

Thursday's child: the role of adverse childhood experiences in explaining mental health disparities among lesbian, gay, and bisexual US adults

John R. Blosnich · Judith P. Andersen

Received: 16 September 2013 / Accepted: 30 August 2014 / Published online: 4 November 2014
© Springer-Verlag (outside the USA) 2014

Abstract This study examined how adverse childhood experiences (ACE) may explain disparities in poor mental health between lesbian, gay, and bisexual (LGB), and heterosexual adults. Data are from three US states' 2010 behavioral risk factor surveillance system surveys ($n = 20,060$) that included sexual orientation, ACE inventory, and mental distress. LGB status was significantly associated with mental distress (OR = 1.85 [1.14–3.02]). Once incorporating ACE scores into the multiple regression analysis, LGB status was no longer associated with mental distress (OR = 1.28 [0.76–2.16]). The results corroborate previous research that LGB individuals report greater prevalence of childhood adversity than their heterosexual peers, which may explain LGB adulthood health disparities.

Keywords Homosexuality · Bisexuality · Health status disparities · Adult survivors of child abuse · Mental health

Introduction

Lesbian, gay, and bisexual (i.e., LGB) populations are vulnerable to mental health disparities, including depression and anxiety, substance abuse, and risk for suicide [1]. Empirical research into the etiology of mental health disparities is limited. Adverse childhood experiences (ACEs) are strong risk factors for adult mental health morbidity [2]. Numerous studies provide evidence of high prevalence of childhood adversities among LGB populations, [3, 4] but scant research explores whether ACEs may influence LGB adult mental health.

ACEs may partly explain LGB health disparities, such as smoking and alcohol abuse [5] and post-traumatic stress disorder (PTSD) [6]. McLaughlin and colleagues found that childhood adversity, as measured in the National Longitudinal Study of Adolescent Health (Add Health) (e.g. homelessness, intimate partner violence), partially, but significantly, accounted for sexual orientation differences in poor mental health [7]. There is a continued need for research to address limitations of prior studies. For example, the Add Health sample was limited by age (18–27) [7], and although previous studies used many indicators of childhood adversity, none used the ACE inventory, which the Centers for Disease Control and Prevention (CDC) use for population-based surveillance of childhood maltreatment recalled in adulthood [8].

This paper extends prior studies by reporting results from a large, pooled probability-based sample of US adults who completed both the ACE inventory and an item for sexual identity. Specifically, this project tested the hypothesis that ACEs explain the association between LGB status and mental distress among adults.

J. R. Blosnich (✉)
Department of Veterans Affairs, Center for Health Equity
Research and Promotion, Pittsburgh, PA 15206, USA
e-mail: john_blosnich@urmc.rochester.edu;
john.blosnich@va.gov

J. R. Blosnich
Department of Behavioral and Community Health Sciences,
University of Pittsburgh, Graduate School of Public Health,
Pittsburgh, PA 15261, USA

J. P. Andersen
Department of Psychology, University of Toronto Mississauga,
Mississauga, ON L5L 1C6, Canada

Methods

The Behavioral Risk Factor Surveillance System (BRFSS) is a computer-assisted telephone interview with probability-based samples of noninstitutionalized adults over the age of 18, conducted annually by each US state and territory and the District of Columbia [9]. Data for the current analysis are from the 2010 BRFSS surveys from Maine, Washington, and Wisconsin, which contained state-added questions about sexual orientation and the CDC optional ACE module ($n = 22,172$). Respondents indicated how they identify themselves (i.e., heterosexual, lesbian/gay, bisexual, or other). Given the focus on sexual identity, persons who indicated “other” were excluded from analyses, and the remaining categories were dichotomized into heterosexual vs. LGB. The ACE inventory assesses eleven negative experiences before the age of 18 (e.g., physical and sexual abuse, household dysfunction), and scores were summed (range 0–11) to represent total reported ACEs [10]. Individual observations in the state datasets were matched with their entries in the national publically available BRFSS dataset from the CDC to facilitate use of sampling weights [11].

The key outcome for this analysis was frequent mental distress (FMD), defined as >14 days of self-reported poor mental health in the last 30 days (yes/no), which has been used in several previous studies [12–14] and aligns with DSM criteria for major depressive disorder [15]. Demographic variables included age, sex, and race/ethnicity (white vs. racial/ethnic minority), which were included as covariates in the regression model.

