority-specific stressors that may further account for increased risk for SITB in acute SGM adolescent populations.

Our findings indicate that, although SGM youth report greater clinical indicators of risk, including elevated rates of mental health diagnoses (e.g., depression, anxiety) relative to their psychiatrically hospitalized counterparts, they are not at a greater risk for rehospitalization. It is possible that, despite higher scores on risk indices at the time of initial hospitalization, SGM youth benefit from this contact with the mental healthcare system to the extend that the rates of rehospitalization do not exceed those of their non-SGM counterparts. Notably, however, our measure of rehospitalization was based on electronic medical record review, which was limited to the adolescent psychiatric units that share the same electronic medical record system. As a result, we were unable to account for rehospitalizations that occurred outside this hospital system. Therefore, limitations in our measure of rehospitalization may account for this unexpected finding. Further, because a small proportion of the sample was re-hospitalized during this six-month period, we may have been limited in our ability to detect differences between these groups. As a result, the present findings should be considered preliminary, and future research in a larger sample over a longer follow-up period with a more complete rehospitalization record should be conducted.

5.1. Limitations

Despite notable study strengths, limitations should also be

considered. First, apart from the clinical diagnostic interview, this study relied on adolescent self-report measures. Although obtaining caregiver perspectives is important, adolescents are the most accurate reporters of their gender identity and sexual orientation, and they are often the most accurate reporters of their own internalized states (Sourander et al., 1999). Second, in future research, it will be important to include a broader range of response options for inquiring about sexual orientation, including assessing both attraction and behavior. Third, we only assessed SGM status and clinical symptoms at their initial hospital admission; as a result, the degree to which SGM status is associated with SITBs over time could not be explored. Such work is needed in future research to disambiguate concomitants from risk factors for SITBs. The study design also prohibited consideration of the long-term stability of SGM identities and exploration of different stages of SGM identity development, factors that have been shown to impact mental health and SITB risk (Pachankis, 2018; D'Augelli et al., 2001). Fourth, item-level data were not available for the ACEs measure to examine whether specific adverse events were driving the observed differences between SGM youth and non-SGM youth. Fifth, the low number of GM youth reduced our ability to detect differences between groups on proposed clinical outcomes. Fifth, some interviewers may have been aware of adolescents' SGM status prior to conducting diagnostic interviews, which could bias these results. Finally, the sample size in this study restricted our ability to compare subgroups of SGM youth. Given evidence that certain subgroups may be at higher risk for SITBs (Mustanski et al., 2010), further exploration of sexual and gender identity group differences is warranted. Research with much larger samples of SGM youth will allow for more nuanced investigation into differences in risk between SGM identities.

5.2. Clinical implications

Given the high proportion of psychiatrically hospitalized youth identifying as SGM, and its association with greater risk for SITBs, it is clinically indicated to assess gender and sexual identity in a thorough and nuanced way, in accordance with guidelines for best practices, and to do so on a continual basis, as identification may change with time (Hu et al., 2016). It is essential that all healthcare providers receive training in best practices with SGM youth and families. Additionally, it is critically important for research to examine whether evidence-based interventions to reduce SITB risk employed during hospitalization (e.g., safety planning (Stanley and Brown, 2012)) and post-discharge (e.g., dialectical behavior therapy (Mehlum et al., 2016)) work effectively for this population, or if SGM-specific modifications are needed. In order to appropriately tailor treatments to maximize effectiveness, it will be imperative for future research to assess the mechanisms underlying elevated SITB risk among psychiatrically hospitalized SGM youth.

5. Conclusion

In summary, even among clinically high-risk youth, SGM youth are at elevated risk for poor clinical outcomes and indices of risk, including SITBs and ACEs. Findings from the current study have direct clinical implications for assessment and clinical training, and results also highlight important directions for future research, including the need to test the effectiveness of evidence-based interventions in adolescent SGM samples.

Author statement

Bettis: Conceptualization; Methodology & formal analysis; Writing – original draft/review & editing; Funding acquisition.

Thompson: Conceptualization; Data curation; Writing – original draft/review & editing.

Burke: Writing – original draft/review & editing.

Nesi: Writing – original draft/review & editing; Funding acquisition.

Liu: Conceptualization; Supervision; Writing –review & editing.

Hunt: Project administration.

Wolff: Conceptualization; Project administration; Supervision; Writing – review & editing.

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Declaration of competing interest

The authors have no disclosures or conflicts of interest to declare.

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