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School Restroom/Locker Rooms Restrictions and Sexual Assault Risk Among Transgender Youth

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Abstract

Background—Transgender and gender non-binary adolescents experience high rates of peer victimization, but the prevalence of sexual assault in this population has not been established. Some schools restrict transgender and non-binary students from using restrooms and locker rooms that match their gender identity, with unknown effects on sexual assault risk. We tested whether these restrictions were associated with the 12-month prevalence of sexual assault victimization.

Methods—Survey responses were analyzed from 3673 transgender and non-binary U.S. adolescents in grades 7 through 12 who participated in the cross-sectional 2017 LGBTQ Teen Study. We estimated the association between school restroom/locker room restrictions and past-

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CONTRIBUTORS' STATEMENT

Mr Murchison conceptualized and designed the study, coordinated data collection, carried out data analysis, drafted the initial manuscript, and revised the manuscript.

Dr Agénor provided input on the study design and analyses and reviewed and revised the manuscript.

Dr Reisner provided input on the study design and analyses and reviewed and revised the manuscript.

Dr Watson conceptualized and designed the study, coordinated and supervised data collection, and reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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year sexual assault, adjusting for potential demographic, social, and behavioral confounders, using logistic regression. We also tested potential mediators.

Results—The 12-month prevalence of sexual assault was 26.5% among transgender boys, 27.0% among non-binary youth assigned female at birth, 18.5% among transgender girls, and 17.6% among non-binary youth assigned male at birth. Youth whose restroom/locker room use was restricted were more likely to experience sexual assault compared to those without restrictions, with risk ratios of 1.26 (95% CI: 1.02, 1.52) in transgender boys, 1.42 (95% CI: 1.10, 1.78) in non-binary youth assigned female at birth, and 2.49 (95% CI: 1.11, 4.28) in transgender girls. Restrictions were not associated with sexual assault among non-binary youth assigned male at birth.

Conclusions—Pediatricians should be aware that sexual assault is highly prevalent in transgender and non-binary youth, and that restrictive school restroom/locker room policies may be associated with risk.

Table of Contents Summary:

This study reports rates of sexual assault victimization, and its association with restrictive school restroom/locker room policies, in a transgender and gender non-binary adolescent sample.

INTRODUCTION

Adolescents (as well as children or adults) may identify as *transgender* when their gender identity—their internal sense of being male, female, or something else—does not match the sex they were assigned at birth. Someone whose gender identity falls outside of the traditional male and female “binary” may also identify as *non-binary*. Together, transgender and non-binary people are sometimes described as “gender minorities.”

Gender minority youth and adults are disproportionately likely to experience sexual violence. In the United States, the lifetime prevalence of sexual assault (i.e., unwanted sexual contact) among gender minorities is estimated at 47%,[1] Prior research with small samples of gender minority youth has found sexual assault rates of over 50% in some subpopulations, including transgender girls of color, transgender boys, and non-binary youth assigned a female sex at birth.[2,3] Transgender and non-binary people with a history of sexual violence are more likely to experience psychiatric distress,[4] engage in problematic substance use[5,6] and sexual risk behaviors, drop out of school,[7] and consider or attempt suicide.[4,5,7] In general, adolescents who have experienced sexual assault are at risk for major depression, post-traumatic stress disorder, substance use problems, eating disorders, and additional sexual violence.[8]

Little is known about risk factors for sexual assault in gender minority adolescents, but school policies and practices play an important role in other forms of victimization.[9,10] One potentially impactful policy is whether schools restrict transgender students from using restrooms or locker rooms that match their gender identity. A majority of transgender students report that school staff have placed limits on their restroom/locker room use.[11] In a focus group study, transgender boys reported fear and harassment when using girls’

restrooms. Using “unisex” facilities, often staff or nurse’s restrooms, likewise attracted “unwanted attention from peers and adults.”[12]

The literature suggests at least three reasons that restroom/locker room policies may be related to gender minority students’ risk of sexual assault. First, restrictions may cause students to use facilities that are less safe for them, and students may be assaulted while using them.[12] Second, restrictions may increase the likelihood of bias-related victimization in other locations, e.g. by increasing peer awareness student’s gender minority status,[12]. Third, restrictive policies may not cause victimization, but may be a marker of a hostile school or community climate for gender minority youth.[10] In each case, we would expect higher rates of sexual assault victimization in gender minority youth whose schools restrict their use of identity-congruent restrooms/locker rooms compared to those not facing restrictions. However, to date, the relationship between restroom/locker room policies and sexual assault victimization has not been examined.

Our first aim was to determine the 12-month prevalence of sexual assault in a large, geographically diverse sample of transgender and non-binary U.S. middle- and high-school youth. Our second aim was to determine whether having been prohibited by school staff from using identity-congruent restrooms/locker rooms is associated with sexual assault victimization in gender minority youth. Our third aim was to test four potential mediators of the restrictions-sexual assault association: perceived safety in restrooms/locker rooms, perceived safety elsewhere at school, sexual harassment victimization, and the proportion of classmates aware of the student’s gender minority status.

