



ELSEVIER

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/jpsychires

Differences in adverse childhood experiences (ACEs) and quality of physical and mental health between transgender and cisgender sexual minorities

Phillip W. Schnarrs^{a,b,c,*}, Amy L. Stone^d, Robert Salcido Jr.^e, Aleta Baldwin^f, Charles B. Nemeroff^{g,h}

^a Division of Community Engagement and Health Equity, Department of Population Health, Dell Medical School, The University of Texas, Austin, TX, USA

^b The Center for Research to Advance Community Health (ReACH), UT Health – San Antonio, San Antonio, TX, USA

^c The Population Research Center, The University of Texas, Austin, USA

^d Department of Sociology and Anthropology, Trinity University, San Antonio, TX, USA

^e The PRIDE Center San Antonio, San Antonio, TX, USA

^f The Department of Kinesiology, Health, and Nutrition, The University of Texas at San Antonio, San Antonio, TX, USA

^g Department of Psychiatry, Dell Medical School, The University of Texas, Austin, TX, USA

^h Institute for Early Life Adversity Research, The University of Texas, Austin, TX, USA

ABSTRACT

Adverse childhood experiences (ACEs) have been shown to increase risk for negative health outcomes. Recent work has shown that lesbian, gay, and bisexual (LGB) individuals, on average, have higher ACEs scores compared to heterosexual individuals. However, past ACEs research involving LGB people did not assess the influence of experiencing childhood neglect and risk for poor health among this population. Further, this previous work has been limited to LGB people, excluding transgender and gender nonconforming experiences. The purpose of this project was to assess the relationship between ACEs, gender-identity, and physical and mental health status. As part of a larger community-based participatory research study, we surveyed 477 sexual and gender minority individuals about mental and physical health, ACEs, and sociodemographic characteristics. Transgender participants reported emotional abuse, physical neglect, and emotional neglect more frequently compared to cisgender LGB people. Two logistic regression models were run to assess the influence of ACE on quality of physical and mental health. The model adjusted for ACE scores showed that ACEs explained 17.6% of the variance in mental health. Our findings show that neglect is a common experience among LGB/TGN and needs to be assessed along with other ACE domains. Further, there may exist unique adverse experiences among this population during childhood resulting from social stigma. Future research should identify and quantify these experiences as well as assess the role of adversity during adulthood on mental health.

1. Introduction

Adverse childhood experiences (ACEs) are ongoing stressful or traumatic experiences during childhood, including abuse, neglect, and household dysfunction, that have been shown to negatively affect adult health (Felitti et al., 1998, 2009). ACEs is a 10-item index score that represents childhood trauma experienced across those three domains (Felitti et al., 1998, 2009). Research has shown that ACEs have an additive effect on poor adult health. The more ACEs reported the greater likelihood of poor health, and exposure to 4 or more ACEs is associated with a marked increase in risk behaviors and poor mental and physical health in adulthood (Felitti et al., 1998, 2009; Afifi et al., 2008a,b; Anda et al., 2006; Austin and Herrick, 2014; Center for Youth Wellness, 2014; Chonholm et al., 2015; Chapman et al., 2004; Aaron and Hughes, 2007).

The first study to assess the breadth of ACEs in the United States

found that 67% of adults reported at least 1 ACE (Felitti et al., 1998). The most commonly reported experiences were physical abuse (28%), and alcohol and drug use in the home (27%) (Felitti et al., 1998). More recent work on ACEs in lesbian, gay, and bisexual (LGB) populations found that they experienced a higher number of ACEs and were more likely to report abuse and household dysfunction, compared to heterosexuals (Austin et al., 2016; Andersen and Blosnich, 2013). In their work, Austin et al. (2016) found that 73.2% of LGB participants reported at least 1 ACE compared to 59.6% of heterosexuals, and 69.5% reported 4 or more ACEs, putting LGB individuals at greater risk for poor health (Austin et al., 2016).

