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EDITED BY

Sanjay Shete,
University of Texas MD Anderson Cancer
Center, United States

REVIEWED BY

Monalisa Chandra,
University of Texas MD Anderson Cancer
Center, United States
Joel Fokom Domgue,
University of Texas MD Anderson Cancer
Center, United States

*CORRESPONDENCE

Francisco Cartujano-Barrera
✉ Francisco_Cartujano@URMC.Rochester.edu

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Prevalence and correlates of current cigarette smoking among transgender women in Argentina

Francisco Cartujano-Barrera^{1*}, Raul M. Mejia^{2,3},
Pablo D. Radusky², Nadir Cardozo^{2,4}, Mariana Duarte^{2,5},
Solange Fabian^{2,6}, Romina Caballero², Virginia Zalazar²,
Alixida Ramos-Pibernus⁷, Ash B. Alpert^{1,8}, Ana Paula Cupertino^{1,9},
Claudia Frola² and Ines Aristegui²

¹Department of Public Health Sciences, University of Rochester Medical Center, Rochester, NY, United States, ²Division of Implementation Research, Fundación Huésped, Buenos Aires, Argentina, ³Department of Ambulatory Care, Universidad de Buenos Aires, Buenos Aires, Argentina, ⁴Asociación de Travestis, Transexuales y Transgéneros de Argentina, Buenos Aires, Argentina, ⁵Casa Trans, Buenos Aires, Argentina, ⁶Hotel Gondolín, Buenos Aires, Argentina, ⁷School of Behavioral and Brain Sciences, Ponce Health Sciences University, Ponce, PR, United States, ⁸Division of Hematology, Department of Medicine, Yale School of Medicine, New Haven, CT, United States, ⁹Department of Surgery, University of Rochester Medical Center, Rochester, NY, United States

Objective: To assess the prevalence of current cigarette smoking among transgender women in Argentina, and to examine the unique associations of current cigarette smoking with demographic and psychosocial factors.

Methods: This study is a secondary data analysis of the TransCITAR – a prospective cohort study of transgender individuals living in Buenos Aires, Argentina – baseline data. The baseline survey collected information on sociodemographic characteristics, perceived health status, depressive symptoms, suicide attempts, current cigarette smoking, alcohol use disorder, and substance use. Participants were also asked about lifetime experiences of physical and sexual violence perpetrated by partners, clients and/or the police, and experiences of gender identity stigma in the past year from healthcare workers and the police. Lastly, participants were asked if they had ever been arrested. Fisher's exact test was used to compare proportions in categorical variables and student *t*-test was used for continuous variables. Significant associations with current cigarette smoking were tested in a logistic regression model adjusted for all significant associations.

Results: A total of 41.7% of participants ($n = 393$) reported current cigarette smoking. Compared to their non-smoking counterparts, participants who reported current cigarette smoking (1) had completed less education, (2) were more likely to be born in Argentina, (3) more likely to have migrated to Buenos Aires from other parts of the country, (4) more likely to report a history of sex work, (5) more likely to perceive their health as excellent, (6) more likely to screen positive for hazardous alcohol drinking, (7) more likely to report any substance and cocaine use in the past year, (8) more likely to experience gender identity stigma from the police in the past year, and (9) more likely to be arrested in their lifetime (all p 's < 0.05). After controlling for all significant associations, education level of less than high school (AOR = 1.79, 95% CI 1.02–2.12), hazardous drinking (AOR = 2.65, 95% CI 1.30–5.37), and any substance use in the last year (AOR = 2.14, 95% CI 1.16–3.94) were positively and independently associated with current cigarette smoking.

Conclusion: Among transgender women in Argentina, current cigarette smoking was more than double the rate for cisgender women. Current cigarette smoking

was associated with education, hazardous drinking, and any drug use. These results will inform future smoking cessation interventions among transgender women in Argentina.