As with other mediation analyses used in cross-sectional data, [16–20] we followed methodology similar to McLaughlin et al. that examined mediation using cross-sectional Add Health wave three data [7]. We examine potential mediation by establishing that (1) LGB status was significantly independently associated with FMD and (2) with ACE and (3) ACE was significantly independently associated with FMD [21]. We used nested multiple logistic regression analyses, and examined how the association of LGB status with mental distress (model 1) changed after adjusting for demographic characteristics (model 2) and ACEs (model 3). At each iteration, we used Wald tests to examine the unique significance of each variable in the fit of each model. All analyses were conducted in Stata/SE Ver. 12 and weighted for complex sampling and survey design. This project was approved by the University of Rochester institutional review board.

Results

Overall, the weighted prevalence of LGB status in the sample was 2.7 % (95 % CI: 2.2–3.3). Except for being

younger, LGB persons were demographically similar to heterosexual persons (see Table 1). LGB individuals had significantly higher mean totals of ACEs than their heterosexual peers (2.73 vs. 1.67, respectively, $p < 0.001$), and a significantly greater proportion of LGB individuals reported mental distress than heterosexual individuals (15.9 vs. 8.9 %, respectively, $p = 0.011$).

In an unadjusted model (model 1) and in a model adjusted solely for demographic characteristics (model 2), LGB status was significantly associated with mental distress and contributed to the fit of each model (Table 2). However, after adjusting for ACEs (model 3), LGB status was no longer significantly associated with mental distress (OR = 1.28, 95 % CI: 0.76–2.16) and no longer contributed to the fit of the model ($F = 0.90$, $p = 0.34$). Conversely, ACEs were significantly associated with mental distress (OR = 1.29, 95 % CI: 1.25–1.34) and contributed significantly to model fit ($F = 221.4$, $p < 0.001$).

Discussion

This paper advances the literature in two ways. First, using a sample of LGB adults, we used the ACE inventory that includes household dysfunction, which may be additive to abuse and thus more fully captures childhood adversity. Second, we test the explanatory role of ACEs in contributing to sexual orientation differences in adulthood mental distress. Information showing higher prevalence of individual ACE items among LGB than heterosexual individuals among this dataset has been

Table 1 Demographic characteristics by sexual identity

	Lesbian, gay, bisexual		Heterosexual	
	$(n = 445)$		$(n = 19,615)$	
	n (%)		n (%)	
Age (mean, SE)	39.7	(1.80)*	46.7	(0.25)
Sex				
Female	276	(51.7)	11,882	(50.8)
Male	169	(48.3)	7,733	(49.2)
Race/ethnicity				
White	384	(83.8)	17,443	(87.1)
Black/African American	14	(4.7)	493	(2.0)
Other	27	(6.0)	1,011	(6.6)
Hispanic	20	(5.4)	668	(4.3)
Frequent mental distress	69	(15.3)*	1,881	(8.9)
ACE total (mean, SE)	2.73	(0.25)*	1.67	(0.03)

Frequencies are unweighted. Means, standard errors, and percentages are weighted

ACE adverse childhood experiences

* $p < 0.05$

Table 2 Associations of sexual orientation and ACEs with mental distress

	Model 1				Model 2				Model 3			
	<i>(n</i> = 20,060)				<i>(n</i> = 20,037)				<i>(n</i> = 20,037)			
	AOR	(95 % CI)	<i>F</i>	<i>P</i>	AOR	(95 % CI)	<i>F</i>	<i>P</i>	AOR	(95 % CI)	<i>F</i>	<i>p</i>
LGB	1.85	(1.14–3.02)*	6.14	0.01	1.66	(1.02–2.69)*	4.22	0.04	1.28	(0.76–2.16)	0.90	0.34
Age					0.99	(0.98–0.99)*	12.66	<0.01	1.00	(0.99–1.00)	1.79	0.18
Sex					0.61	(0.50–0.74)*	24.55	<0.01	0.70	(0.57–0.85)*	12.17	<0.01
Race/ethnicity					1.33	(1.01–1.75)*	4.23	0.04	1.18	(0.89–1.57)	1.28	0.26
ACEs									1.29	(1.25–1.34)*	221.44	<0.01

AOR adjusted odds ratio, CI confidence interval; all models are weighted

* $p < 0.05$

published previously [22], but the present results suggest that ACEs may help to explain disparities in mental health even into adulthood.