Research on LGB people has shown that higher rates of ACEs in these populations partly account for adult health disparities (Austin et al., 2016; Andersen and Blosnich, 2013). Additionally, while not specific to ACEs measure, previous work has demonstrated that adversity and trauma in childhood has implication for mental health

* Corresponding author. Division of Community Engagement and Health Equity, Department of Population Health, Dell Medical School, The University of Texas, Health Discovery Building (HDB), 1601 Trinity St, Building B, Austin, TX, 78212, USA.

E-mail address: phillip.schnarrs@austin.utexas.edu (P.W. Schnarrs).

<https://doi.org/10.1016/j.jpsychires.2019.09.001>

Received 22 February 2019; Received in revised form 5 August 2019; Accepted 5 September 2019

0022-3956/ © 2019 Published by Elsevier Ltd.

(Schneeberger et al., 2014; Balsam et al., 2010; Andersen and Blosnich, 2013; Blosnich and Andersen, 2015; Mustanski et al., 2016), obesity (Mustanski et al., 2016; Feldman and Meyer, 2007), and other indicators of poor health in LGBTQ + adults. While this previous research on heterosexuals and ACEs included measures of childhood neglect, the work of Austin et al., 2016; Andersen, et al. 2014) did not assess this domain of ACEs as these items are not included in the Behavioral Risk Factor Surveillance Survey (BRFSS) conducted by the Centers for Disease Control and Prevention (CDC). The lack of data on childhood neglect likely resulted in underestimations of ACEs experienced by LGB people. As such, in order to fully understand the effect of ACEs on poor health in LGB adults, research needs to ascertain the implications of childhood neglect for adult LGBTQ + health by assessing this domain in this population.

In addition to the limitations of previous research on LGB adult health, there is a need to determine the extent to which ACEs are associated with the health of transgender and gender nonconforming (TGN) adults. Approximately one million people in the United States identify as TGN (Meerwijk and Sevelius, 2017). TGN people identify with a gender different from the gender assumed of them based on their sex assigned at birth, and previous research shows that TGN people are more likely to be racial minorities and live below the poverty line compared to cisgender people (i.e. those who identify as the gender assumed of them based on their sex assigned at birth), both of which compound risk for poor health (Crissman et al., 2017; Conron et al., 2012). Research has documented higher rates of poor mental and physical health in this group compared with the general population as well (Meyer et al., 2017; Sterzing et al., 2017).

Existing literature suggests that a history of childhood mistreatment is prevalent among LGB (Andersen and Blosnich, 2013) and TGN (Bandini et al., 2011; Kersting et al., 2003) individuals in the United States (Austin et al., 2016 (Bandini et al., 2011); adults. Similar to findings about LGB people, early childhood trauma (Bandini et al., 2011; Kersting et al., 2003) and stigma experienced during adulthood (Reback et al., 2017; Bockting et al., 2013), have been linked to poor mental health and a number of poor physical health outcomes in TGN adults. Obtaining information about ACEs among TGN is thus important to understanding the social determinants of adult health in order to guide public health and policy efforts.

In the present study, we examine the relationship between ACEs and adult mental and physical health among TGN compared to their LGB individuals living in San Antonio, Texas. We hypothesize that transgender adults with higher ACEs scores will report poorer physical and mental health compared to their LGB peers.

2. Material and Methods

These data were obtained from Strengthening Colors of PRIDE, San Antonio, a Community-Based Participatory Research (CBPR) project aimed at better understanding the development and activation of resilience among LGBTQ + individuals living in South Texas. The project was approved by the IRB of Trinity University. The study was conducted in accordance with the latest version of the Declaration of Helsinki and all participants provided consent after reviewing the study information sheet.

We employed a diverse recruitment strategy that included online recruitment through study social media sites, our community advisory board (CAB) networks on- and offline, community outreach events, table tents at local gay-owned businesses, and during the annual LGBTQ + PRIDE event in San Antonio, TX. The first phase of the study, conducted between May and August of 2018, consisted of a survey of sociodemographic characteristics, ACEs, and quality of mental and physical health.