METHODS

Study population

We analyzed data from the LGBTQ Teen Study, an anonymous web-based survey of lesbian, gay, bisexual, transgender, and queer (LGBTQ) adolescents aged 13 to 17 years living in the United States and able to read English (N=17,112).[13] Youth were recruited through social media posts and were offered Human Rights Campaign-branded wristbands and entry into a $50 gift card drawing. Participants provided informed assent; parental permission was waived to avoid disclosure of the child’s LGBTQ identity. The study protocol was approved by the Institutional Review Board at the University of Connecticut.

Of 29,291 participants who began the survey, 8,985 screened ineligible and 3,006 were removed because they abandoned the survey before completing the first section. Probable mischievous (n=175) and duplicate (n=22) responses were manually identified and removed. The present analysis was limited to the 3,673 participants who were currently in grades 7 through 12 and reported a transgender and/or non-binary identity.

Measures

Restroom/locker room status.—The exposure of interest was being denied access to identity-congruent school restrooms and/or locker rooms by school staff. Participants were asked, “At school, do you use restrooms and locker rooms that match your gender identity?” (1=never, 5=always). Participants with responses other than “always” were provided a list of

5 possible reasons for not using identity-congruent facilities. Those who selected "Teachers or administrators told me I am not allowed to use them" (with or without other reasons) were classified as restricted. Any other response was classified as not restricted. Some students classified as restricted also reported additional reasons, such as feeling unsafe, and some students classified as non-restricted did not use identity-congruent facilities. In other words, the exposure of interest was the restriction imposed by school staff rather than actual facility use.

Sexual assault.—The binary outcome of interest was past-year sexual assault. Participants were asked, "During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)"[14] The response "0 times" was coded as 0. Any positive number of assaults was coded as 1.

Gender identity and sex assigned at birth.—Gender was assessed using a "two-step approach."[15] Participants provided their sex assigned at birth (male or female) and their current gender identity (male, female, trans male/trans boy, trans female/trans girl, non-binary, genderqueer/gender non-conforming, or write-in responses). "Non-binary," "genderqueer/gender non-conforming," and similar write-in responses (e.g., "gender fluid") were considered non-binary identities. Based on this information, participants were assigned to 1 of 4 categories: (1) *trans male*, i.e., male and/or trans male gender identity and female sex assigned at birth; (2) *trans female*, i.e., female and/or trans female gender identity and male sex assigned at birth; (3) *non-binary, AFAB*, i.e., non-binary gender identity and female sex assigned at birth; and (4) *non-binary, AMAB*, i.e., non-binary gender identity and male sex assigned at birth.

Covariates.—Our primary estimates of the association between restroom/locker room restrictions and sexual assault were adjusted for known risk factors for adolescent sexual assault victimization and gender minority peer victimization, as follows:

Alcohol use.: Participants were asked, "During your life, on how many days have you had at least one drink of alcohol?" (1=0 days, 7=100 or more days).[14]

Family connectedness.: Family connectedness was assessed using the mean of 3 items (sample: "How much do you feel…your family cares about your feelings?"; 1=strongly disagree, 5 = strongly agree). Items were selected, based on item-total correlation, from a 7-item scale previously used in research with LGBTQ adolescents.[16,17] Coefficient alpha was 0.83.

Teacher awareness of gender minority status ("outness").: Participants were asked, "For each of the following groups [teachers and adults at school], how many people currently do you think know that you are transgender?" (1=none, 5=all).

Caregiver education.: Participants were asked their relationship to "the one or two adults most responsible for raising you now" and the highest level of education that each had completed (1=High school/GED or less, 2=vocational/technical school or some college,

3=college completion, 4=postgraduate education). For youth with 2 caregivers, scores were averaged and (for Table 1 only) rounded to the nearest integer.

State same-sex marriage approval.: Attitudes towards sexual minorities and gender minorities are strongly correlated,[18] and same-sex marriage approval rates are predictive of health outcomes in LGBTQ populations.[19] In our sample, state-level approval was positively associated with family connectedness, outness to classmates and teachers, and perceived safety at school, and negatively associated with depression, sexual harassment, and restroom/locker room restrictions, supporting its validity as a proxy for lower levels of local anti-transgender stigma (see Supplemental Information). The proportion of state residents who approve of legal same-sex marriage was obtained from the 2016 Cooperative Congressional Election Study (CCES; N=64,600).[20]

Teacher LGBTQ attitudes.: Participants were asked, "How many of the teachers and staff at your school do you think are supportive of LGBTQ people?" (0=none of them, 3=all of them).

Presence of GSA.: Participants reported whether their school had a GSA, or gender/sexuality alliance (1=yes, 0=no).

Potential mediators.—Variables related to peer victimization were conceptualized as potential intermediates in the relationship between restroom/locker room restrictions and sexual assault risk.

Safety at school.: Participants responded to the question "When at school, how often do you feel safe…" for eight locations (sample: "In the cafeteria," 0=never, 4=always).[21] Safety in restrooms and locker rooms was defined as the mean of "in the bathroom" and "in the locker room" (alpha=0.89). Safety elsewhere in school was defined as the mean of the remaining six items (alpha=0.88).

Classmate awareness of gender minority status ("outness").: Participants were asked, "For each of the following groups [classmates at school], how many people currently do you think know that you are transgender?" (1=none, 5=all).

Sexual harassment.: Participants rated the past 12 month frequency (0=*0 times*, 5=*6+ times*) of experiencing five sexual harassment behaviors (sample: "Having someone flash or expose themselves to you").[22] Responses were summed. Coefficient alpha was 0.79.

