Title:
Multiple Chronic Conditions and General Health in Transgender Individuals in the US

Suha Ballout, PhD
Philimon Gona, PhD
College of Nursing and Health Sciences, University of Massachusetts Boston, Boston, MA, USA

Session Title:
Health Disparities in LGBTQ
Slot:
C 09: Sunday, 29 October 2017: 10:45 AM-11:30 AM
Scheduled Time:
10:45 AM

Keywords:
Chronic conditions, Health disparities and Transgender health

References:
1. Graham, R., Berkowitz, B., Blum, R., Bockting, W., Bradford, J., de Vries, B., ... & Makadon, H. (2011). The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding. *Washington, DC: Institute of Medicine*.

2. U.S. Department of Health and Human Services. (2011). *Healthy People 2020 objectives: Lesbian, gay, bisexual, and transgender health*. Retrieved from

http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=25

3. National Institute of Minority Health and Health Disparities. Director's Message. Accessed from: http://www.nimhd.nih.gov/about/directors-corner/message.html on October 6, 2016

4. Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J., ... & Monstrey, S. (2012). Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *International Journal of Transgenderism*, *13*(4), 165-232. doi: 10.1080/15532739.2011.700873

5. Reisner, S. L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., ... & Baral, S. D. (2016). Global health burden and needs of transgender populations: a review. *The Lancet*, *388*(10042), 412-436. doi: 10.1016/S0140-6736(16)00684-X

6. Burkhalter, J. E., Margolies, L., Sigurdsson, H. O., Walland, J., Radix, A., Rice, D., ... & Cahill, S. (2016). The National LGBT Cancer Action Plan: A White Paper of the 2014 National Summit on Cancer in the LGBT Communities. *LGBT health*, *3*(1), 19-31. doi:10.1089/lgbt.2015.0118.

7. Winter, S., Diamond, M., Green, J., Karasic, D., Reed, T., Whittle, S., & Wylie, K. (2016). Transgender people: health at the margins of society. *The Lancet*, *388*(10042), 390-400. doi: 10.1016/S0140-6736(16)00683-8

8. Lick, D. J., Durso, L. E., & Johnson, K. L. (2013). Minority stress and physical health among sexual minorities. *Perspectives on Psychological Science*, *8*(5), 521-548. doi: 10.1177/1745691613497965

9. Clements-Nolle, K., Marx, R., Guzman, R., & Katz, M. (2001). HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: implications for public health intervention. *American journal of public health*, *91*(6), 915.

10. Reisner, S. L., White, J. M., Bradford, J. B., & Mimiaga, M. J. (2014). Transgender health disparities: comparing full cohort and nested matched-pair study designs in a community health center. *LGBT health*, *1*(3), 177-184. doi:10.1089/lgbt.2014.0009

11. Hotton, A. L., Garofalo, R., Kuhns, L. M., & Johnson, A. K. (2013). Substance use as a mediator of the relationship between life stress and sexual risk among young transgender women. *AIDS Education and Prevention*, *25*(1), 62-71. doi: 10.1521/aeap.2013.25.1.62

12. Conron, K. J., Scott, G., Stowell, G. S., & Landers, S. J. (2012). Transgender health in Massachusetts: results from a household probability sample of adults. *American journal of public health*, *102*(1), 118-122. doi: 10.2105/AJPH.2011.300315

13. Grant, J. M., Mottet, L. A., Tanis, J., Herman, J. L., Harrison, J., & Keisling, M. (2010). National transgender discrimination survey report on health and health care. *Washington, DC: National Center for Transgender Equality and the National Gay and Lesbian Task Force*.

14. Sevelius, J. M. (2013). Gender affirmation: a framework for conceptualizing risk behavior among transgender women of color. *Sex roles*, *68*(11-12), 675-689. doi:10.1007/s11199-012-0216-5

15. Operario, D., Nemoto, T., Iwamoto, M., & Moore, T. (2011). Unprotected sexual behavior and HIV risk in the context of primary partnerships for transgender women. *AIDS and Behavior*, *15*(3), 674-682. doi:10.1007/s10461-010-9795-8