While the LGB persons in this sample, on average, reported a greater cumulative number of adverse childhood experiences, this may be an underestimate since the current ACE inventory does not assess peer-to-peer victimization. Evidence suggests that the definition of childhood adversity should encompass experiences beyond household physical and sexual abuse [23], and peer victimization, including bullying, is a major source of early-life violence for many LGB youth [24]. For example, Finkelhor and colleagues expanded the ACE inventory to include items such as peer rejection, peer victimization, and community violence exposure among a nationally representative sample of 10- to 17-year-old children [25]. The enhanced ACE inventory better explained poor mental health, and this broader scope of early life adversity may be specifically salient among LGB individuals.

The results also provide additional evidence that social and structural determinants contribute to sexual orientation-based mental health disparities, rather than the view that sexual orientation, itself, causes poor mental health. These findings corroborate recent research that shows detrimental associations both of discrimination [26] and other measures of childhood adversity with mental health among LGB individuals [7]. Consequently, understanding the etiology of LGB health disparities from a social ecological frame is vital for prevention and intervention. While individual-level interventions (e.g., mental health treatment) are indispensable, so too are understanding and augmenting “stressogenic” structures (e.g., laws that limit the rights of LGBT individuals) that may indirectly contribute to the development of distress in these populations.

Several limitations must be noted. First, although the results support ACE partially explaining mental distress among LGB individuals and the ACE recall period

precedes mental distress, the data are cross-sectional and cannot formally address causality. For example, it is unclear if an individual’s actualization or disclosure of LGB status occurred before or after childhood adversity. Second, although this is a probability-based sample, the individuals were gathered from only three states, which limits generalizability. Third, the sample of LGB adults was relatively small, limiting the ability to examine the heterogeneity of LGB individuals (e.g., differences by sex and race/ethnicity). Furthermore, the combination of lesbian/gay and bisexual identities may mask differences between these two different sexual identities [27]. Fourth, the reference period for responses to the ACE inventory (i.e., 18 years of age and younger) may be subject to recall bias. Finally, the measure of mental distress was broad and did not allow for examination of specific mental health conditions, such as depression and anxiety.

In addition to better understanding health trajectories of LGB individuals who experience ACEs, research is needed to understand why LGB individuals are more likely to report childhood victimization [3, 4]. While retrospective self-reports from survivors are crucial data, they do not necessarily provide information about why a person may have been targeted for abuse. Understanding why perpetrators target LGB persons may provide information for developing more circumspect prevention and intervention initiatives, which may include legal, clinical, and school environments.

Finally, as the nursery rhyme Monday’s child muses, “Thursday’s child has far to go” [28] seems to well represent LGB youth in terms of their surmounting increased prevalence of adversity. Research is needed to explore resiliency factors among LGB populations that may mitigate the consequences of childhood adversity. While some components of resiliency may be idiosyncratic, others factors may help to inform intervention, such as social support through families of choice and access to culturally competent health care providers.

Acknowledgments The authors thank the state BRFSS coordinators from the individual states included in this project for their cooperation in accessing the data. The authors also thank Elizabeth Handley for her statistical assistance. The opinions expressed in this work are those of the authors and do not represent the funders, institutions, the Department of Veterans Affairs, or United States Government. This work was partially supported by a post-doctoral fellowship to John R. Blosnich in an institutional National Research Service Award from the National Institute of Mental Health 5T32MH020061, a post-doctoral fellowship from the Department of Veterans Affairs Office of Academic Affiliations, and the Center for Health Equity Research and Promotion at the VA Pittsburgh Healthcare System.

