

Disproportionate Tobacco Use in the Puerto Rico Lesbian, Gay, Bisexual and Transgender Community of 18 Years and Over—A Descriptive Profile

Alex Cabrera-Serrano, MS,¹ Marcos E. Felici-Giovanini, MPH,¹ Elba C. Díaz-Toro, DMD, MSD, MPH,² and Antonio L. Cases-Rosario, MPA¹

Abstract

Purpose: Tobacco use is currently one of the most critical public health issues affecting sexual and gender minority individuals. The primary objective of this research was to provide the first population-based epidemiological profile of tobacco use in the LGBT community in Puerto Rico. The secondary objective was to identify differences between LGBT smokers (LGBT-S) versus LGBT nonsmokers (LGBT-NS).

Methods: We conducted a secondary data analysis of the 2011 Puerto Rico Behavioral Risk Surveillance System database through a cross-sectional study methodology. A univariate analysis was performed to obtain an epidemiological profile of the LGBT-S. Through a bivariate analysis, we compared LGBT-S with LGBT-NS to identify differences.

Results: A higher prevalence of tobacco use was found in the Puerto Rico LGBT community (20.8%) compared with the Puerto Rico general population (14.8%). The groups with higher prevalence were females (23.2%), bisexuals (23.9%), people aged 25–34 years (52.0%), people with some years in university or technical school (23.9%), people who reported being out of work for more than 1 year (45.5%), and people who reported an annual income of \$50,000 or more (12.5%). LGBT-S were more likely to report a history of cancer, arthritis, kidney disease, overweight or obesity, depressive disorder, and anxiety disorder than LGBT-NS.

Conclusion: Health surveys should incorporate sexual and gender identity questions in order to learn more about the health status of the LGBT community, especially given the disproportionate use of tobacco. The data may be useful to implement health promotion strategies related to tobacco control in this community.

Key words: Hispanic, LGBT smokers, LGBT and tobacco, Puerto Rico, smoking, tobacco use.

Introduction

Tobacco use is currently one of the most critical public health issues affecting sexual and gender minority individuals.¹ The 2009–2010 National Adult Tobacco Survey (NATS) demonstrated that the prevalence of cigarette smoking in the United States was 32.8% for lesbian, gay, bisexual, transgender (LGBT) adults versus 19.5% in heterosexual adults.² In 2009 a systematic review conducted by Lee and colleagues³ showed a positive association between sexual minority status and cigarette use with odds ratios (ORs) between 1.5 to 2.5.

Since 2006, with the approval of Act No. 66, which amended Act No. 40 of August 3, 1993 (Act to regulate smoking in certain public and private places), Puerto Rico has some of the most restrictive and comprehensive legislation in to-

bacco control use and protection of secondhand smoke exposure in the United States.⁴ In 2011, according to the Behavioral Risk Factor Surveillance System (BRFSS), the tobacco use prevalence remains lower in Puerto Rico (14.8%) than in the United States (21.1%).⁵ However, 7 of the 12 leading causes of death on the Island are associated with smoking (heart disease, malignant tumors, Alzheimer's disease, cerebrovascular disease, chronic pulmonary disease, nephritis, and hypertension).⁶

Despite the progress in tobacco control, Puerto Rico did not have population-based data of tobacco use in sexual and gender minority individuals until recently. In 2009, local tobacco control advocates and community volunteers began the first survey of the Lesbian, Gay, Bisexual, and Transgender/Transsexual (LGBT) community health in Puerto Rico.⁷ But this research used convenience sampling, and for this reason,

¹Puerto Rico Department of Health, San Juan, Puerto Rico.

²Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico.

the results were not representative of the whole LGBT community. However, this first survey generated important data on health, including tobacco use. Finally, in 2011, the Puerto Rico Tobacco Control Program included two questions of gender and sexual orientation in the Puerto Rico BRFSS (PRBRFSS). With these data, the main objective of the present research was to provide the first population-based epidemiological profile of tobacco use in the LGBT community in Puerto Rico. Our secondary objective was to identify the existence of statistically significant differences between LGBT smokers (LGBT-S) versus LGBT nonsmokers (LGBT-NS), to have a clearer picture of the risk factors that may encourage tobacco use in this community.