2.1. Measures

We used a two-step item to assess sex and gender (Williamson Institute). Participants were first asked about the sex assigned on their original birth certificate (1 = male; 2 = female; 3 = prefer not to respond). Next, participants were asked their current gender-identity (1 = man; 2 = woman, 3 = transgender, 4 = agender/gender non-conforming). A binary variable was created such that sex-assigned-at-birth (SAAB) males who identified as women or SAAB females who identified as men were combined with those who self-identified as transgender or agender/gender non-conforming. All transgender and gender non-conforming individuals were then coded as TGN = 1, and all other participants were coded as cisgender = 0.

Adverse childhood experiences (ACEs) were assessed through a modified 10-item index of stressful or traumatic events during childhood covering three domains (Felitti et al., 1998): Household challenges (e.g. substance abuse in the family, family member incarceration, divorce, witnessing domestic violence); abuse (e.g. physical, emotional, and sexual harm); and neglect – both emotional (e.g. not feeling loved) and physical (e.g. not having enough to eat, having to wear dirty clothes). Participants indicated that they either had or had not experienced each event. From these data we generated a summative score ranging from 0 to 10.

Quality of physical and mental health were measured with 5-point Likert scale items that asked participants, “In the past 30 days, how would you say your physical health has been?” and “In the past 30 days, how has the quality of your mental health been?” The response options ranged from *excellent* to *poor*. This was transformed into a binary variable such that *excellent, very good, and good* = 1 and *fair and poor* = 0. Participants who selected *don't know* or *no response* were removed from the analysis. We also included items to measure sexual orientation, age, race/ethnicity, educational attainment, and income.

2.2. Statistical analysis

We followed a similar analytic approach used in recent work examining the relationship between ACEs and adult health in LGB individuals compared to heterosexual people. (Austin et al., 2016). We assessed the prevalence of demographics characteristics and ACE scores, and then estimated differences by gender-identity and using *chi-square* (χ^2) test. A cutoff of $p \leq 0.05$ was used to determine statistical significance. First, unadjusted logistic regression models were constructed for mental and physical health outcomes with gender-identity as the predictor variable. Next, each logistic regression model was adjusted for ACEs score. Finally, logistic regression models were the adjusted to included sexual orientation, age, race/ethnicity educational attainment, and income. All analyses were conducted using SPSS 25.0. (IBM Corp, 2017).

3. Results

A total 525 individuals completed the survey and 91% ($n = 477$) individuals completed all items of interest. Just over a fifth of respondents were transgender (21.4%). We identified significant differences between TGN and cisgender participants related to sexual orientation, educational attainment, and annual income: Transgender participants were more likely to identify as bisexual or pansexual, have lower educational attainment, and have lower income than cisgender participants. Table 1 presents data on demographic characteristics stratified by gender-identity.

3.1. Adverse childhood experiences

Overall, the most frequently reported ACE was the presence of a parent or other adult in the household who would often swear at them, insult them, put them down, or humiliate them (i.e., emotional abuse).

Table 1
Sample characteristics stratified by gender-identity.

	Total Sample (%) (n = 477)	Gender-Identity (%)		X ² (p-value)
		Cis-gender (n = 375)	Transgender* (n = 102)	
Sexual Orientation				143.798 (p < 0.000)
Gay	37.8	45.4	9.8	
Lesbian	25.8	30.1	9.8	
Bisexual/Pansexual	26.0	21.4	43.1	
Other	10.4	3.2	37.3	
Age				5.957 (p = 0.124)
18–44	70.7	68.5	79.2	
45–54	13.9	14.6	11.5	
55–64	10.3	10.8	8.3	
≥ 65	5.1	6.2	1.0	
Race/Ethnicity				5.762 (p = 0.124)
White, non-Hispanic	36.7	35.5	41.2	
Latinx, Hispanic, Chicano/a	45.3	47.2	38.2	
Black/African-American	7.1	7.7	4.9	
Other	10.9	9.6	15.7	
Educational Attainment				15.355 (p < 0.000)
≤ high school	12.1	9.2	22.5	
some college	38.7	37.2	44.1	
≥ 4-year college/university degree	49.3	53.6	33.3	
Annual Income**				33.606 (p < 0.000)
< \$20,000	32.3	25.9	55.9	
\$20,000–49,000	41.1	44.3	29.4	
≥ \$50,000	26.6	29.9	14.7	

Notes. *includes transgender, discordance between sex assigned at birth and current gender identity, and other gender minorities.

