Full text under embargo at American Journal of Preventive Medicine
Please do not distribute

MENTAL DISORDERS AND DISTRESS BY SEXUAL ORIENTATION: RESULTS OF THE MINNESOTA COLLEGE STUDENT HEALTH SURVEY

Julia M. Przedworski, BS, Nicole A. VanKim, MPH, PhD, Marla E. Eisenberg, ScD, MPH, Donna D. McAlpine, PhD, Katherine A. Lust, PhD, MPH, RD, Melissa N. Laska, PhD, RD

Extended abstract

Background: Mental disorders, which affect approximately one in four adults in the U.S., can have significant repercussions on future health, well-being, and social functioning.[1–3] Evidence suggests that lesbian, gay, and bisexual (LGB) individuals face a disproportionate burden of poor mental health compared to heterosexuals.[4–9] However, gaps persist in knowledge regarding the mental health of various sexual minority (i.e., non-heterosexual) subpopulations, such as sexual minority emerging adults (aged 18-25), nearly half of whom are in college. Studies have found that sexual minority college students are at increased risk of poor mental health, including depression and suicidality,[10–12] and of experiencing stressful life events.[12] Sexual minority college students have also been found to utilize more mental health services than heterosexual students.[10,12] Poor mental health during college can have serious implications for students' academic achievement.[13–15]

Purpose: To compare self-reported mental disorder diagnoses, frequent mental distress, and stressful life events across five sexual orientation categories, stratified by gender, using a large probability sample of college students. It is hypothesized that sexual minority men and women are more likely to be diagnosed with a mental disorder, to report frequent mental distress, and to experience stressful life events when compared with their heterosexual counterparts.

Data source: Data were from the 2007–2011 College Student Health Survey (CSHS). The CSHS is an online health survey administered by University of Minnesota's Boynton Health Service to a random sample of 2- and 4-year college students at Minnesota institutions. Students from 40 institutions were sampled from enrollment rosters and invited to participate through postcard mailings and e-mails. Additional details on the survey have been previously described[16,17] and are publicly available online (www.bhs.umn.edu/surveys/index.htm). All survey procedures for the CSHS were approved by the University of Minnesota IRB. The merged data set had 34,392 students from 40 institutions with an overall response rate of 42%, similar to response rates reported in other studies of college populations.[18–22]

Measures: Five sexual orientation groups were defined for this study: (1) *heterosexual* (identified as heterosexual and engaged in only different-sex sexual behavior or did not engage in sexual behavior in the past year); (2) *discordant heterosexual* (identified as heterosexual and engaged in same-sex or both-sex sexual behavior in the past year); (3) *gay or lesbian*; (4) *bisexual*; and (5) *unsure*. Mental health was assessed using self-report of receiving any of 11 diagnoses in past 12 months (including anxiety, depression, bulimia, panic attacks, and social phobia) and frequent mental distress, or FMD (≥14 days of poor mental health in the past 30 days). Respondents also reported past year exposure to 11 stressful life events, such as failing a

class, parental conflict, and divorce or separation. Sociodemographic covariates included school type (2- vs. 4-year), health insurance status, age, relationship status, student status, race/ethnicity, having children, international student, living arrangements, hours worked for pay, and credit card debt.[23]

Analysis: The final analytic sample had 34,324 participants. Wald chi-square tests were used to assess differences in prevalence of mental health measures and stressful life events across sexual orientation groups. Unadjusted and adjusted (including all aforementioned covariates) gender-stratified logistic regression models were used to assess the relationship between sexual orientation and mental health outcomes, and stressful life events. Standard errors were adjusted for school clustering. Analyses were conducted using STATA, version 11.

Results: 93.0% of women in the sample were classified as heterosexual, 1.2% as gay or lesbian, 3.5% as bisexual, 1.6% as unsure, and 0.8% as discordant heterosexual. 93.1% of men were classified as heterosexual, 2.9% as gay, 1.6% as bisexual, 1.6% as unsure, and 0.9% as discordant heterosexual. Compared to heterosexual women, bisexual women had a significantly higher prevalence of diagnoses across all 11 disorders; gay or lesbian women were significantly higher for seven of 11 disorders. Similarly, compared to heterosexual men, gay and bisexual men had significantly higher proportions for the majority of mental disorder diagnoses, ten and eight, respectively. Unsure individuals had a higher prevalence anorexia and bulimia than heterosexual individuals. Discordant heterosexual men had higher prevalence of anorexia, bulimia, depression, panic attacks, and post-traumatic stress diagnoses than heterosexual men. In terms of stressful life events, there were significant differences among women across sexual orientation groups for all 11 events, whereas significant differences were observed among men for five of 11 events. In adjusted models and compared to their heterosexual counterparts, LGB men and women had significantly higher odds of receiving a mental health diagnosis, of reporting FMD, and of experiencing stressful life events; unsure men and women had higher odds of FMD.