Methods

Through a cross-sectional study methodology, we conducted a secondary data analysis of the 2011 PRBRFSS database using the Statistical Package for the Social Sciences (SPSS) version 19. The BRFSS is a population-based telephone survey funded by the Centers for Disease Control and Prevention (CDC) in all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands. This annual survey interviews more than 350,000 noninstitutionalized adults of 18 years and over and is the largest telephone survey in the world. In Puerto Rico, this survey began in 1996 under the Puerto Rico Department of Health and includes information on sociodemographic, health conditions, tobacco use, and alcohol use, among others. During 2011 two major changes were implemented in the BRFSS. One of these changes was the inclusion of cell phones in the sampling, and the other change was the incorporation of a new weighting method (Raking). These changes were made with the purpose of increasing the coverage of the survey and to minimize the nonresponse selection bias.⁸ In 2011 the PRBRFSS completed a total of 6,738 interviews. The questionnaire used by the PRBRFSS was in Spanish and English and was administered in either language as needed. Nevertheless, 95% of interviews were conducted in Spanish. The response rates for the survey were calculated using standards set by the American Association of Public Opinion Research Response Rate Formula. The response rate for PRBRFSS in 2011 was 61.7%. The median survey combined response rate for all states and Washington, DC, in 2011 was 49.7%, and rates ranged from 33.77% to 64.14%.⁹

LGBT people were identified through two questions. The first question was related to gender and was formulated as follows: Which of the following best describes your gender? The categories for response were male, female, transgender,

transsexual, other, don't know/not sure, and refused. The refusal rate for this question was 0.3%. The second question was related to sexual orientation and was formulated as follows: Which of the following best describes your sexual orientation? The categories for response were heterosexual/straight, homosexual/gay, lesbian, bisexual, other, don't know/not sure, and refused. The refusal rate for this question was 0.8%. The construction of the LGBT variable was performed using the gender and sexual orientation questions (Table 1). We considered as part of the LGBT community the people who identified themselves as lesbian, gay, bisexual, or transgender. At the same time, the remaining individuals were considered as non-LGBT. In the 2011 PRBRFSS, 1.6% (44,851) of the population of 18 years and over reported being part of the LGBT community. It is important to mention that the LGBT variable does not include the transsexual community because no person interviewed in the survey identified themselves as transsexual.

The data were analyzed using univariate analyses that included frequency distributions for categorical variables and means and standard deviation for continuous variables. The purpose of this analysis was to obtain an epidemiological profile of the people who use tobacco in the LGBT community. Finally, we compared the smokers and nonsmokers of the LGBT community to identify differences. This comparison was performed through a bivariate analysis using chi-square tests.

Results

For 2011, according to the PRBRFSS, tobacco use prevalence (not including smokeless tobacco products) in the population of 18 years and over in Puerto Rico was 14.8%. In terms of the LGBT community, the data showed that 1.6% (44,851) of the population of 18 years and over reported being part of this community, and the prevalence of tobacco use reported by the LGBT community was 20.8%.

When the tobacco use prevalence was analyzed by sociodemographic variables in the LGBT community, the groups with higher prevalence were females (23.2%), bisexuals (23.9%), people aged 25–34 years (52.0%), people with some years in university or technical school (23.9%), people who reported being out of work for more than 1 year (45.5%), and people who reported an annual income of \$50,000 or more (12.5%) (Table 2).

In terms of LGBT-S, 48.9% reported smoking cigarettes every day, and 51.0% reported smoking the first cigarette of the day during the first half hour after waking up. Likewise, 73.9% of the LGBT-S reported buying cigarettes in gas

TABLE 1. CROSS-TABULATION OF THE VARIABLES GENDER AND SEXUAL ORIENTATION TO CONSTRUCT THE LGBT VARIABLE

	Male		Female		Transgender		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Straight	1,265,311	97.8	1,472,066	98.9	4,132	88.0	0	0
Gay	20,792	1.6	1600	0.1	0	0	0	0
Lesbian	0	0	7519	0.5	0	0	0	0
Bisexual	2958	0.2	6310	0.4	564	12.0	976	100
Other	4818	0.4	1488	0.1	0	0	0	
Total	1,293,879	100	1,488,983	100	4,696	100	976	100