This was reported by 53.6% of participants. Nearly half of all participants (49.9%) reported living with a household member who was depressed, mentally ill, or attempted suicide (i.e., adult mental illness in the household).

The prevalence of ACEs for both TGN and cis-gender participants are presented in Table 2 along with unadjusted odds ratios. Significant differences were found between TGN and cisgender LGB respondents on 3 ACE items. TGN respondents more likely to report emotional abuse [Odds Ratio (OR) = 1.90; Confidence Interval (CI) = 1.21–3.01] emotional neglect [OR = 1.70; CI = 1.09–2.64], and physical neglect compared to cisgender respondent [OR = 1.87; CI = 1.09–3.21].

Table 3 presents data on ACE items by gender-identity. Overall, 86.2% of the total sample reported at least 1 adverse childhood experience, with 91.2% TGN participants reporting at least one. Over half of the sample reported at least 4 ACEs (50.8%). TGN participants more often reported an ACEs score of at least 4 (60.7%) compared to cisgender LGB respondents (48.1%).

3.2. Quality of physical and mental health

More TGN respondents reported poor quality of physical and mental health than cisgender respondents (see Table 4). We did not find a significant relationship between gender-identity and physical health in either the unadjusted or either of the adjusted models. However, we did detect a significant difference between gender-identity and mental health status in the unadjusted model. In the unadjusted model, TGN participants were more than twice as likely to report poor mental health [OR = 2.59; 95% CI = 1.65–4.04]. In the second model, adjusted for ACEs score, the relationship between TGN identity and poor mental health remained [OR = 2.47 95% CI = 1.57–3.88]. The third model, adjusted ACEs score and sociodemographic characteristics, a relationship remained between gender-identity and poor quality of mental health remained [OR = 2.00; 95% CI = 1.22–3.27].

4. Discussion

In this paper, we examined the relationship between gender identity, ACEs, and mental and physical health in a sample of LGB and TGN

individuals living in San Antonio, TX. To our knowledge, this is the first study to specifically examine ACEs among TGN individuals.

Data were drawn from a larger CBPR study seeking to better understand the development and activation of resilience in LGBTQ + people living in South Texas. Our findings add to the literature by comparing differences in poor mental and physical health between TGN and cisgender LGB people by including the ACEs domain of childhood neglect – a common experience of U.S. adults (Felitti et al., 1998).

Consistent with previous research, we found a higher prevalence of poor mental health among TGN respondents compared to cisgender LGB respondents (Austin et al., 2016; Andersen, Blosnich; Meyer et al., 2017). TGN respondents in our sample more often reported at least 1 ACE compared to U.S. adults in Felitti and colleagues' work (Felitti et al., 1998). Additionally, LGB respondents in our study more often reported at least one ACE compared to U.S. (Felitti et al., 1998) and LGB adults (Austin et al., 2016). Overall, 51% of our sample had an ACEs score of at least 4, compared to 12.6% heterosexual and 30.5% LGB adults (Austin et al., 2016). Previous research on ACEs in LGB people was limited to the presence of household dysfunction and abuse (Austin et al., 2016; Andersen, Blosnich). We found a substantial portion of the sample experienced emotional (43.6%) and physical (16.1%) neglect. Our inclusion of measures of childhood neglect may have resulted in higher ACE scores among our sample compared to existing research which excluded this/these ACEs domains. Our findings suggest that childhood neglect was a common experience LGB participants and therefore should be assessed when examining the relationship between ACE scores and poor adult health in this population.

In addition to confirming and extending previous research findings in this area by including items related to childhood neglect in LGB people, we also added to the literature by documenting ACEs and TGN adult health. TGN participants more frequently reported higher ACEs compared to cisgender LGB respondents—a population with already higher ACEs scores than the general population (Austin et al., 2016; Andersen, Blosnich). Further, TGN participants were significantly more likely to report experiencing physical and emotional neglect and emotional abuse compared to cisgender LGB participants. TGN individuals may experience be more likely to experience neglect because of their

Table 2
Adverse Childhood Experiences (ACE) items, by gender-identity.

