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SHORT REPORT

Self-Reported Physical and Mental Health of Gender Nonconforming Transgender Adults in the United States

Carl G. Streed Jr., MD, MPH,[1,*] Ellen P. McCarthy, PhD, MPH,[2] and Jennifer S. Haas, MD, MSc[1]

Abstract

Purpose: This study compares the health status of gender nonconforming transgender adults with gender-binary transgender peers (i.e., transgender men and transgender women).
Methods: We performed a retrospective analysis of the 2014–2016 Behavioral Risk Factor Surveillance System.
Results: After adjustment for sociodemographic characteristics, proxies for healthcare access, health conditions, and health behaviors, gender nonconforming transgender adults were at increased odds, compared with gender-binary transgender peers, of self-reported poor or fair health and self-reported limitation in any way in any activities because of physical, mental, or emotional problems.
Conclusions: Gender nonconforming transgender adults experienced worse self-reported health disparities than gender-binary transgender peers.

Keywords: Behavioral Risk Factor Surveillance System, gender identity, gender nonconforming, transgender

Introduction

Gender minorities include transgender individuals, whose gender identity differs from their sex assigned at birth, and gender nonconforming individuals, whose gender identity does not match conventional binary categories of man/woman[1]; gender nonconforming individuals may or may not self-identify as transgender. The National Institutes of Health has underscored the need to better understand the health of gender minorities.[2] In addition, the 2011 Institute of Medicine report on the Health of Lesbian, Gay, Bisexual, and Transgender People and a follow-up report in 2013 both highlighted the need for further research on gender minorities.[3,4] However, research addressing gender nonconforming individuals, specifically, remains sparse and is confined largely to pediatric and adolescent medicine.[5–8] Furthermore, national surveys or surveillance systems have lagged in including gender identity data. More recently, national surveys and surveillance systems have incorporated gender identity data based on the recommendations of the Gender Identity in U.S. Surveillance (GenIUSS) Group.[1] Whereas the GenIUSS Group recommended a two-step question for gender identity,[1] the Behavioral Risk Factor Surveillance System (BRFSS) employs a one-step question.

Since 2014, the BRFSS has provided states with the option to administer a sexual orientation and gender identity module to identify gender minority populations within the United States. Research has since explored the physical and mental health of gender minorities in the United States.[9,10] However, these studies have either focused only on transgender individuals who have a binary gender identity,[9] or aggregated data on gender-binary and gender nonconforming transgender adults.[10] Our study aims to examine the health status specifically of gender nonconforming transgender adults compared with gender-binary transgender peers in the United States.

Methods

BRFSS is a surveillance system conducted by state health departments in collaboration with the Centers for Disease Control and Prevention (CDC).[11] Beginning in 2014, respondents could be asked ''Do you consider yourself to be

[1]Division of General Internal Medicine and Primary Care, Department of Medicine, Harvard Medical School, Brigham and Women's Hospital, Boston, Massachusetts.
[2]Division of General Medicine and Primary Care, Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts.
*Present affiliation: Section of General Internal Medicine, Department of Medicine, Boston University School of Medicine, Boston Medical Center, Boston, Massachusetts.

transgender?'' Responses are as follows: (1) yes, transgender, male-to-female, (2) yes, transgender, female-to-male, (3) yes, transgender, gender nonconforming, (4) no, (5) don't know/not sure, and (6) refused to answer. Individuals completing the gender identity module were classified as male-to-female transgender ($n=1078$), female-to-male transgender ($n=701$), gender nonconforming transgender ($n=450$), cisgender ($n=516{,}757$), don't know/not sure ($n=2970$), or refused ($n=4286$). Population size and prevalence were estimated using BRFSS sample weights. As the study did not obtain identifiable private information, the Brigham and Women's Hospital Institutional Review Board determined this research study to be exempt.

Study sample

Our study sample draws from the 2014–2016 BRFSS and includes individuals completing the gender identity module. We classified respondents as gender nonconforming transgender ($n=450$, representing an estimated 314,935 U.S. adults) and gender-binary transgender ($n=1779$, representing an estimated 1,180,949 U.S. adults) for a total sample size of 2229 individuals; we excluded those who did not identify as transgender or responded as don't know/not sure or refused.