Abstract Summary:
Transgender individuals are a growing marginalized and medically underserved population with unique health concerns. They suffer from multilevel stressors that negatively impact their health outcomes. Our study used a large population-based and representative sample to cross-sectionally describe multiple chronic conditions and general health in transgender individuals in the U.S.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
By the end of the presentation, the audience will be able to summarize the health disparities in the transgender community.	Transgender individuals are a growing medically underserved population with unique health concerns and needs which are generally not addressed; thus, leading to health disparities. The 2011 Institute of Medicine (IOM) report highlighted the gap in knowledge and scientific research to better understand and act on the health disparities that are grounded on a person's racial or ethnic group, socioeconomic status (SES), gender, mental health, sexual orientation, and other concerns related to discrimination or exclusion. The Healthy People 2020 also recognized Lesbian, Gay, Bisexual, and Transgender (LGBT) individuals as an at-risk population. The

	transgender community is marginalized and suffers from multilevel stressors that negatively impact their health outcomes thus creating a health disparity that needs immediate attention.
By the end of the presentation the audience will be able to identify the differences in sociodemographic characteristics, general health, and multiple chronic conditions among transgender individuals as compared to nontransgender individuals	More transgender individuals reported never being married (22.3% vs. 14.9%) and separated (3.0% vs. 1.9%) whereas fewer transgender individuals were married (46.4% vs. 53.3%) as compared to nontransgender individuals. Also, fewer transgender individuals completed high school (13.4% vs. 6.9%) and graduated from a 4-year college (23.0% vs. 38.8%). Similarly, transgender individuals reported higher rates of unemployment (6.2% vs. 3.9%) and inability to work (11.3% vs. 6.6%) with less likelihood of earning $75,000 or more (24.4% vs. 34.3%). Transgender individuals also had lower prevalence of having health insurance (10.6% vs. 6.5%). Comparing transgender and nontransgender general health rating showed that more nontransgender individuals rated their health as “very good” or “excellent” (51.4% vs 42.0%) while more transgender individuals rated their health as “fair” or “poor” (24.2% vs. 17.7%). Diabetes (17.2 % in transgender vs. 13.8% in non-transgender, p=0.007) cardiac disease (11.6% vs. 8.6%, p=0.0042), and stroke (6.4% vs. 4.1%, p=0.002) were significantly more prevalent in transgender individuals. In the opposite direction, the prevalence of cancer (12.7% vs. 17.6%, p=0.0004) was more prevalent in nontransgender individuals. The prevalence of hypertension, hypercholesterolemia, asthma, arthritis and kidney disease were similar.
By the end of the presentation, the audience will be able to discuss the differences in sociodemographic characteristics, general health, and multiple chronic conditions within the transgender groups (i.e., male-to-female, female-to-male, and gender nonconforming	Examining the differences among the transgender groups, stroke, asthma, cardiac disease was particularly more prevalent in the gender-non-conforming group, whereas cancer and diabetes were more common among MTF transgender individuals. Among the transgender groups, MTF transgender (aOR=1.38, 95%CI: 1.096, 1.739, had greater

	odds for hypertension. Also, MTF transgender (aOR=1.56 ,95%CI: 1.11-2.19), and gender non-conforming, aOR=2.26, (95%CI: 1.42-3.62) had greater odds for cardiac disease. On the other hand, MTF transgender had significantly lower odds for asthma (aOR=0.54, 95%CI: 0.37, 0.80).
By the end of the presentation, the audience will be able to identify the differences in sociodemographic characteristics and general health among transgender individuals with zero, one, and two or more chronic conditions	Nine chronic conditions were examined in this study. There was at least one transgender and nontransgender individual reported each of the nine conditions. Around half the sample reported two or more chronic conditions and only 27% of the sample reported only one chronic condition. There were no differences in the number of unique chronic conditions between transgender and nontransgender individuals.
By the end of the presentation, the audience will be able to identify the significance of healthcare providers and future research to understand, examine, and enhance the health of transgender individuals	Our study used a large population-based and representative sample to cross-sectionally describe multiple chronic conditions and general health in transgender individuals in the U.S. The findings recognize that transgender individuals have a higher risk of chronic conditions such as diabetes, cardiac disease, and stroke. However, within the transgender community, there are additional layers of differences in the risks and likelihoods of chronic conditions where MTF and gender nonconforming individuals are at a higher risk for chronic conditions such as hypertension, cardiac disease, and asthma. The findings also highlight the increased burden of two or more chronic conditions. These results shed light on the health disparities facing the transgender community and ascertains the need for transgender-specific research and interventions to prevent and manage chronic diseases. These findings pave the way for nurses and other healthcare providers to be cognizant of the unique disease profiles to design and implement studies that prevent and better manage chronic conditions in transgender individuals.

Abstract Text:

Multiple Chronic Conditions and General Health in Transgender Individuals in the U.S.