ACE item	Gender Identity (%) ^a			Unadjusted OR (95% CI)
	Total Sample (n = 477)	Cis-gender (n = 375)	Transgender (n = 102)	
Did a parent or other adult in the household often swear at you insult you, put you down, or humiliate you?	53.6	50.1	65.7	1.90 (1.21–3.01)
Did a parent or other adult in the household often push, grab, or throw something at you?	35.6	34.0	41.2	1.37 (0.87–2.14)
Did an adult or person at least 5 years older than you ever touch or fondle you or have you touch their body in a sexual way?	42.3	42.7	41.2	0.94 (0.61–1.47)
Did you often feel that no one in your family loved you or thought you were important or special?	43.6	40.8	53.9	1.70 (1.09–2.64)
Did you often feel you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?	16.1	14.1	23.5	1.87 (1.09–3.21)
Were your parents ever separated or divorced?	48.6	48.8	48.0	0.97 (0.63–1.50)
Was your mother or stepmother often physically assaulted (e.g., pushed, grabbed, hit)?	26.4	25.9	28.4	1.14 (0.70–1.86)
Did you live with anyone who was a problem drinker or alcoholic or who used illegal drugs?	46.1	45.1	50.0	1.22 (0.79–1.89)
Was a household member depressed or mentally ill or did a household member attempt suicide?	49.9	48.5	54.9	1.29 (0.83–2.00)
Did a household member go to prison?	13.0	12.8	13.7	1.08 (0.57–2.06)

Notes. OR = Odds Ratio.

CI = Confidence Interval.

^a Includes transgender, discordance between sex assigned at birth and current gender identity, and other gender minorities.

Table 3
ACEs by gender-identity.

ACE Score	Total Sample (n = 477; %)	Gender Identity (%)	
		Cis-gender (n = 375)	Transgender (n = 102)
0	12.8	13.9	8.8
1	11.5	11.7	10.8
2	13.6	13.9	12.7
3	11.3	12.5	6.9
4	13.4	12.3	17.6
5	11.1	9.9	15.7
6	8.6	9.6	4.9
7	6.7	6.4	7.8
8	5.5	5.1	6.9
9	3.6	3.7	2.9
10	1.9	1.1	4.9

Notes. *includes transgender, discordance between sex assigned at birth and current gender identity, and other gender minorities.

gender non-conformity as parents may be unwilling or lack sufficient knowledge to address the needs of TGN youth. Improving parents' ability or address the unique needs of TGN youth may mitigate feelings of neglect among this population. Taken together, these findings suggest that neglect experienced during childhood may influence LGB in adulthood and, to an even greater extent, TGN adults.

Previous research has also identified a relationship between ACEs and poor mental health (Meyer et al., 2017). This relationship has been demonstrated in nationally representative samples (Sterzing et al., 2017) which include LGB participants but did not measure gender identity (Anda et al., 2006; Austin and Herrick, 2014). We extend this literature by documenting an association between ACEs and poor mental health among a sample comparing cisgender LGB and TGN respondents. After adjusting for ACE scores, a significant association remained between gender-identity and poor mental health. This suggests that ACEs explain some of the difference in prevalence of poor mental health between TGN and cisgender LGB individuals, but other factors play a role. Given the prominent social stigma against gender non-conformity, it is likely that adult experiences of discrimination contribute to poor mental health in this group (Bandini et al., 2011).