Conclusion: Sexual minority college students in this study were more likely than heterosexual students to experience mental health problems. In addition to previously documented disparities in depression and anxiety, [24,25] there was evidence of sexual orientation disparities across a number of additional mental disorders, including attention deficit, bipolar, bulimia, panic attacks, and obsessive compulsive disorders. Findings also suggest differences in mental health between gay/lesbian and bisexual women, consistent with research indicating worse mental health status among bisexual women than both heterosexual and lesbian women.[5,10,26,27]

As reported in the literature, students who reported being unsure of their sexual identity had greater risk of psychological distress compared to heterosexual students.[5,12] Unsure students, despite not identifying as LGB, may experience structural heterosexism and internalized homophobia.[28] They may also experience psychological distress as a result of uncertainty in exploring a new sexual identity, as well as being less integrated into the LGB community.[12]

Although there were no significant differences in the odds of mental disorder diagnoses or FMD among heterosexual women based on sexual behavior (i.e., heterosexual versus discordant heterosexual), findings indicate that same-sex sexual behavior may have a significant impact on the mental health of self-identified heterosexual men. One possible explanation is that heterosexuality is policed more punitively among men, and the stress associated with concealing

same-sex sexual behavior, along with internalized shame and stigma, may contribute to increased psychological distress for heterosexual men who have sex with men.[5,29–32]

Limitations: Despite using a large sample of college student, there may have been insufficient data to detect differences for some subgroups. Further, the generalizability may be limited owing to a lower response rate, and findings may not be generalizable to other geographic areas. Finally, the use of self-reported mental disorder diagnoses may lead to measurement limitations, though it is most likely that any bias would tend toward underestimating disorders and be similar across groups.

Implications: Given the significant consequences of psychological distress and psychopathology for students' success and retention in college,[13–15] the finding that sexual minority college students experience more mental disorder diagnoses and FMD than their heterosexual counterparts is disconcerting. Although sexual minority students are likely to benefit from general interventions to improve student well-being, it is unlikely that these efforts alone will address the sexual orientation disparities in mental health. Instead, improving the mental health of sexual minority students may require interventions that target the structural and social causes of these disparities, as well as individual-level interventions that consider the unique life experiences of sexual minority students.[33]

1. Reeves WC, Strine TW, Pratt L a, et al. Mental illness surveillance among adults in the United States. *MMWR Surveill Summ*. 2011;60(3):1-29.

2. Newman DL, Moffitt TE, Caspi a, Magdol L, Silva P a, Stanton WR. Psychiatric disorder in a birth cohort of young adults: prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *J Consult Clin Psychol*. 1996;64(3):552-62.

3. Hunt J, Eisenberg D. Mental health problems and help-seeking behavior among college students. *J Adolesc Health*. 2010;46(1):3-10.

4. King M, Semlyen J, Tai SS, et al. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*. 2008;8:70.

5. Bostwick WB, Boyd CJ, Hughes TL, McCabe SE. Dimensions of sexual orientation and the prevalence of mood and anxiety disorders in the United States. *Am J Public Health*. 2010;100(3):468-75.

6. Fergusson DM, Horwood LJ, Ridder EM, Beautrais AL. Sexual orientation and mental health in a birth cohort of young adults. *Psychol Med*. 2005;35(7):971-981.

7. Cochran S, Sullivan J, Mays V. Prevalence of mental disorders, psychological distress, and mental services use among lesbian, gay, and bisexual adults in the United States. *J Consult Clin Psychol*. 2003;71(1):53-61.

8. Mustanski BS, Garofalo R, Emerson EM. Mental health disorders, psychological distress, and suicidality in a diverse sample of lesbian, gay, bisexual, and transgender youths. *Am J Public Health*. 2010;100(12):2426-32.

9. Almazan EP, Roettger M, Acosta PS. Measures of Sexual Minority Status and Suicide Risk among Young Adults in the United States. *Arch suicide Res*. 2014;18(3):274-281.

10. Kerr DL, Santurri L, Peters P. A comparison of lesbian, bisexual, and heterosexual college undergraduate women on selected mental health issues. *J Am Coll Health*. 2013;61(4):185-94.