TABLE 2. SOCIODEMOGRAPHIC CHARACTERISTICS OF THE LGBT-S AND LGBT-NS

Variables	LGBT-S		LGBT-NS		p value ^a
	n	%	n	%	
Gender	9282		35,361		
Male	4660	50.2	19,090	54.0	<0.001
Female	3587	38.6	11,842	33.5	
Transgender	359	3.9	4129	11.7	
Transsexual ^b	0	0	0	0	
Other	676	7.3	300	0.8	
Sexual orientation	9282		35,361		
Straight ^c	359	3.9	3564	10.1	<0.001
Gay	4660	50.2	17,732	50.1	
Lesbian	1681	18.1	5838	16.5	
Bisexual	2582	27.8	8227	23.3	
Age	9282		34,566		
18–24	1063	11.5	14,141	40.9	<0.001
25–34	3901	42.0	3599	10.4	
35–44	1597	17.2	5677	16.4	
45–54	1279	13.8	4945	14.3	
55–64	1442	15.5	3063	8.9	
65 or more	0	0	3141	9.1	
Education	9285		35,360		
Did not graduate high school	1432	15.4	6063	17.1	<0.001
Graduated of high school	1069	11.5	6000	17.0	
Attended college or technical school	4954	53.4	15,771	44.6	
Graduated from college or technical school	1827	19.7	7526	21.3	
Income	8722		30,242		
<\$15,000	3181	36.5	11,928	39.4	<0.001
\$15,000–\$24,999	3162	36.3	11,390	37.7	
\$25,000–\$34,999	836	9.6	2891	9.6	
\$35,000–\$49,999	453	5.2	1809	6.0	
≥\$50,000	1090	12.5	2224	7.4	
Employment status	9282		35,361		
Employed for wages	2596	28.0	12,618	35.7	<0.001
Self-employed	2141	23.1	2848	8.1	
Out of work for >1 year	1623	17.5	1943	5.5	
Out of work for <1 year	0	0	3345	9.5	
Homemaker	1073	11.6	2569	7.3	
Student	1063	11.5	6377	18.0	
Retired	175	1.9	3312	9.4	
Unable to work	611	6.6	2349	6.6	

^aPearson chi-square.

^bAny person interviewed was identified as part of this group.

^cAll who identified as straight were transgender (Table 1).

stations followed by supermarkets (11.6%), and pharmacies (8.8%). Nevertheless, 68.1% of LGBT-S reported an attempt to quit smoking for a day or more in the past 12 months.

Smoker Versus Nonsmokers in the LGBT Community

The analysis of the sociodemographic variables demonstrated that the mean age across LGBT-S and LGBT-NS groups was 36 years, but in the LGBT-S group the highest proportion of individuals was between 25 and 34 years of age (42.0%), while in the LGBT-NS group the highest proportion of individuals was between 18 and 24 years of age (40.9%; $p < 0.001$) (Table 2). In both LGBT groups, in terms of gender, a higher proportion of people were men (50.2% LGBT-S vs. 54.0% LGBT-NS; $p < 0.001$), and in terms of sexual orientation, a higher proportion of people were gay (50.2%

LGBT-S vs. 50.1% LGBT-NS; $p < 0.001$) (Table 2). Likewise, in both groups a higher proportion of people had some years of university or technical school (53.4% LGBT-S, 44.6% LGBT-NS; $p < 0.001$) (Table 2), and 51.1% of the LGBT-S reported being employed by wages or self-employed versus 43.8% of the LGBT-NS ($p < 0.001$; Table 2). In terms of annual income, 36.5% of the LGBT-S and 39.4% of the LGBT-NS reported an annual income less than \$15,000 ($p < 0.001$; Table 2).

In an analysis of the health variables, more LGBT-S (8.8%) than LGBT-NS (4.9%) reported not having any form of health insurance ($p < 0.001$). Likewise, 37.3% of the LGBT-S versus 16.2% of the LGBT-NS reported that at some moment in the last year they could not visit a doctor for financial reasons. In an analysis of health status, 35.1% of LGBT-S reported excellent general health and 41.4% of the LGBT-NS reported

good general health. In terms of no-smoking rules at home, 12.7% of the LGBT-S versus 1.0% of LGBT-NS did not have rules about not smoking inside the house ($p < 0.001$).

More than 20% in both groups reported a high blood cholesterol (20.1% LGBT-S, 27.1% LGBT-NS; $p < 0.001$) (Table 3), and more than half in both groups reported taking medication for high blood pressure (57.2% LGBT-S, 81.3% LGBT-NS; $p < 0.001$). In relation to angina and coronary heart disease, 3.9% of LGBT-S and 6.5% of LGBT-NS reported a diagnosis of any of these health conditions ($p < 0.001$; Table 3). More than 20% in both groups reported having asthma (20.4% LGBT-S, 21.0% LGBT-NS; $p = 0.192$), and more than 3% of both groups reported having some type of cancer (3.9% LGBT-S, 3.2% LGBT-NS; $p = 0.003$) (Table 3). Additionally, 15.5% of the LGBT-S and 14.5% of LGBT-NS reported having some type of arthritis ($p = 0.012$; Table 3). Likewise, 6.0% of