Analysis

We first calculated the distribution of each covariate by gender group (i.e., gender identity and sex assigned at birth) and restroom/locker room restriction status. We then determined the prevalence of past 12-month sexual assault by gender and restroom/locker room restriction status. Next, we fit a logistic regression model for the probability of sexual assault, adjusting for potential confounders associated with adolescent sexual assault (i.e., alcohol use,[23] family connectedness,[24] and caregiver educational attainment[25]) and exposure to anti-transgender stigma and victimization (i.e., state same-sex marriage approval

rate[18,19] outness to teachers,[26] perceived teacher LGBTQ support, and presence/absence of GSA). The initial model also adjusted for age and race, but these were removed due to non-significance. Each model included interaction terms between restroom restrictions and gender group in order to estimate the effect of restroom/locker room restrictions separately for each group. We also tested interaction terms between assigned sex and each covariate; all were non-significant except for the interaction between assigned sex and outness to teachers, which was retained in the final model. Odds ratios from the model were converted to relative risks to aid interpretation.[27]

To assess potential mediators, we fit a separate natural effects model for each proposed mediator using the *Medflex* package for R.[28] The proportion mediated was calculated by dividing the natural indirect effect by the total effect on the log odds scale.

Missingness was low (1.7%) for sexual assault, but substantial for restroom/locker room status (9.6%) and certain covariates. Nearly all missingness was attributable to early survey termination rather than skipping of sensitive items, supporting the assumption that the data were missing at random and making multiple imputation appropriate.[29] The data were imputed 40 times using the *mice* package for R, and imputed data were used for all regression models.[30] As a sensitivity analysis, we fit models on the non-imputed data, resulting in similar point estimates (except for a stronger association among transgender girls) and larger standard errors due to the deletion of partial cases (see Supplemental Information). Data analysis was conducted in R 3.4.4.[31]

RESULTS

Participants represented every U.S. state, and a plurality (35.4%) lived in the South (Table 1). The mean age was 15.4 years (*SD*=1.3). Most (90.0%) participants were assigned female at birth (AFAB) with the remaining 10.0% assigned male at birth (AMAB); 58.9% of AFAB participants and 56.9% of AMAB participants had a non-binary gender identity.

Non-restricted youth lived in states with higher average same-sex marriage approval (0.62, *SD*=0.08) compared to restricted youth (0.60, *SD*=0.08, *P*<.001; Table 2). Restricted youth were less likely to have a GSA at their school (57.3% compared to 66.8%, *P*<.001) and gave poorer mean ratings for teacher LGBTQ attitudes (1.34, *SD*=0.64, compared to 1.53, *SD*=0.63, *P*<.001).

The prevalence of sexual assault in the past 12 months was 25.9% (95% CI 24.4, 27.3; Table 3). The prevalence was highest among non-binary AFAB youth at 27.0% (95% CI 25.0, 29.0) and transgender boys at 26.5% (95% CI 24.0, 28.6). Youth subject to restroom/locker room restrictions had an overall sexual assault prevalence of 36.0% (95% CI 31.6, 40.3).

After adjustment for potential confounders, in three of the four gender groups, youth who experienced restroom/locker room restrictions were significantly more likely to experience sexual assault than those whose facility use was not restricted (Table 4). Specifically, restricted transgender boys had 1.26 (95% CI 1.02, 1.52; *P*=.042) times the adjusted sexual assault risk compared to non-restricted transgender boys, restricted non-binary AFAB youth had 1.42 (95% CI 1.10, 1.78; *P*=.012) times the adjusted risk compared to non-binary

AFAB youth without restrictions, and restricted transgender girls had 2.49 (95% CI 1.11, 4.28; *P*=.027) times the adjusted risk compared to non-restricted transgender girls. For non-binary AMAB participants, restroom/locker room restrictions were not associated with sexual assault risk (*P*=.673).

Significant indirect effects were present for all four mediating variables tested (Table 5). Sexual harassment fully mediated the association between restroom/locker room restrictions and sexual assault victimization. There was partial mediation by feeling safe in restrooms/locker rooms (23.7% mediated), feeling safe elsewhere in school (19.0% mediated), and classmate knowledge of gender minority status (6.8% mediated).

DISCUSSION

In our sample of transgender and non-binary U.S. adolescents, the 12-month prevalence of sexual assault was 25.9%, substantially higher than national rates of 15% among cisgender high school girls and 4% among cisgender boys.[32] After adjusting for potential confounders, compared to non-restricted youth of the same gender identity and sex assigned at birth, school restrooms/locker room restrictions were associated with 1.26 times the risk of sexual assault for transgender boys, 1.42 times the risk for non-binary youth assigned female at birth, and 2.49 times the risk for transgender girls; we found no association between restroom/locker room restrictions and sexual assault risk in non-binary youth assigned male at birth. To our knowledge, the present study is the first to determine rates of sexual assault in a large middle- and high-school gender minority sample and the first to assess the association between school restroom/locker room policies and sexual assault victimization.