11. Kisch J, Leino EV, Silverman MM. Aspects of suicidal behavior, depression, and treatment in college students: results from the spring 2000 national college health assessment survey. *Suicide Life Threat Behav*. 2005;35(1):3-13.

12. Oswalt SB, Wyatt TJ. Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. college students. *J Homosex*. 2011;58(9):1255-80.

13. Eisenberg D, Golberstein E, Hunt JB. Mental Health and Academic Success in College. *BE J Econ Anal Policy*. 2009;9(1).

14. Kessler CR, Foster CL, Saunders WB, Stang PE. Social Consequences of Psychiatric Disorders I: Educational Attainment. *Am J Psychiatry*. 1995;152:1026-1032.

15. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on the academic productivity of university students. *J Ment Health Policy Econ*. 2005;8(3):145-51.

16. Laska MN, Pasch KE, Lust K, Story M, Ehlinger E. Latent class analysis of lifestyle characteristics and health risk behaviors among college youth. *Prev Sci*. 2009;10(4):376-386.

17. VanKim NA, Laska MN, Ehlinger E, Lust K, Story M. Understanding young adult physical activity, alcohol and tobacco use in community colleges and 4-year post-secondary institutions: A cross-sectional analysis of epidemiological surveillance data. *BMC Public Health*. 2010;10(208).

18. Kaplowitz MD, Hadlock TD, Levine R. A Comparison of Web and Mail Survey Response Rates. *Public Opin Q*. 2004;68:94-101.

19. Porter SR, Umbach PD. Student survey response rates across institutions: Why do they vary? *Res High Educ*. 2006;47:229-247.

20. Carini RM, Hayek JC, Kuh GD, Kennedy JM, Ouimet JA. College Student Responses to Web and Paper Surveys: Does Mode Matter?+. *Res High Educ*. 2003;44:1-19.

21. Paolo AM, Bonaminio GA, Gibson C, Partridge T, Kallail K. *Response rate comparisons of e-mail- and mail-distributed student evaluations*.; 2000.

22. Wechsler H, Lee JE, Kuo M, Seibring M, Nelson TF, Lee H. Trends in college binge drinking during a period of increased prevention efforts. Findings from 4 Harvard School of Public Health College Alcohol Study surveys: 1993-2001. *J Am Coll Health*. 2002;50:203-217.

23. Nelson MC, Lust K, Story M, Ehlinger E. Credit card debt, stress and key health risk behaviors among college students. *Am J Heal Promot*. 2008;22(6):400-407.

24. Lindley LL, Walsemann KM, Carter JW. The association of sexual orientation measures with young adults' health-related outcomes. *Am J Public Health*. 2012;102(6):1177-85.

25. Marshal MP, Dietz LJ, Friedman MS, et al. Suicidality and depression disparities between sexual minority and heterosexual youth: a meta-analytic review. *J Adolesc Heal*. 2011;49(2):115-23.

26. Bostwick W. Assessing Bisexual Stigma and Mental Health Status: A Brief Report. *J Bisex*. 2012;12(2):214-222.

27. Jorm AF, Korten AE, Rodgers B, Jacomb PA, Christensen H. Sexual orientation and mental health: results from a community survey of young and middle-aged adults. *Br J Psychiatry*. 2002;180(5):423-427.

28. Zhao Y, Montoro R, Igartua K, Thombs BD. Suicidal Ideation and Attempt Among Adolescents Reporting "Unsure" Sexual Identity or Heterosexual Identity Plus Same-Sex Attraction or Behavior: Forgotten Groups? *J Am Acad Child Adolesc Psychiatry*. 2010;49(2):104-113.

29. Rosser BRS, Bockting WO, Ross MW, Miner MH, Coleman E. The relationship between homosexuality, internalized homo-negativity, and mental health in men who have sex with men. *J Homosex*. 2008;55(2):185-203.

30. Ratcliff JJ, Lassiter GD, Markman KD, Snyder CJ. Gender differences in attitudes toward gay men and lesbians: the role of motivation to respond without prejudice. *Pers Soc Psychol Bull*. 2006;32(10):1325-38.

31. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull*. 2003;129(5):674-97.

32. Mills T, Paul J, Stall R. Distress and depression in men who have sex with men: The Urban Men's Health Study. *Am J Psychiatry*. 2004;161(2):278-58.

33. Hatzenbuehler ML. How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychol Bull*. 2009;135(5):707-30.