the LGBT-S and 3.9% of LGBT-NS reported having kidney disease (not including kidney stones, bladder infection, or incontinence) ($p < 0.001$; Table 3), and 1.6% of LGBT-S and 8.0% of LGBT-NS reported having diabetes ($p < 0.001$; Table 3). In terms of HIV, 74.6% of the LGBT-S and 58.4% of the LGBT-NS reported having an HIV test in their lifetime ($p < 0.001$), at the same time, a higher proportion of LGBT-S (19.9%) than LGBT-NS (10.7%) reported having been in any of the following risk situations for HIV: use of intravenous drugs in the past year, treated for a sexually transmitted or venereal disease in the past year, given or received money or drugs in exchange for sex in the past year, and had anal sex without a condom in the past year ($p < 0.001$).

When the data were analyzed in terms of body mass index, 63.4% of LGBT-S and 51.6% of LGBT-NS reported being overweight or obese ($p < 0.001$; Table 3). Likewise, more than 40% in both groups reported not participating in any type of physical activity (48.3% LGBT-S, 49.4% LGBT-NS; $p < 0.01$). In terms of mental health, 14.3% of the LGBT-S and 11.9% of LGBT-NS reported having a depressive disorder (including depression, major depression, dysthymia, or minor depression) ($p < 0.001$; Table 3). At the same time, only the LGBT-S (10.3%) reported having an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, post-traumatic stress disorder, or social anxiety disorder) ($p < 0.01$; Table 3). Finally, in terms of alcohol use, 74.2% of the LGBT-S and 86.1% of the LGBT-NS reported being binge drinkers, and 98.6% of the LGBT-S and 93.0% of the LGBT-NS reported being heavy drinkers.

TABLE 3. HEALTH CONDITIONS IN LGBT-S AND LGBT-NS

Variables	LGBT-S		LGBT-NS		p value ^a
	n	%	n	%	
High blood cholesterol	4912		28,610		
Yes	987	20.1	7748	27.1	<0.001
No	3925	79.9	20,862	72.9	
Angina and coronary heart disease	9282		35,361		
Yes	359	3.9	2308	6.5	<0.001
No	8923	96.1	33,053	93.5	
Asthma	9282		35,361		
Yes	1889	20.4	7415	21.0	0.192
No	7393	79.6	27,946	79.0	
Cancer	9282		35,361		
Yes	359	3.9	1144	3.2	0.003
No	8923	96.1	34,217	96.8	
Arthritis	9282		35,361		
Yes	1438	15.5	5110	14.5	0.012
No	7845	84.5	30,251	85.5	
Kidney disease ^b	9282		35,361		
Yes	560	6.0	1392	3.9	<0.001
No	8722	94.0	33,969	96.1	
Diabetes	9282		33,803		
Yes	151	1.6	2710	8.0	<0.001
No	9131	98.4	31,093	92.0	
Body mass index (BMI)	9282		34,999		
Underweight	359	3.9	2035	5.8	<0.001
Normal weight	3040	32.8	14,899	42.6	
Overweight	3023	32.6	7432	21.2	
Obese	2860	30.8	10,633	30.4	
Depressive disorder ^c	9282		35,361		
Yes	1327	14.3	4203	11.9	<0.001
No	7955	85.7	31,158	88.1	
Anxiety ^d	1461		6888		
Yes	151	10.3	0	0	<0.001
No	1310	89.7	6888	100	

^aPearson chi-square

^bNot including kidney stones, bladder infection, or incontinence.

^cIncluding depression, major depression, dysthymia, or minor depression.

^dIncluding acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, post-traumatic stress disorder, or social anxiety disorder.

Discussion

There is no doubt that the LGBT community in the United States continues to be disproportionately impacted by tobacco use.¹⁰ Although scientific literature shows that this community has some of the highest smoking prevalence rates,¹¹ and the NATS found a high prevalence of tobacco use for the period of 2009–2010 in this community, there is a lack of data related to tobacco use in this community. The tobacco use prevalence in the LGBT community has not been adequately examined because many of the national and state tobacco surveys do not have questions about gender and sexual orientation.¹² Currently only a dozen states gather information of sexual orientation on routine health surveys, and only a few states have published the information; some of these states are Arizona, California, Massachusetts, New Mexico, Oregon, and Washington.¹³ The data collected in these six states demonstrate significantly elevated smoking rates in the LGBT community.¹³ For this reason, with the inclusion of two questions of gender and sexual orientation in the PRBRFSS in 2011, Puerto Rico joined these states that were already gathering information from this community.