We found that sexual harassment fully mediated the association between restroom/locker room restrictions and sexual assault risk. One explanation for this finding is that restroom/locker room restrictions increase gender minority students' risk of sexual harassment, which can escalate to sexual assault. It is also possible that the students who experience restroom/locker room restrictions are more likely to experience sexual harassment and assault for other reasons (i.e., confounding), such as poor school disciplinary practices. Notably, our analysis controlled for both state-level and school-level indicators of attitudes towards LGBTQ people, reducing the likelihood that these attitudes confounded our results.

Our mediation results also suggested that restrictions are associated with student safety both in restrooms/locker rooms themselves and elsewhere at school, consistent with prior qualitative research indicating that restrictions increase both restroom/locker room victimization and peer hostility in general.[12] While the present study cannot determine whether the restrictions themselves affected safety, these results suggest that a single-person facility (e.g., a staff restroom) may not fully address the risks associated with restrictions. We found evidence for one potential mechanism for victimization outside restrooms/locker rooms—that restroom/locker room restrictions may put students at risk by "outing" them as transgender[12,33]—although classmates' awareness of students' gender minority status accounted for only a small proportion of the association between restrictions and sexual assault risk.

A major strength of the present study is the use of one of the largest samples of gender minority adolescents ever collected, including youth in every U.S. state. We controlled for key potential confounders, including school, family, and contextual factors. The study's limitations stem primarily from the use of cross-sectional, non-probability data. We cannot determine whether restroom/locker room restrictions caused the observed differences in sexual assault risk; furthermore, sexual assault prevalence estimates and other findings may not apply to the full population of U.S. transgender and non-binary adolescents. In particular, Black and Hispanic/Latino/a/x participants were underrepresented, which limited our ability to observe differences by race or ethnicity—a critical consideration in adolescent health research, particularly when restrictive or punitive practices (which often target Black and Latino/a/x youth) play a role. Similarly, the smaller number of students assigned male at birth limited the precision of effect estimates in this subgroup. Nonetheless, our sample had strong geographic and socioeconomic diversity, supporting our findings' generalizability to U.S. gender minority adolescents broadly.

CONCLUSION

Transgender and non-binary middle and high school youth in our sample experienced sexual assault at troubling rates well above those for non-transgender adolescents. Besides avoiding restrictive policies, schools should strongly consider designating "all-gender restrooms,"[12,33] along with additional adult supervision in locations where harassment is most likely to occur,[34] training staff to intervene in anti-LGBTQ bullying, and offering privacy options (e.g., curtains) in locker rooms.

Pediatricians should be aware of the high prevalence of sexual assault among transgender and non-binary youth, particularly those who have been subject to restrictive school policies, and should consider sexual victimization as a possible contributor to psychological distress and health risk behaviors in gender minority patients. Clinicians should routinely screen adolescents for a history of sexual assault,[35] keeping in mind that youth may not have previously disclosed the assault and may not volunteer the information unless asked directly.[36] Pediatricians can provide emotional support and mental health referrals;[35] gender minority youth should ideally be referred to providers who are experienced with gender minority populations. From a prevention perspective, pediatricians are key advocates for transgender and non-binary patients, and their role may include educating school officials and submitting letters confirming the patient's need to express their gender identity.[37] These communications can emphasize the importance of access to safe, identity-congruent restrooms and locker rooms.

Future research should identify the characteristics (e.g., perpetrators, settings) of sexual assault in transgender and non-binary K-12 youth, as well as any protective factors. Finally, it is not clear why restroom/locker room restrictions were not associated with sexual assault risk among non-binary youth assigned male at birth. Additional research should seek to better understand the school experiences and health risk profile of this understudied group.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations:

AFAB	assigned female at birth
AMAB	assigned male at birth
HS	high school
GED	general equivalency diploma
SD	standard deviation
SSM	same-sex marriage
GSA	gender/sexuality alliance
LGBTQ	lesbian, gay, bisexual, transgender, and queer/questioning

REFERENCES

1. James SE, Herman JL, Rankin S, Keisling M, Mottet L, Anafi M. The Report of the 2015 U.S. Transgender Survey. Washington, D.C.: National Center for Transgender Equality; 2016. https://www.transequality.org/sites/default/files/docs/USTS-Full-Report-FINAL.PDF. Published December 8 2016. Accessed June 1, 2018.
2. Garofalo R, Deleon J, Osmer E, Doll M, Harper GW. Overlooked, misunderstood and at-risk: Exploring the lives and HIV risk of ethnic minority male-to-female transgender youth. J Adolesc Health. 2006;38(3):230–236. DOI: 10.1016/j.jadohealth.2005.03.023 [PubMed: 16488820]
3. Sterzing PR, Gartner RE, Goldbach JT, McGeough BL, Ratliff GA, Johnson KC. Polyvictimization prevalence rates for sexual and gender minority adolescents: Breaking down the silos of victimization research. Psychology of Violence. 2017. DOI: 10.1037/vio0000123
4. Fernández-Rouco N, Fernández-Fuertes AA, Carcedo RJ, Lázaro-Visa S, Gómez-Pérez E. Sexual violence history and welfare in transgender people. J Interpers Violence. 2016;32(19):2885–2907. DOI: 10.1177/0886260516657911 [PubMed: 27386885]
5. Testa RJ, Sciacca LM, Wang F, et al. Effects of violence on transgender people. Prof Psychol Res Pr. 2012;43(5):452–459. DOI: 10.1037/a0029604
6. Coulter RWS, Blosnich JR, Bukowski LA, Herrick AL, Siconolfi DE, Stall RD. Differences in alcohol use and alcohol-related problems between transgender- and nontransgender-identified

young adults. Drug Alcohol Depend. 2015;154:251–259. DOI: 10.1016/j.drugalcdep.2015.07.006 [PubMed: 26210734]