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

References

- Institute of Medicine (2011) The health of lesbian, gay, bisexual, and transgender people: building a foundation for better understanding. Institute of Medicine, Washington, DC
- Edwards V, Holden G, Felitti V, Anda R (2003) Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *Am J Psychiatry* 160(8):1453–1460
- Rothman EF, Exner D, Baughman AL (2011) The prevalence of sexual assault against people who identify as gay, lesbian, or bisexual in the United States: a systematic review. *Trauma Violence Abuse* 12(2):55–66
- Friedman MS, Marshal MP, Guadamuz TE, Wei C, Wong CF, Saewyc E, Stall R (2011) A meta-analysis of disparities in childhood sexual abuse, parental physical abuse, and peer victimization among sexual minority and sexual nonminority individuals. *Am J Public Health* 101(8):1481–1494
- Jun H-J, Austin SB, Wylie SA, Corliss HL, Jackson B, Spiegelman D, Pazaris MJ, Wright RJ (2010) The mediating effect of childhood abuse in sexual orientation disparities in tobacco and alcohol use during adolescence: results from the nurses' health study II. *Cancer Causes Control* 21(11):1817–1828
- Roberts AL, Austin SB, Corliss HL, Vandermorris AK, Koenen KC (2010) Pervasive trauma exposure among US sexual orientation minority adults and risk of posttraumatic stress disorder. *Am J Public Health* 100(12):2433–2441
- McLaughlin KA, Hatzenbuehler ML, Xuan Z, Conron KJ (2012) Disproportionate exposure to early-life adversity and sexual orientation disparities in psychiatric morbidity. *Child Abuse Negl* 36(9):645–655
- Adverse childhood experiences (ACE) study. <http://www.cdc.gov/ace/index.htm>
- Behavioral risk factor surveillance system. www.cdc.gov/brfss
- Bynum L, Griffin T, Wynkoop K, Anda R, Edwards V, Strine T, Liu Y, McKnight-Eily L, Croft J (2010) Adverse childhood experiences reported by adults—five states, 2009. *Morb Mortal Wkly Rep* 59(49):1609–1613
- Blosnich JR, Farmer GW, Lee JGL, Silenzio VMB, Bowen D (2014) Health inequalities among sexual minority adults: evidence from ten US states, 2010. *Am J Prev Med* 46(4):337–349
- Strine TW, Greenlund KJ, Brown DW, Mokdad A, Balluz L (2004) Characteristics of people aged 45 years or older with heart disease by frequent mental distress status, 2001. *Prev Med* 39(1):191–196
- Liu Y, Croft JB, Wheaton AG, Perry GS, Chapman DP, Strine TW, McKnight-Eily LR, Presley-Cantrell L (2013) Association between perceived insufficient sleep, frequent mental distress, obesity and chronic diseases among US adults, 2009 behavioral risk factor surveillance system. *BMC Public Health* 13(1):84
- Moriarty DG, Zack MM, Kobau R (2003) The centers for disease control and prevention's healthy days measures—population tracking of perceived physical and mental health over time. *Health Qual Life Outcomes* 1(1):37
- American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders, 5th edn. American Psychiatric, Arlington, VA
- Cochran S, Grella C, Mays V (2012) Do substance use norms and perceived drug availability mediate sexual orientation differences in patterns of substance use? Results from the California quality of life survey II. *J Stud Alcohol Drugs* 73(4):675–685
- Luk JW, Wang J, Simons-Morton BG (2010) Bullying victimization and substance use among US adolescents: mediation by depression. *Prev Sci* 11(4):355–359
- Rodriguez D, Audrain-McGovern J (2005) Physical activity, global physical self-concept, and adolescent smoking. *Ann Behav Med* 30(3):251–259
- Bauman S, Toomey RB, Walker JL (2013) Associations among bullying, cyberbullying, and suicide in high school students. *J Adolesc* 36(2):341–350
- Reisner SL, Falb KL, Mimiaga MJ (2011) Early life traumatic stressors and the mediating role of PTSD in incident HIV infection among US men, comparisons by sexual orientation and race/ethnicity: results from the NESARC, 2004–2005. *J Acquir Immune Defic Syndr* 57(4):340–350
- Baron RM, Kenny DA (1986) The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* 51(6):1173–1182
- Andersen JP, Blosnich J (2013) Disparities in adverse childhood experiences among sexual minority and heterosexual adults: results from a multi-state probability-based sample. *PLOS One* 8(1):e54691
- Anda R, Butchart A, Felitti V, Brown D (2010) Building a framework for global surveillance of the public health implications of adverse childhood experiences. *Am J Prev Med* 39(1):93–98
- Kann L, Olsen E, McManus T, Kinchen S, Chyen D, Harris WA, Wechsler H (2011) Sexual identity, sex of sexual contacts, and health-risk behaviors among students in grades 9–12—youth risk behavior surveillance, selected sites, United States, 2001–2009. *MMWR* 60(7):1–133
- Finkelhor D, Shattuck A, Turner H, Hamby S (2013) Improving the adverse childhood experiences study scale. *JAMA Pediatr* 167(1):70–75
- Hatzenbuehler ML, McLaughlin KA, Keyes KM, Hasin DS (2010) The impact of institutional discrimination on psychiatric disorders in lesbian, gay, and bisexual populations: a prospective study. *Am J Public Health* 100(3):452–459
- Matthews DD, Blosnich JR, Farmer GW, Adams BJ (2013) Operational definitions of sexual orientation and estimates of adolescent health risk behaviors. *LGBT Health* 1(1):22–29
- Opie I, Opie P (1997) The Oxford dictionary of nursery rhymes, 2nd edn. Oxford University, New York