In light of the findings from this study, we identify the following directions for future research. First, among both LGB and TGN populations, research is needed that incorporates validated self-rating and observer rating scales such as the Childhood Trauma Questionnaire (CTQ) and the Childhood Experience of Care and Abuse Questionnaire (CECA.Q), to explore childhood mistreatment including the timing and severity of neglect (Bernstein and Fink, 1998; Smith, et al., 1998). In general, future research ACEs, and other childhood trauma measures should include neglect items when conducting research with these populations because of how common these experiences were with our sample, and the differences between cisgender and transgender respondents. Second, longitudinal research is needed to understand if there is a directional effect of childhood neglect on health for LGB and TGN adults. Third, studies are needed to measure ACEs and difficult or traumatic events experienced during adulthood to better understand the relationship between childhood trauma, recent trauma, and poor adult health in LGB and TGN populations. Such research should determine if adverse events unique to TGN people, such as denial of one's gender identity by family members, help explain differences in health outcomes within the broader LGBTQ community. Findings from such studies will be useful in the development of supportive interventions that promote environments that allow LGB and TGN youth, and adults, to thrive. Finally, given the limited scope of existing resilience literature focused on LGB and TGN individuals (Colpitts and Gahagan, 2016), research is needed to assess positive experiences during childhood among LGB and TGN people. For example, using the Protective and

Table 4
Prevalence, odds ratio, and adjusted odds ratio for physical and mental health.

	Gender Identity (%)		OR (95% CI)	AOR ^a (95% CI)	AOR ^b (95% CI)
	Cis-gender (n = 375)	Transgender (n = 102)			
Poor Physical Health	22.1	27.5	1.33 (0.81–2.19)	1.25 (0.75–2.07)	1.01 (0.59–1.74)
Poor Mental Health	34.7	57.8	2.59 (1.65–4.04)	2.47 (1.57–3.88)	2.00 (1.22–3.28)

Notes. OR = Odds Ratio AOR = Adjusted Odds Ratio; CI = Confidence Intervals.

^a OR not adjusted for ACEs or sociodemographic characteristics.

^b AOR adjusted for adverse childhood experience score.

^c AOR adjusted for ACEs, annual income, education, race/ethnicity, sexual orientation, and age.

Compensatory Experiences (PACEs) survey to measure positive interpersonal experiences and household functioning (Morris and Hays-Grudo, 2014) can provide a more robust understanding of adult health outcomes and childhood experiences in LGB and TGN populations.

5. Limitations

The cross-sectional study design limits our ability to determine any temporal relationships between, or draw causal conclusions about, poor mental and physical health, gender-identity and ACEs. However, a review of existing studies shows with probability and non-probability samples, LGB people show high rates of childhood mistreatment (Anda et al., 2006). Because we used convenience sampling strategies, it is difficult to assess the generalizability of our results. However, it is important to note that because of the difficulty reaching this population, virtually all surveys capturing data on transgender people have used non-probability samples, with the exception of a handful of national studies (Crissman et al., 2017; Meyer et al., 2017). Most self-reported surveys of TGN people recruit less than 100 participants into their study (Reback et al., 2017). Therefore, an important strength of this study is the relatively large sample size. As such, this analysis contributes to understanding the role of ACEs in the lives of LGB/TGN people. Given the retrospective nature of the ACEs measure, limited bias may affect the extent to which participants remember difficult or traumatizing experiences during childhood and may lead to under reporting (Reuben et al., 2016). Finally, social stigma has been shown to contribute to poor mental health among gender minority individuals (Anda et al., 2006; Bandini et al., 2011), however we did not directly collect data on social stigma experienced by this group.

6. Conclusions

To our knowledge, this is the first study to explore ACEs, an important social determinant of health, among TGN individuals. We found that negative experiences in childhood, particularly abuse and neglect, are associated with poorer mental health in adulthood in a population that already experiences a number of risk factors for negative mental health outcomes including stigma and discrimination (Bockting et al., 2013), and who are further burdened by lack of access to health care (James et al., 2016; Baldwin et al., 2018). Also, findings demonstrate that neglect was a common childhood experience among our sample, with TGN individuals reporting significantly more emotional and physical neglect compared to LGB respondents. This suggests that assessing childhood neglect is important when examining the relationship between ACEs and poor adult health. Finally, we found that ACEs were associated with mental health among our sample, but the ACEs-adjusted model suggests other factors, possibly trans-specific ACEs or recent traumatic experiences, contribute to the increase in poor mental health burden observed.