Health outcome measures

We examined the following three self-reported health outcomes: (1) overall health status (responses: poor, fair, good, very good, and excellent; this was dichotomized as fair/poor and good/very good/excellent based on previous research)[10]; (2) serious difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition (responses: yes, no); and (3) limitation in any way in any activities because of physical, mental, or emotional problems (responses: yes, no). Self-reported overall health was dichotomized in accordance with common practice and is supported by prior assessment of the reliability of this practice.[12]

Covariates of interest

We adjusted for factors found to be confounders or drawn from previous literature[3] including sociodemographic characteristics, proxies for healthcare access, health conditions, and health behaviors. Sociodemographic characteristics were as follows: age (18–24 years of age, 25–34 years of age, 35–44 years of age, 45–54 years of age, 55–64 years of age, and 65 years of age and older); race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic other); relationship status (married or living with partner; separated, divorced, or widowed; and never married); minor child (no children <18 years of age vs. any) in the household; language of interview (English vs. non-English); family income (<$15,000, $15,000–$24,999, $25,000–$34,999, $35,000–$49,999, $50,000 or more, and don't know/not sure/missing); educational attainment (did not complete high school, high school graduate or completed a General Equivalency Diploma, attended college or technical school, and graduated from college or attended school beyond college); and employment status (employed or self-employed, unemployed, and not in the labor force).

Proxies for healthcare access included health insurance (public/private vs. none), office visit with a healthcare professional in the past year (none vs. any), unmet medical care need because of cost in the past year (yes vs. no), and having a personal healthcare provider (yes vs. no). Health conditions were assessed using body mass index $\geq 25\ kg/m^2$ calculated from self-reported weight and height, number of reported chronic health conditions (none, one, or two or more than two of the following: arthritis, asthma, cancer, chronic kidney disease, chronic obstructive pulmonary disease, coronary heart disease, diabetes, diabetic retinopathy, previous stroke, or previous myocardial infarction), and history of depression.

Health behaviors were assessed based on measures of alcohol and cigarette use; the BRFSS does not ask respondents about marijuana, opioid, or other illicit drug use. Participants reported their alcohol consumption in the past 30 days, including the number of days when they drank and the average number of drinks consumed on those days for all types of alcoholic beverages. One drink was defined as a 12-ounce can or bottle of beer, a 5-ounce glass of wine, one can or bottle of wine cooler, one cocktail, or a drink with one shot of liquor. Based on previous reporting of alcohol consumption with the BRFSS, we categorized alcohol consumption into four levels, as follows: (1) nonconsumers (less than monthly), (2) rare consumers (one or fewer drinks per week but one or more drinks per month), (3) moderate consumers (more than one drink per week but not heavy consumers), and (4) heavy consumers (more than two drinks per day for men and more than one drink per day for women).[13] Tobacco use was assessed based on the report of having smoked at least 100 cigarettes in their entire life and report of current smoking every day, some days, or not at all. Respondents were classified as follows: (1) never smokers, (2) former smokers, (3) current occasional smokers, or (4) current everyday smokers.[14]

Statistical analysis

We used descriptive statistics to characterize the study sample and to estimate the prevalence of self-reported impaired health. Bivariable analyses were used to compare sociodemographic characteristics, proxies for healthcare access, health conditions, and health behaviors across gender identities. We estimated logistic regression models for each outcome to assess differences across gender identities adjusting for covariates of interest.

All analyses were performed using SAS survey procedures version 9.4 (SAS Institute Inc., Cary, NC) to account for the complex sampling design, and data were weighted to reflect estimates representative of the geographic areas studied. Adjusted odds ratios [aOR] were estimated comparing gender nonconforming transgender adults with gender-binary transgender peers and adjusted for sociodemographic characteristics, proxies for healthcare access, health conditions, and health behaviors. Unless otherwise indicated, missing data were excluded to remain consistent with previous research.[10] Models were estimated from observations with complete data. The model for self-reported poor or fair health included 1423 observations; the model for self-reported difficulty concentrating, remembering, or making decisions included 1423 observations; and the model for self-reported limitation in any way included 1181 observations.