This is the first research related to tobacco use in the Puerto Rico LGBT community using a population-based sample. Likewise, this is one of the first population-based studies performed in the LGBT community in which 95% are Hispanic or Latino. The results of this research demonstrate higher tobacco use prevalence in the Puerto Rico LGBT community in comparison with the Puerto Rico general population (20.8% vs. 14.8%). At the same time, the prevalence determined in this research was lower than the prevalence

determined in the convenience sample research completed by the local tobacco control advocates and community volunteers in 2009 (39%).⁷

Our research also identified the groups with the highest prevalence of tobacco use in the Puerto Rico LGBT community. These are females (23.2%), bisexuals (23.9%), people aged 25–34 years (52.0%), people with some years in university or technical school (23.9%), people who reported being out of work for more than 1 year (45.5%), and people who reported an annual income of \$50,000 or more (12.5%). While in the PR general population the groups with the highest prevalence are male (20.8%), people aged 25–34 years (23.4%), people who had not completed high school (18.8%), people out of work for less than 1 year (34.7%), and people with an annual income less than \$15,000 (18%).

The high rates of cigarette smoking in the LGBT community place them at increased risk of tobacco-related diseases,¹⁴ including an increased risk of lung cancer and chronic obstructive pulmonary disease, among others conditions.¹⁵ At the same time, second- and third-hand smoke increase the risk of tobacco-related diseases in their families. These findings are of concern because in the current study, more LGBT-S than LGBT-NS reported not having rules about smoking inside the home.

The LGBT community is disproportionately uninsured.¹⁶ In our research, this is more evident among LGBT-S than among LGBT-NS. Likewise, more LGBT-S than LGBT-NS reported that at some time in the last year they could not visit the doctor for financial reasons. LGBT-S reported a higher prevalence of cancer, arthritis, kidney disease, overweight or obesity, depressive disorder, and anxiety disorder than LGBT-NS.

In terms of HIV, some researchers fear that cigarette smoking may increase the risk of HIV infections and accelerate the progression to AIDS.^{17,18} Considering this, as well as the need for further research to determine the direct relationship between tobacco use and HIV, the results of this research suggest that the relationship for increased risks of infection and progression may exist. More LGBT-S than LGBT-NS reported having been in some risk situation for HIV (19.9% LGBT-S vs. 10.7% LGBT-NS). This is compatible with the smokers of 18 years and over in the Puerto Rico general population that reported having an HIV test in their lifetime. A higher proportion of Puerto Rico general population smokers with an HIV test in their lifetime reported having been in some risk situation for HIV in comparison with nonsmokers (13.6% smokers vs. 5.5% nonsmokers).¹⁹

There is no doubt that during the 1990s and the 2000s the visibility of the LGBT community increased dramatically in U.S. society.²⁰ Although social conditions and public acceptance of this community have been slowly improving, it appears that they still face high levels of health disparities in multiple areas, including the tobacco use.¹³ The challenge to eliminate disparities requires concerted efforts by researchers, health professionals, policymakers, and others to address inequities in health as well as to amend the scientific research agenda.²¹ It is important that more states incorporate questions of gender and sexual orientation in health surveys to learn more about the health status of the LGBT community, especially disproportionate tobacco use. Likewise, it is important for researchers to establish a systematic process that allows them to share information to compare health disparity

data on sexual and gender minorities across socioeconomic and demographic groups and nationalities.²² Finally, it is necessary that more physicians and health professionals develop competencies in LGBT health to improve the health care services provided to the LGBT community and reduce health disparities.

The current research has several limitations. First, the BRFSS is a self-reported survey, and one of the limitations is that some respondents have the tendency to underreport some behaviors that may be considered socially unacceptable, unhealthy, or even illegal. Second, the data collection is limited to a single time point (cross-sectional design), and this limits the ability to determine causality. Third, the research findings can only apply to the LGBT community in Puerto Rico. Finally, as in most studies, data on LGBT individuals were combined when, in fact, each population warrants separate analysis.

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Address correspondence to:

*Alex Cabrera-Serrano, MS
Puerto Rico Department of Health
Tobacco Control and Oral Health Division
PO Box 70184
San Juan 00936
Puerto Rico*

E-mail: alecabrera@salud.gov.pr