Acknowledgements

Phillip W. Schnarrs, Amy L. Stone, and Robert Saldcido, Jr. are 2017

Robert Wood Johnson Foundation Interdisciplinary Researcher Leader fellows. Support for project was provided by a grant from the Robert Wood Johnson Foundation Interdisciplinary Research Leaders program. The Interdisciplinary Research Leaders is a national program of The Robert Wood Johnson Foundation led by the University of Minnesota.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpsychires.2019.09.001>.

References

- Aaron, D.J., Hughes, T.L., 2007. Association of childhood sexual abuse with obesity in a community sample of lesbians. *Obesity* 15 (4), 1023–1028.
- Affi, T.O., Enns, M.W., Cox, B.J., et al., 2008. Populations attributable fractions of psychiatric disorders and suicide ideation and attempts associated with adverse childhood experiences. *AJPH (Am. J. Public Health)* 98, 946–952.
- Affi, T.O., Enns, M.W., Cox, B.J., et al., 2008b. Populations attributable fractions of psychiatric disorders and suicide ideation and attempts associated with adverse childhood experiences. *AJPH (Am. J. Public Health)* 98, 946–952.
- Anda, R.F., Felitti, V.J., Bremner, J.D., et al., 2006. The enduring effects of abuse and related adverse experiences in childhood. A convergence of evidence from neurobiology and epidemiology. *Eur. Arch. Psychiatry Clin. Neurosci.* 174, 186.
- Andersen, J.P., Blossnich, 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.
- Austin, A.E., Herrick, H.W.B., 2014. The effect of Adverse Childhood Experiences on adult health. In: 2012. North Carolina Behavioral Risk Factor Surveillance System Survey. North Carolina State Center for Health Statistics Study, vol 167. pp. 1–15.
- Austin, A., Herrick, H., Proescholdbells, 2016. Adverse childhood experiences related to poor adult health among lesbian, gay, and bisexual individuals. *AJPH (Am. J. Public Health)* 106 (2), 314–320.
- Bandini, E., Fisher, A.D., Ricca, V., et al., 2011. Childhood maltreatment in subjects with male-to-female gender identity disorder. *Int. J. Impot. Res.* 23 (6), 276–285.
- Baldwin, A., Dodge, B., Schick, V.R., Light, B., Schnarrs, P.W., Herbenic, D., Fortenberry, J.D., 2018. Transgender and genderqueer individual's experiences with healthcare providers: what's working, what's not, and where do we go from here? *JHCPU* 29 (45), 1300–1318.
- Balsam, K.F., Lehavot, K., Beadnell, B., Circo, E., 2010. Childhood abuse and mental health indicators among ethnically diverse lesbian, gay, and bisexual adults. *J. Consult. Clin. Psychol.* 78 (4), 459–468.
- Bernstein, D.P., Fink, L., 1998. Childhood Trauma Questionnaire: A Retrospective Self-Report. The Psychological Corporation, San Antonio, TX.
- Blossnich, J.R., Andersen, J.P., 2015. Thursday's child: the role of adverse childhood experiences in explaining mental health disparities among lesbian, gay, and bisexual US adults. *Soc. Psychiatry Psychiatr. Epidemiol.* 50 (2), 335–338.
- Bockting, W.O., Miner, M.H., Swinburne Romine, R.E., Hamilton, A., Coleman, E., 2013. Stigma, mental health, and resilience in an online sample of the US transgender population. *Am. J. Public Health* 103 (5), 943–951.
- Center for Youth Wellness, 2014. A Hidden Crisis: Findings on Adverse Childhood Experiences in California. Data Report. San Francisco. (Prepared by Survey Research Group, Public Health Institute, Danielle Ewing, MPH, Suzanne Ryan-Ibarra, MS, MPH, Michael Wright, MA, Marta Induni, PhD.).
- Chapman, D.P., Whitfield, C.L., Felitti, V.J., et al., 2004. Adverse childhood experiences and the risk of depressive disorders. *J. Affect. Disord.* 82 (2), 217–225.
- Chonholm, P.F., Forke, C.M., Wade, R., et al., 2015. Adverse childhood experiences: expanding the concept of adversity. *AJPM* 49.
- Crissman, H.P., Berger, M.B., Graham, L.F., Dalton, V.K., 2017. Transgender demographics: a household probability sample of US adults. 2014 107, 213–215 2.
- Colpitts, E., Gahagan, J., 2016. The utility of resilience as a conceptual framework for understanding and measuring LGBTQ health. *Int. J. Health Equity* 15 (60). <https://doi.org/10.1186/s12939-016-0349-1>.
- Conron, K.J., Scott, G., Stowell, G.S., Landers, S.J., 2012. Transgender health in Massachusetts: results from a household probability sample of adults. *Am. J. Public*