Table 1. Characteristics of U.S. Adults by Self-Reported Gender Identity

	Gender nonconforming transgender adults (n = 450), n (%)[a]	*Gender-binary transgender adults (n = 1779) n (%)*[a]	p *(gender nonconforming vs. gender-binary transgender adults)*
Sociodemographic characteristics			
Age, years			
18–24	56 (26.7)	150 (17.8)	**0.02**
25–34	83 (20.8)	161 (14.0)	
35–44	48 (13.4)	204 (18.6)	
45–54	61 (9.6)	309 (15.3)	
55–64	80 (14.7)	430 (18.6)	
≥65	122 (14.7)	525 (15.7)	
Race/ethnicity			
Non-Hispanic White	301 (52.4)	1236 (56.4)	0.87
Non-Hispanic Black	35 (14.1)	164 (13.6)	
Hispanic	42 (21.0)	160 (19.6)	
Non-Hispanic other	62 (12.5)	186 (10.4)	
Relationship status			
Married or living with partner	207 (44.5)	846 (49.3)	0.24
Separated, divorced, or widowed	117 (17.2)	509 (19.6)	
Never married	123 (38.3)	414 (31.1)	
Educational attainment			
<High school	45 (16.5)	267 (27.2)	**0.004**
High school graduate/general equivalency diploma	149 (30.0)	687 (36.3)	
Some college	136 (35.0)	470 (24.6)	
≥College degree	120 (18.4)	346 (11.9)	
Households with children <18 years	44 (12.6)	175 (17.0)	0.29
Non-English-speaking interview	8 (3.6)	74 (13.2)	**0.001**
Household income			
<$15,000	74 (15.9)	286 (17.0)	0.36
$15,000–$24,999	94 (19.0)	350 (19.6)	
$25,000–$34,999	41 (9.4)	189 (13.7)	
$35,000–$49,999	54 (11.7)	224 (9.6)	
≥$50,000	123 (33.2)	493 (25.6)	
Don't know/not sure/missing	64 (10.8)	237 (14.5)	
Employment status			
Employed or self-employed	200 (45.3)	791 (55.3)	0.06
Unemployed	34 (8.1)	118 (8.4)	
Not in labor force	212 (46.6)	854 (36.3)	
Proxies for healthcare access			
Possessing health insurance	391 (86.5)	1567 (80.4)	0.09
No office visit for healthcare in the past year	124 (37.5)	436 (30.4)	0.14
Unmet care need because of cost in the past year	70 (20.4)	245 (20.9)	0.90
Access to personal healthcare provider	358 (75.0)	1462 (72.9)	0.67
Health conditions			
Body mass index ≥25 kg/m^2	283 (66.0)	1185 (70.6)	0.30
Chronic health conditions[b]			
None	245 (69.6)	854 (68.1)	0.94
One chronic condition	103 (20.7)	437 (21.9)	
Two or more chronic conditions	48 (9.7)	254 (10.1)	
Reports diagnosis of depression	153 (32.2)	444 (24.9)	0.08
Health behaviors			
Alcohol consumption			
Nonconsumer	230 (52.7)	1000 (58.3)	0.12
Rare	47 (5.4)	202 (9.0)	
Moderate	122 (32.2)	434 (25.8)	
Heavy	40 (9.7)	103 (6.8)	
Cigarette use			
Never smoker	249 (67.1)	933 (56.7)	0.06
Former smoker	105 (16.4)	481 (20.9)	
Current occasional smoker	27 (5.5)	91 (6.1)	
Current everyday smoker	64 (11.0)	260 (16.3)	

(*continued*)

TABLE 1. (CONTINUED)

	Gender nonconforming transgender adults (n = 450), n *(%)*[a]	*Gender-binary transgender adults (n = 1779)* n *(%)*[a]	p *(gender nonconforming vs. gender-binary transgender adults)*
Self-reported health outcomes			
Poor or fair health	133 (30.3)	454 (20.2)	**0.008**
Serious difficulty concentrating, remembering, or making decisions	111 (27.6)	323 (19.3)	**0.03**
Limitation in any way	132 (36.3)	404 (20.1)	**<0.001**

p-values <0.05 are shown in bold.

[a]Proportions are weighted to reflect population estimates; unweighted sample size represented by (*n*); all *p*-values account for complex sampling design.

[b]Arthritis, asthma, cancer, chronic kidney disease, chronic obstructive pulmonary disease, coronary heart disease, diabetes, diabetic retinopathy, previous stroke, or previous myocardial infarction.

Unless explicitly included, missing data were excluded from the determination of prevalence data; individual variable sample size may not sum to the entire sample size.

Data on gender identity are available from the following states and territories: California, Colorado, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nevada, New York, Ohio, Pennsylvania, Rhode Island, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and Guam.

Results

Study population

In the United States, 0.51% of adults identified as a gender minority, with 0.11% identifying as gender nonconforming transgender (representing an estimated 314,935 adults) and 0.4% identifying as gender-binary transgender (representing an estimated 1,180,949 adults). Compared with gender-binary transgender adults, gender nonconforming transgender adults were younger and had higher educational attainment. All other sociodemographic characteristics, health conditions, proxies for healthcare access, and health behaviors were similar between gender-binary transgender and gender nonconforming adults (Table 1).