KEYWORDS

smoking, tobacco, transgender individuals, transgender women, Argentina

1 Introduction

Low- and middle-income countries (LMICs), including Argentina – an upper middle-income country – have not benefited from the decline in smoking-related deaths that high-income countries have experienced since the 1980s (1, 2). In 2003, Argentina signed the Framework Convention for Tobacco Control (FCTC) (3), an international treaty that aims to reduce the demand and supply of tobacco (4). While this treaty has still not yet been ratified by the National Congress, other tobacco control policies implemented in Argentina (e.g., smoke-free environments, excise tax on cigarettes) have resulted in a decline of smoking prevalence by 50% between 2004 and 2012 (from 37 to 22.1%) (5–7). However, since 2012, the smoking prevalence in Argentina has remained unchanged (7, 8). Today, Argentina has one of the highest smoking rates in Latin America: 6 million adults (22%) currently smoke (18% of women and 26% of men) (7). Consequently, smoking is directly responsible for nearly 1 million years of healthy life lost each year in Argentina and is the cause of 13.2% of all deaths in people over the age of 35, a total of 44,851 preventable deaths annually (8). To decrease the current smoking rates in LMICs (e.g., Argentina) and their public health impact, it is imperative to develop and implement interventions that reach and engage individuals in smoking cessation treatment.

Transgender is an umbrella term for persons whose gender identity, gender expression, and/or behavior differs from that typically associated with the sex to which they were assigned at birth (9). Research on the prevalence of cigarette smoking among transgender individuals living in LMICs is limited, but existing evidence suggests that rates are higher than the general population (10, 11). For example, a community-based cross-sectional study with 734 transgender adults living in India reported that 64.4% of study participants currently used a form of tobacco (10). Another example is a community-based cross-sectional study with 206 transgender and non-binary youth (ages 16–25) living in Brazil that reported a 14.1% prevalence of cigarette smoking (11). The minority stress model (MSM) may explain the higher prevalence of cigarette smoking among transgender individuals. MSM proposes that, along with experiencing the everyday stressors shared by the general population, there are certain stressors unique to minority groups (e.g., external and internal gender minority stress) (12). Additional research is needed to assess the prevalence and correlates of cigarette smoking among transgender individuals living in different LMICs – especially research that considers the diverse cultural, legal (e.g., transgender rights), clinical (e.g., healthcare access), and economic settings of different LMICs (13). The purpose of the present study was thus two-fold: (1) to assess the prevalence of current cigarette smoking among transgender women in Argentina, and (2) to examine the unique associations of current cigarette smoking with demographic and psychosocial factors. These results

will inform future smoking cessation interventions among transgender women in Argentina.

2 Methods

2.1 Study design

This study is a secondary data analysis of the *TransCITAR* baseline data. *TransCITAR* is a prospective cohort study of transgender individuals living in the metropolitan area of Buenos Aires, Argentina. The details of *TransCITAR* have been described elsewhere (14). Study procedures were approved and monitored by Fundacion Huesped's Institutional Review Board (IRB00002014 # FH-41).

2.2 Participants

Transgender individuals were recruited by transgender peer navigators using community-based recruitment strategies (e.g., conducting study presentations, distributing flyers, etc.) in venues that serve transgender individuals (e.g., recreation spaces for transgender individuals, hotels that serve as home for transgender individuals, organizations providing testing and treatment of sexually transmitted diseases), in a research clinic that provides gender-affirming care, and word of mouth from participants. Recruitment started in September 2019 and ended in September 2022. Individuals were eligible if they self-reported a gender identity different from that commonly associated with their sex assigned at birth and were older than 18 years old. Written informed consent was obtained from participants prior to study procedures. Participants did not receive compensation for their participation in the study.

2.3 Measures

The *TransCITAR* baseline survey was developed with members of the transgender community and collected information on sociodemographic characteristics [e.g., gender identity, age, educational level, place of birth, social and income assistance, housing situation, and engagement in sex work]. The baseline survey additionally assessed participants' perceived health status (i.e., poor, fair, good, very good, or excellent) (15), depressive symptoms (measured by the Center for Epidemiologic Studies Depression Scale) (16), and suicide attempts. Participants were asked if they currently smoke or have smoked cigarettes (Do you/did you smoke cigarettes? Yes, currently; yes, in the past; never). Alcohol use disorder and substance use were assessed with the Alcohol Use Disorder

Identification Test (AUDIT) and the Drug Abuse Screening Test (DAST-10), respectively (17–19). Assessment of substance use included use of marijuana, cocaine, cocaine paste (regionally known as *paco*, a crude extract of the coca leaf which contains 40 to 91% cocaine freebase along with companion coca alkaloids and varying quantities of benzoic acid, methanol, and kerosene), ecstasy, heroin, lysergic acid diethylamide (LSD), crack, popper, and amphetamines. Participants were also asked about lifetime experiences of physical and sexual violence perpetrated by partners, clients and/or the police. They were also asked about lifetime experiences of gender identity stigma perpetrated by healthcare workers and the police. Lastly, participants were asked if they had ever been arrested. Study surveys were administered by transgender peer navigators.