7. Wyss SE. 'This was my hell': the violence experienced by gender non-conforming youth in US high schools. Int J Qual Stud Educ. 2004;17(5):709–730. DOI: 10.1080/0951839042000253676
8. Danielson CK, Holmes MM. Adolescent sexual assault: an update of the literature. Curr Opin Obstet Gynecol. 2004;16(5):383–388. DOI: 10.1097/00001703-200410000-00005 [PubMed: 15353946]
9. Hall W The effectiveness of policy interventions for school bullying: a systematic review. J Soc Social Work Res. 2017;8(1):45–69. DOI: 10.1086/690565 [PubMed: 28344750]
10. McGuire JK, Anderson CR, Toomey RB, Russell ST. School climate for transgender youth: a mixed method investigation of student experiences and school responses. J Youth Adolesc. 2010;39(10):1175–1188. DOI: 10.1007/s10964-010-9540-7 [PubMed: 20428933]
11. Kosciw JG, Greytak EA, Giga NM, Villenas C, Danischewski DJ. The 2015 National School Climate Survey: the experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools. New York: GLSEN; 2016. https://www.glsen.org/sites/default/files/2015%20National%20GLSEN%202015%20National%20School%20Climate%20Survey%20%28NSCS%29%20-%20Full%20Report_0.pdf. Published December 14, 2016. Accessed August 20, 2018.
12. Weinhardt LS, Stevens P, Xie H, et al. Transgender and gender nonconforming youths' public facilities use and psychological well-being: a mixed-method study. Transgend Health. 2017;2(1):140–150. DOI: 10.1089/trgh.2017.0020 [PubMed: 29159308]
13. Watson R, Wheldon C, Puhl R. Evidence of diverse identities in a large national sample of sexual and gender minority adolescents [published online ahead of print (February 13, 2019)]. J Res Adolesc. DOI: 10.1111/jora.12488
14. Centers for Disease Control and Prevention. Youth Risk Behavior Survey (YRBS) 2017 Standard Questionnaire Item Rationale. https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_standard_YRBS_item_rationale.pdf. Published 2016. Accessed July 3, 2018.
15. Reisner SL, Conron KJ, Tardiff LA, Jarvi S, Gordon AR, Austin SB. Monitoring the health of transgender and other gender minority populations: validity of natal sex and gender identity survey items in a U.S. national cohort of young adults. BMC Public Health. 2014;14(1):1224. DOI: 10.1186/1471-2458-14-1224 [PubMed: 25427573]
16. Eisenberg ME, Resnick MD. Suicidality among gay, lesbian and bisexual youth: the role of protective factors. J Adolesc Health. 2006;39(5):662–668. DOI: 10.1016/j.jadohealth.2006.04.024 [PubMed: 17046502]
17. Watson RJ, Veale JF, Saewyc EM. Disordered eating behaviors among transgender youth: probability profiles from risk and protective factors. Int J Eat Disord. 2016;50(5):515–522. DOI: 10.1002/eat.22627 [PubMed: 27862124]
18. Norton AT, Herek GM. Heterosexuals' attitudes toward transgender people: findings from a national probability sample of U.S. adults. Sex Roles. 2013;68(11):738–753. DOI: 10.1007/s11199-011-0110-6
19. Hatzenbuehler M L, Flores A R, Gates G J Social attitudes regarding same-sex marriage and LGBT health disparities: results from a national probability sample. J Soc Issues. 2017;73(3):508–528. DOI: 10.1111/josi.12229
20. Ansolabehere S, Schaffner BF. Cooperative Congressional Election Study, 2016: Common Content. Cambridge, MA: Harvard University; 2017.
21. Konishi C, Saewyc E, Homma Y, Poon C. Population-level evaluation of school-based interventions to prevent problem substance use among gay, lesbian and bisexual adolescents in Canada. Preventive Medicine. 2013;57(6):929–933. DOI: 10.1016/j.ypmed.2013.06.031 [PubMed: 23850517]
22. Hill C, Kearl H. Crossing the line: Sexual harassment at school. Washington, D.C.: American Association of University Women. https://www.aauw.org/files/2013/02/Crossing-the-Line-Sexual-Harassment-at-School.pdf. 2011. Accessed