- Health 102 (1), 118–122.
- Feldman, M.B., Meyer, I.H., 2007. Childhood abuse and eating disorders in gay and bisexual men. *Int. J. Eat. Disord.* 40 (5), 418–423.
- Felitti, V.J., Anda, R.F., Nordenberg, D., Williamson, D.F., Spitz, A.M., Edwards, V., Marks, J.S., 1998. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. *Am. J. Prev. Med.* 14 (4), 245–258.
- Felitti, V.J., 2009. Adverse childhood experiences and adult health. *Acad. Pediatr.* 9, 131–132.
- IBM Corp Released, 2017. IBM SPSS Statistics for Windows, Version 25.0. IBM Corp, Armonk, NY.
- James, S.E., Herman, J.L., Rankin, S., Keisling, M., Mottet, L., Anafi, M., 2016. The Report of the 2015 U.S. Transgender Survey. National Center for Transgender Equality, Washington, DC.
- Kersting, A., Reutemann, M., Gast, U., et al., 2003. Dissociative disorders and traumatic childhood experiences in transsexuals. *J. Nerv. Ment. Dis.* 191 (3), 182–189.
- Meerwijk, E.L., Sevelius, M., 2017. Transgender population size in the United States: a meta-regression of population-based probability samples. *AJPH (Am. J. Public Health)* 107 (2), e1–e8.
- Meyer, I.H., Brown, T.N., Herman, J.L., Reisner, S.L., Bockting, W.O., 2017. Demographic characteristics and health status of transgender adults in select US regions: Behavioral Risk Factor Surveillance System, 2014. *AJPH (Am. J. Public Health)* 107 (4), 582–589.
- Morris, A.W., Hays-Grudo, J., 2014. Protecting parents and children from adverse childhood experiences (ACEs): preliminary evidence for the validity of PACEs. In: Paper Presented at the Society for Research in Child Development Special Topic Meeting: New Conceptualizations in the Study of Parenting-At-Risk, San Diego, CA.
- Mustanski, B., Andrews, R., Puckett, J.A., 2016. The effects of cumulative victimization on mental health among lesbian, gay, bisexual, and transgender adolescents and young adults. *AJPH (Am. J. Public Health)* 106 (3), 527–533.
- Reback, C.J., Rünger, D., Fletcher, J.B., 2017. Physical and/or sexual abuse are associated with negative health outcomes among transgender women of color living with HIV. *Violence Gend.* 4 (4), 130–136.
- Reuben, A., Moffitt, T.E., Caspi, A., et al., 2016. Lest we forget: comparing retrospective and prospective assessments of adverse childhood experiences in the prediction of adult health. *JCPP (J. Child Psychol. Psychiatry)* 57 (10), 1103–1112.
- Schneeberger, A.R., Dietl, M.F., Muenzenmaier, K.H., Huber, C.G., Lang, U.E., 2014. Stressful childhood experiences and health outcomes in sexual minority populations: a systematic review. *Soc. Psychiatry Psychiatr. Epidemiol.* 49 (9), 1427–1445.
- Smith, N., Lam, D., Bifulco, A., Checkly, S., 1998. Childhood Experiences of Care and Abuse Questionnaire (CECA.Q). Validation of a Screening Instrument for Childhood Adversity in Clinical Populations.
- Sterzing, P.R., Ratliff, G.A., Gartner, R.E., McGeough, B.L., Johnson, K.C., 2017. Social ecological correlates of polyvictimization among a national sample of transgender, genderqueer, and cisgender sexual minority adolescents. *Child Abuse Negl.* 67, 1–12.