Background

Transgender individuals are a growing medically underserved population with unique health concerns and needs which are generally not addressed; thus, leading to health disparities[1,2]. The terms "transgender" and "gender nonconforming" refer to individuals who have a gender identity, behavior, or self-expression that is different from their biological sex at birth[1]. Transgender identities include male to female (MTF, transwomen) or female to male (FTM, transmen)[1] transition. The 2011 Institute of Medicine (IOM)[1] report highlighted the gap in knowledge and scientific research to better understand and act on the health disparities that are grounded on a person's racial or ethnic group, socioeconomic status (SES), gender, mental health, sexual orientation, and other concerns related to discrimination or exclusion[1]. The *Healthy People 2020* also recognized Lesbian, Gay, Bisexual, and Transgender (LGBT) individuals as an at-risk population[2].

Significance

Published reports suggest that between 0.3% and 0.5% of the adults aged 18-64 years in the U.S. identify as transgender.[3,4,5] Despite these very small proportions, it is essential to pay attention to the transgender population that is burdened by social, economic, health inequity and disparities[1,2,6,7]. Research studies conducted with the transgender community have been limited to mental health issues,[7,8] risk for suicide,[9] substance abuse,[10] cigarette smoking,[11] HIV status and other sexually transmitted diseases (STDs)[12]. Other studies focused on social determinants of health such as minority stress,[7] stigma,[1-3] discrimination,[9,13] lack of equitable access to health care,[1,13,14] violence,[9,13] victimization,[1,13] abuse,[9,13]low SES,[1,7,13] and limited employment opportunities.[1,7,13] However, few studies have focused on physical health including the prevention and burden of chronic conditions among the transgender community.[6,7,15] Before 2013, most of the large publicly available population-based databases on chronic diseases have not collected participants' sexual orientation and therefore it has been impossible to examine chronic disease risk factors specific to the transgender community. Furthermore, many studies used cross-sectional and descriptive study designs to study health outcomes of transgender populations.

Purpose

The purpose of this study was to examine the sociodemographic characteristics, general health, and chronic conditions (i.e., hypertension, hypercholesterolemia, cardiac disease, stroke, asthma, cancer, arthritis, kidney disease, and diabetes) in transgender individuals using the 2015 Behavioral Risk Factor Surveillance Surveys (BRFSS). The following research questions were addressed:

1. Are there differences in sociodemographic characteristics, general health, and multiple chronic conditions among transgender individuals as compared to nontransgender individuals?
2. Are there differences in sociodemographic characteristics, general health, and multiple chronic conditions within the transgender groups (i.e., male-to-female, female-to-male, and gender nonconforming)?
3. Are there differences in sociodemographic characteristics and general health among transgender individuals with zero, one, and two or more chronic conditions?

Methods

Sample

The BRFSS is a U.S. national system of health-related surveys that annually collects data about health-related risk behaviors, chronic health conditions, and use of preventive services. The survey conducts phone interviews of noninstitutionalized U.S. population aged ≥18 years living in the U.S. Of the 441,456

participants in the 2015 survey, statistical analysis was restricted to 164,437 (37.2%) participants who responded to the question: "*Do you consider yourself to be transgender*?" A small proportion, 752 (0.46%) stated that they were transgender (361 MTF, 237 FTM, and 154 gender non-conforming.

Statistical Analysis

Demographic characteristics were summarized using frequencies for categorical variables, means and standard deviations for quantitative measures. Nine chronic conditions (i.e., hypertension, hypercholesterolemia, cardiac disease, stroke, asthma, cancer, arthritis, kidney disease, and diabetes) were coded as binary variables and a composite score was created counting the unique number of prevalent chronic conditions for everyone. Statistical analysis was stratified by transgender status. First, all transgender participants were grouped into one broad category and then the Chi-squared test for independence was used to compare proportions of each individual chronic condition vs. transgender status (i.e., transgender versus non-transgender) . Secondly, the Chi-squared test for homogeneity was used to compare the prevalence of chronic condition across transgender status (MTF, FTM, gender non-conforming, vs. the non-transgender referent group). Prevalence and 95% confidence interval (CI) for each chronic condition were calculated. Pooled and un-pooled transgender statuses were used in separate models as the predictor variable for each chronic condition. The non-transgender group was used as the referent category in logistic regression analysis. Unadjusted and multivariable adjusted logistic regression analysis with each chronic condition as the response variable were used to estimate the log odds associated with transgender status. The variables adjusted for were age, race, marital status, education, and health insurance. Seven percent of participants had missing income data; thus, income was not included in the adjusted logistic regression models. Odds ratios (ORs) and 95% CIs were calculated. MV-adjusted odds ratios (aORs) were essentially unchanged when additionally adjusted for income. A composite variable was coded to count zero chronic conditions, one, two, and three or more. General health was rated on a 5-point Likert scale.