23. Champion HLO, Foley KL, Durant RH, Hensberry R, Altman D, Wolfson M. Adolescent sexual victimization, use of alcohol and other substances, and other health risk behaviors. J Adolesc Health. 2004;35(4):321–328. DOI: 10.1016/j.jadohealth.2003.09.023 [PubMed: 15450546]
24. Tillyer MS, Wilcox P, Gialopsos BM. Adolescent school-based sexual victimization: exploring the role of opportunity in a gender-specific multilevel analysis. J Crim Justice. 2010;38(5):1071–1081. DOI: 10.1016/j.jcrimjus.2010.07.010
25. Butler AC. Child sexual assault: risk factors for girls. Child Abuse Negl. 2013;37(9):643–652. DOI: 10.1016/j.chiabu.2013.06.009 [PubMed: 23899536]
26. Russell ST, Toomey RB, Ryan C, Diaz RM. Being out at school: the implications for school victimization and young adult adjustment. Am J Orthopsychiatry. 2014;84(6):635–643. DOI: 10.1037/ort0000037 [PubMed: 25545431]
27. Zhang J, Yu KF. What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. JAMA. 1998;280(19):1690–1691. DOI: 10.1001/jama.280.19.1690 [PubMed: 9832001]
28. Steen J, Loeys T, Moerkerke B, Vansteelandt S. medflex: An R Package for Flexible Mediation Analysis using Natural Effect Models. J Stat Soft. 2017;76(11). DOI: 10.18637/jss.v076.i11
29. Sterne JA, White IR, Carlin JB, et al. Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. BMJ. 2009;338:b2393. DOI: 10.1136/bmj.b2393 [PubMed: 19564179]
30. van Buuren S, Groothuis-Oudshoorn K. mice: multivariate imputation by chained equations in R. J Stat Softw. 2010:1–68. DOI: 10.18637/jss.v045.i03
31. R: A Language and Environment for Statistical Computing [computer program]. Version 3.4.4. Vienna, Austria: R Foundation for Statistical Computing; 2017.
32. Kann L, McManus T, Harris WA, et al. Youth Risk Behavior Surveillance—United States, 2017. MMWR Surveill Summ. 2018;67(SS-8):1–114. DOI: 10.15585/mmwr.ss6708a1
33. Porta CM, Gower AL, Mehus CJ, Yu X, Saewyc EM, Eisenberg ME. "Kicked out": LGBTQ youths' bathroom experiences and preferences. J Adolesc. 2017;56:107–112. DOI: 10.1016/j.adolescence.2017.02.005 [PubMed: 28212504]
34. Taylor BG, Stein ND, Mumford EA, Woods D. Shifting boundaries: an experimental evaluation of a dating violence prevention program in middle schools. Prev Sci. 2013;14(1):64–76. DOI: 10.1007/s11121-012-0293-2 [PubMed: 23076726]
35. Kaufman M Care of the adolescent sexual assault victim. Pediatrics. 2008;122(2):462. DOI: 10.1542/peds.107.6.1476 [PubMed: 18676568]
36. Lessing JE. Primary care provider interventions for the delayed disclosure of adolescent sexual assault. J Pediatr Health Care. 2005;19(1):17–24. DOI: 10.1016/j.pedhc.2004.06.010 [PubMed: 15662358]
37. Forcier M, Olson-Kennedy J. Gender development and clinical presentation of gender nonconformity in children and adolescents. In: Blake D, Brent D, Geffner ME, Torchia MM, eds. *UpToDate*. Waltham, MA: UpToDate; 2018: https://www.uptodate.com/contents/gender-development-and-clinical-presentation-of-gender-nonconformity-in-children-and-adolescents. Accessed July 13, 2018.

What's Known on This Subject:

Among transgender and gender non-binary adolescents, lacking access to safe, gender identity-congruent restrooms and locker rooms is associated with psychological distress and negative peer attention. Peer victimization, including sexual harassment, is prevalent in this population.

What This Study Adds:

Transgender and gender non-binary adolescents experience high rates of sexual assault victimization during middle and high school. Being denied access to gender identity-congruent school restrooms and locker rooms is associated with sexual assault risk.

TABLE 1.

Percent distribution of demographic, family, social, and behavioral covariates among U.S. transgender and non-binary youth in grades 7-12 participating in the LGBTQ Teen Study, by sex assigned at birth and gender identity (*N*=3673)

Variable	Total (*N*=3673), %	Assigned female at birth		Assigned male at birth	
		Transgender boys (*n*=1359), %	Non-binary youth (*n*=1947), %	Transgender girls (*n*=158), %	Non-binary youth (*n*=209), %
Total		37.0	53.0	4.3	5.7
Region					
Northeast	18.2	17.7	18.2	18.6	21.3
South	35.4	32.3	37.6	36.5	34.8
North Central	24.2	27.8	22.1	23.1	20.3
West	22.2	22.1	22.1	21.8	23.7
Race/ethnicity					
White	68.1	71.5	66.1	70.3	62.7
Black	3.0	2.3	3.3	4.4	4.3
Asian	3.0	2.2	3.3	5.7	3.3
Hispanic/Latino	8.2	7.1	9.0	5.7	10.0
Biracial/Multiracial	15.3	14.8	15.8	12.7	16.7
Another race	2.3	2.1	2.4	1.3	2.9
Caregiver education					
HS/GED or less	16.6	20.0	14.1	11.2	19.9
Some college	27.7	29.5	26.6	25.2	27.9
4-year degree	33.3	32.8	33.9	39.9	27.9
Graduate degree	22.3	17.7	25.3	23.8	24.4
Out to teachers					
None	48.2	28.3	60.7	45.6	63.1
A few	20.9	20.8	21.3	20.4	19.5
Some	9.4	13.4	7.3	6.2	5.6
Most	10.9	17.7	6.6	13.4	5.8
All	10.5	19.9	4.1	14.4	6.0
Alcohol use					
0 days	44.5	41.3	46.5	48.5	43.8
1 or 2 days	17.8	16.7	18.3	18.0	20.4
3 to 9 days	18.2	19.2	17.8	15.2	18.2
10 to 19 days	8.1	9.7	7.0	10.0	5.9
20 to 39 days	5.6	6.8	5.4	2.2	3.3
40 to 99 days	3.0	2.9	3.0	2.7	5.1
100 or more days	2.6	3.4	2.0	3.5	3.3
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Age (years)	15.40 (1.29)	15.45 (1.25)	15.31 (1.32)	15.74 (1.22)	15.77 (1.28)
Family connectedness	3.18 (1.00)	3.09 (1.04)	3.20 (0.97)	3.35 (1.05)	3.42 (1.00)