Health outcomes by gender identity

Gender nonconforming transgender adults, compared with gender-binary transgender adults, were more likely to report the following: poor or fair health (30.3% vs. 20.2%), serious difficulty concentrating, remembering, or making decisions (27.6% vs. 19.3%), and being limited in any way (36.3% vs. 20.1%) (Table 1). After adjustment for sociodemographic characteristics, proxies for healthcare access, health conditions, and health behaviors, gender nonconforming transgender adults were at increased odds of self-reported poor or fair health (aOR = 2.29; 95% CI = 1.31–4.01) and self-reported limitation in any way in any activities because of physical, mental, or emotional problems (aOR = 2.44; 95% CI = 1.36–4.34) compared with gender-binary transgender adults; there was no difference between gender nonconforming transgender adults and gender-binary transgender peers with regard to self-reported serious difficulty concentrating, remembering, or making decisions (aOR = 1.18; 95% CI = 0.66–2.09).

Discussion

This study demonstrates that gender nonconforming transgender adults in the United States experience disparities in physical and mental health compared with their gender-binary transgender peers. Our findings add to a limited field of research in gender-binary and gender nonconforming transgender health.[3,15] Previous studies are limited by lack of comparable data about gender-binary transgender peers and cisgender peers and also less diverse sampling to provide generalizability across populations.[3] Previous research had not found a significant difference in tobacco use between cisgender and gender minority adults, including both gender-binary and gender nonconforming transgender individuals in aggregate, and found lower rates of alcohol consumption.[9] We did not observe significant differences in tobacco use and alcohol consumption between gender-binary and gender nonconforming transgender adults. The observed disparities in physical and mental health outcomes persisted after adjustment for sociodemographic characteristics, proxies for healthcare access, health conditions, and alcohol and cigarette use, highlighting the need for further study to elucidate reasons for these disparities. There is speculation that interpersonal and structural discrimination toward gender nonconformity results in stress that contributes to worse health outcomes.[16]

Limitations

There are limitations to our study. Prevalence of chronic health conditions was lower than expected and rates of insurance coverage higher than expected; these discrepancies compared with previous research[3] may indicate that the BRFSS is reaching a healthier, more affluent gender minority population than previous convenience samples, although this has not been studied or verified. Validation of BRFSS sample weights has yet to be investigated for gender minority respondents. We lacked reliable data on respondent sex assigned at birth, limiting comparison of gender-binary and gender nonconforming transgender adults based on assigned sex.[17,18] Gender-binary transgender individuals may be less likely than gender nonconforming transgender or cisgender individuals to divulge their gender identity for fear of discrimination[19]; we may be underestimating gender minority status. Furthermore, as the gender identity module only allows gender nonconforming individuals to self-identify

whether they first identify as transgender, the BRFSS likely underestimates the population of gender nonconforming individuals as it excludes gender nonconforming individuals who do not identify as transgender.

To eliminate health disparities, there must be widespread collection of sexual orientation and gender identity data using standard, reliable questions.[3,20] To obtain a complete picture of the health needs of gender minorities in the United States, all states and territories should administer the CDC-approved sexual orientation and gender identity module in BRFSS.[21] Specifically, to identify gender minority populations, gender minority sampling should be distinct from questions about sexual orientation and clearly distinguish between gender-binary transgender individuals (i.e., transgender men and transgender women) and gender nonconforming/gender nonbinary transgender individuals. These recommendations are consistent with expert input[1] and the National Institute on Minority Health and Health Disparities goal to identify and address the health needs of gender minorities.[22]

Conclusions

Gender nonconforming transgender adults in a broad sample of the U.S. population experienced worse disparities in health status than gender-binary transgender individuals, a community known to suffer great disparities in health status compared with their cisgender peers. Our findings indicate that healthcare professionals and public health practitioners should pay attention to the health of this uniquely vulnerable population.

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Disclaimer

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Author Disclosure Statement

No competing financial interests exist.

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Address correspondence to:
Carl G. Streed Jr., MD, MPH
Section of General Internal Medicine
Department of Medicine
Boston University School of Medicine
Boston Medical Center
Crosstown Center
801 Massachusetts Avenue
2nd Floor
Boston, MA 02118

E-mail: carl.streed@bmc.org