Results

A majority (58.6%) of participants were between 55 years and older. Most were White (78.7%), married (53.3%), and employed (49.6%). Many had a four year or more of college education (38.7%) with income of $75,000 or less (65.7%) and reported to have health insurance (92.9%). There were no differences in age groups or race/ ethnicity among transgender and nontransgender participants. However, more transgender individuals reported never being married (22.3% vs. 14.9%) and separated (3.0% vs. 1.9%) whereas fewer transgender individuals were married (46.4% vs. 53.3%) as compared to nontransgender individuals. Also, fewer transgender individuals completed high school (13.4% vs. 6.9%) and graduated from a 4-year college (23.0% vs. 38.8%). Similarly, transgender individuals reported higher rates of unemployment (6.2% vs. 3.9%) and inability to work (11.3% vs. 6.6%) with less likelihood of earning $75,000 or more (24.4% vs. 34.3%). Transgender individuals also had lower prevalence of having health insurance (10.6% vs. 6.5%).

A majority (51.2%) of participants rated their health as "very good" or "excellent." Comparing transgender and nontransgender general health rating showed that more nontransgender individuals rated their health as "very good" or "excellent" (51.4% vs 42.0%) while more transgender individuals rated their health as "fair" or "poor" (24.2% vs. 17.7%). Diabetes (17.2 % in transgender vs. 13.8% in non-transgender, p=0.007) cardiac disease (11.6% vs. 8.6%, p=0.0042), and stroke (6.4% vs. 4.1%, p=0.002) were significantly more prevalent in transgender individuals. In the opposite direction, the prevalence of cancer (12.7% vs. 17.6%, p=0.0004) was more prevalent in nontransgender individuals. The prevalence of hypertension, hypercholesterolemia, asthma, arthritis and kidney disease were similar. Examining the differences among the transgender groups, stroke, asthma, cardiac disease was particularly more prevalent in the gender-non-conforming group, whereas cancer and diabetes were more common among MTF transgender individuals.

After adjusting for the confounding effects of age, race, marital status, education, health insurance, logistic regression models showed that transgender individuals had higher odds for stroke (aOR=1.62,

95%CI: 1.20-2.20, p=0.0019), and higher odds for cardiac disease OR=1.42, 95% CI 1.11-1.81, p=0.0046). The odds for cancer were lower among nontransgender individuals (aOR=0.76 95%CI: 0.60-0.96, p=0.0217). Among the transgender groups, MTF transgender (aOR=1.38, 95%CI: 1.096, 1.739, had greater odds for hypertension. Also, MTF transgender (aOR=1.56 ,95%CI: 1.11-2.19), and gender non-conforming, aOR=2.26, (95%CI: 1.42-3.62) had greater odds for cardiac disease. On the other hand, MTF transgender had significantly lower odds for asthma (aOR=0.54, 95%CI: 0.37, 0.80).

Nine chronic conditions were examined in this study. There was at least one transgender and nontransgender individual reported each of the nine conditions. Around half the sample reported two or more chronic conditions and only 27% of the sample reported only one chronic condition. There were no differences in the number of unique chronic conditions between transgender and nontransgender individuals.

Conclusion

The transgender community is marginalized and suffers from multilevel stressors that negatively impact their health outcomes thus creating a health disparity that needs immediate attention. Our study used a large population-based and representative sample to cross-sectionally describe multiple chronic conditions and general health in transgender individuals in the U.S. The findings recognize that transgender individuals have a higher risk of chronic conditions such as diabetes, cardiac disease, and stroke. However, within the transgender community, there are additional layers of differences in the risks and likelihoods of chronic conditions where MTF and gender nonconforming individuals are at a higher risk for chronic conditions such as hypertension, cardiac disease, and asthma. The findings also highlight the increased burden of two or more chronic conditions. These results shed light on the health disparities facing the transgender community and ascertains the need for transgender-specific research and interventions to prevent and manage chronic diseases. These findings pave the way for nurses and other healthcare providers to be cognizant of the unique disease profiles to design and implement studies that prevent and better manage chronic conditions in transgender individuals.