Variable	Total (*N*=3673), %	Assigned female at birth		Assigned male at birth	
		Transgender boys (*n*=1359), %	Non-binary youth (*n*=1947), %	Transgender girls (*n*=158), %	Non-binary youth (*n*=209), %
State SSM approval	0.62 (0.08)	0.62 (0.08)	0.62 (0.08)	0.62 (0.08)	0.61 (0.08)

Note. SD = standard deviation. HS = high school. GED = general equivalency diploma. SSM = same-sex marriage.

TABLE 2.

Percent distribution of demographic, family, social, and behavioral covariates in relation to restroom/locker room restrictions among U.S. transgender and non-binary youth in grades 7-12 participating in the LGBTQ Teen Study, by sex assigned at birth and gender identity (*N*=3673)

	All (*N*=3673)		Assigned female at birth				Assigned male at birth			
			Transgender boys (*n*=1359)		Non-binary youth (*n*=1947)		Transgender girls (*n*=158)		Non-binary youth (*n*=209)	
	Restricted (*n*=452), %	Not restricted (*n*=2868), %	Restricted (*n*=265), %	Not restricted (*n*=985), %	Restricted (*n*=145), %	Not restricted (*n*=1599), %	Restricted (*n*=23), %	Not restricted (*n*=121), %	Restricted (*n*=19), %	Not restricted (*n*=163), %
Total	13.6	86.4	21.2	78.8	8.4	91.6	15.7	84.3	11.4	88.6
Race/ethnicity										
White	65.8	68.4	72.7	71.9	56.9	70.0	64.3	66.5	49.9	62.2
Black	2.3	3.2	3.8	2.4	8.1	1.6	4.3	3.5	4.5	2.2
Asian	2.0	3.2	5.9	2.3	4.8	1.9	2.9	3.6	6.7	1.1
Hispanic/Latino	9.0	8.1	5.3	7.1	8.1	7.4	9.6	8.8	13.6	11.3
Bi/Multiracial	17.8	15.0	10.9	14.4	22.1	16.3	16.5	15.4	19.1	19.6
Another race	3.1	2.1	1.5	1.9	0.0	2.9	2.5	2.3	6.2	3.5
Caregiver education										
HS/GED or less	21.0	15.9	72.7	19.3	56.9	23.2	64.3	13.8	49.9	18.5
Some college	32.0	27.1	3.8	29.2	8.1	31.4	4.3	26.0	4.5	33.3
4-year degree	29.9	33.9	5.9	32.8	4.8	32.1	2.9	34.6	6.7	26.0
Graduate degree	17.1	23.1	5.3	18.7	8.1	13.3	9.6	25.6	13.6	22.2
Teachers know gender minority status										
None	31.0	50.9	46.7	30.2	39.8	21.1	64.2	62.3	54.7	43.7
A few	21.5	20.9	20.3	20.8	20.6	20.8	20.6	21.0	10.5	24.5
Some	13.2	8.8	5.5	12.8	10.2	15.4	4.6	7.1	13.2	9.6
Most	18.1	9.8	13.6	16.3	12.6	22.6	4.7	6.2	15.1	11.3
All	16.2	9.6	14.0	19.8	16.8	20.0	5.9	3.5	6.5	10.9
Alcohol use										
0 days	41.0	45.1	46.4	41.7	59.9	39.8	42.7	47.3	52.6	38.5
1 or 2 days	15.4	18.2	17.4	17.3	21.1	14.5	21.6	18.5	10.7	16.8
3 to 9 days	16.4	18.5	17.0	19.9	5.6	16.5	20.0	17.6	4.1	19.6

	All (*N*=3673)		Assigned female at birth				Assigned male at birth			
			Transgender boys (*n*=1359)		Non-binary youth (*n*=1947)		Transgender girls (*n*=158)		Non-binary youth (*n*=209)	
	Restricted (*n*=452), %	Not restricted (*n*=2868), %	Restricted (*n*=265), %	Not restricted (*n*=985), %	Restricted (*n*=145), %	Not restricted (*n*=1599), %	Restricted (*n*=23), %	Not restricted (*n*=121), %	Restricted (*n*=19), %	Not restricted (*n*=163), %
10 to 19 days	10.4	7.7	11.0	9.1	4.2	11.9	6.0	6.7	5.2	9.6
20 to 39 days	8.1	5.3	2.5	6.1	0.4	9.6	2.7	5.2	7.6	6.8
40 to 99 days	3.1	3.1	3.2	3.2	0.4	1.8	4.0	2.9	14.0	4.2
100 or more days	5.7	2.2	2.6	2.7	8.3	6.0	3.0	1.7	5.7	4.6
School has GSA										
Yes	57.3	66.8	62.1	71.5	49.6	64.9	42.9	59.8	66.7	62.5
No	42.7	33.2	37.9	28.5	50.4	35.1	57.1	40.2	33.3	37.5
	Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)	
Age, years	15.32 (1.34)	15.42 (1.29)	15.38 (1.30)	15.46 (1.24)	15.15 (1.39)	15.32 (1.31)	15.6 (1.44)	15.77 (1.17)	15.71 (1.24)	15.77 (1.28)
Family connectedness	2.89 (1.05)	3.22 (0.99)	2.92 (1.05)	3.14 (1.03)	2.82 (1.02)	3.23 (0.96)	2.84 (1.19)	3.44 (1.00)	3.15 (1.01)	3.46 (1.00)
State SSM approval	0.60 (0.08)	0.62 (0.08)	0.60 (0.08)	0.62 (0.08)	0.59 (0.09)	0.62 (0.08)	0.64 (0.09)	0.62 (0.08)	0.58 (0.08)	0.62 (0.08)
Teacher LGBTQ support	1.34 (0.64)	1.53 (0.63)	1.39 (0.64)	1.60 (0.61)	1.29 (0.62)	1.47 (0.63)	1.19 (0.75)	1.59 (0.70)	1.20 (0.56)	1.59 (0.58)

Note. HS = high school. GED = general equivalency diploma. SD = standard deviation. SSM = same-sex marriage. GSA = gender/sexuality alliance.

TABLE 3.

Prevalence of sexual assault in the past 12 months overall and by school restroom/locker room status among U.S. transgender and non-binary youth in grades 7-12 participating in the LGBTQ Teen Study, by sex assigned at birth and gender identity (*N*=3673)

		Assigned female at birth		Assigned male at birth	
	All (*N*=3673), % (95% CI)	**Transgender boys (*n*=1359), % (95% CI)**	**Non-binary youth (*n*=1947), % (95% CI)**	**Transgender girls (*n*=158), % (95% CI)**	**Non-binary youth (*n*=209), % (95% CI)**
Sexual assault in past 12 months					
All	25.9 (24.4, 27.3)	26.5 (24.0, 28.6)	27.0 (25.0, 29.0)	18.5 (12.4, 24.6)	17.6 (12.3, 22.8)
No restrictions	24.3 (22.8, 25.8)	24.5 (21.9, 27.1)	25.6 (23.5, 27.6)	14.9 (8.8, 20.9)	17.6 (12.0, 23.2)
Restroom/locker room use restricted	36.0 (31.6, 40.3)	33.8 (28.1, 39.5)	42.2 (34.3, 50.2)	37.9 (18.3, 57.6)	17.4 (0.7, 34.1)

Note. CI = confidence interval.

TABLE 4.

Adjusted risk ratios for the association between being restricted from using gender-appropriate restrooms and locker rooms at school and past 12 month sexual assault victimization among U.S. transgender and non-binary youth in grades 7-12 participating in the LGBTQ Teen Study, by sex assigned at birth and gender identity (*N*=3673)

	Adjusted risk ratio for past 12 month sexual assault victimization (95% CI)
Assigned female at birth	
Transgender boys (*n*=1359)	
No restrictions (reference)	1.00
Restroom/locker room use restricted	**1.26 (1.02, 1.52)**
Non-binary youth (*n*=1947)	
No restrictions (reference)	1.00
Restroom/locker room use restricted	**1.42 (1.10, 1.78)**
Assigned male at birth	
Transgender girls (*n*=158)	
No restrictions (reference)	1.00
Restroom/locker room use restricted	**2.49 (1.11, 4.28)**
Non-binary youth (*n*=209)	
No restrictions (reference)	1.00
Restroom/locker room use restricted	0.82 (0.27, 2.08)

Note. All estimates are adjusted for parental educational attainment, alcohol use, family connectedness, teachers' awareness of participant's gender minority status, state same-sex marriage approval rate, presence of gender/sexuality alliance, and teacher LGBTQ attitudes. Within each model, the effect of restroom/locker room restrictions was allowed to vary by sex assigned at birth and gender identity (boy/girl versus non-binary). Bolded values are statistically significant at $\alpha = 0.05$.

TABLE 5.

Direct and indirect effects and proportion mediated by peer victimization variables for association between restroom/locker room restrictions and past 12 month sexual assault victimization among U.S. transgender and non-binary youth in grades 6-12 participating in the LGBTQ Teen Study (*N*=3673)

	Natural direct effect		Natural indirect effect		Proportion mediated
Mediating variable	**Risk ratio**	***P***	**Risk ratio**	***P***	
Feel safe in restrooms/locker rooms	1.24 (1.05, 1.44)	.013	1.07 (1.04, 1.10)	<.001	.237
Feel safe elsewhere at school	1.25 (1.06, 1.46)	.008	1.06 (1.03, 1.09)	<.001	.190
Classmates know gender minority status	1.29 (1.10, 1.50)	.002	1.02 (1.00, 1.04)	.030	.068
Sexual harassment	1.02 (0.87, 1.19)	.816	1.29 (1.19, 1.40)	<.001	.935