2.4 Analyses

Only participants who self-identified as transgender women were included in the analysis. This determination was due to their high representation in the *TransCITAR* study (84% of the *TransCITAR* participants). Moreover, previous studies conducted in Argentina have identified that transgender men and non-binary individuals have different demographic and psychosocial factors compared to transgender women (20). For example, compared to transgender women, transgender men have higher educational levels and lower levels of unstable housing (20).

Frequencies and percentages were calculated for categorical variables, and means and standard deviations for continuous variables. Fisher's exact test was used to compare proportions in categorical variables and crude odds ratios (OR) were reported, and student t-test was used for continuous variables. Significant associations with current cigarette smoking (at the $p < 0.05$ level) were tested in an unadjusted logistic regression model, followed by a logistic regression model adjusted for all significant associations. Statistical analyses were performed using the Statistical Package for the Social Sciences v29.0 (SPSS; IBM, 2022).

2.5 Sample size

Estimating a current cigarette smoking rate of 40% in a sample of 356 participants insures a margin of error of 5%. Moreover, with the general guideline of 10 events per variable, 356 participants is an adequate sample size for a logistic regression model accommodating 10 variables.

3 Results

3.1 Sample

A total of 393 transgender women were included in the study. Participants' mean age was 32.0 years old (SD 8.96). Half of the participants (50.6%) had not completed high school, 30.8% were born in a country other than Argentina, and 68.9% migrated to Buenos Aires from other parts of the country. Almost half of participants reported receiving social and income assistance (46.7%) and unstable housing (42.0%). More than three-quarter of participants (78.4%)

reported participating in sex work at some point in their lives. Most participants (76.3%) perceived their health as good, very good, or excellent. A third of participants (32.8%) met criteria for depression, and one quarter (25.4%) reported a past suicide attempt. A total of 19.9% of participants screened positive for hazardous alcohol drinking. In the prior year, 63.1% of participants reported using at least one substance, 46.1% reported marijuana use, 29.8% reported cocaine use, and 5.1% reported ecstasy use. Half of participants (52.7%) reported physical violence perpetrated by partners, clients and/or the police, and 29.6% reported sexual violence from those same groups. Moreover, 23.7 and 29.8% of participants reported experiencing gender identity stigma from the police and healthcare workers, respectively. Less than half (41.2%) of participants reported a prior arrest (Table 1).

3.2 Prevalence and correlates of current cigarette smoking

A total of 41.7% of participants reported current cigarette smoking. The median age of cigarette smoking initiation was 16 years (IQR: 15–18). Compared to their non-smoking counterparts, participants who reported current cigarette smoking (1) had completed less education, (2) were more likely to be born in Argentina, (3) more likely to have migrated to Buenos Aires from other parts of the country, (4) more likely to report a history of sex work, (5) more likely to perceive their health as excellent, (6) more likely to screen positive for hazardous alcohol drinking, (7) more likely to report any substance and cocaine use in the past year, (8) more likely to experience gender identity stigma from the police in the past year, and (9) more likely to being arrested in their lifetimes (Table 1; all p 's < 0.05).

Results of the unadjusted logistic regression model are presented in Table 2. After controlling for all significant associations, education level of less than high school (AOR = 1.79, 95% CI 1.02–2.12), hazardous drinking (AOR = 2.65, 95% CI 1.30–5.37), and any substance use in the last year (AOR = 2.14, 95% CI 1.16–3.94) were positively and independently associated with current cigarette smoking.

4 Discussion

To the best of our knowledge, this is the first study to assess the prevalence of current cigarette smoking among transgender women in Argentina, and to examine the unique associations of current cigarette smoking with demographic and psychosocial factors. In this study, 41.7% of transgender women reported current cigarette smoking, more than double the rate for cisgender women (i.e., individuals who were assigned female at birth and identify as a woman) (7). Univariate analyses demonstrated that current cigarette smoking was significantly associated with education, external and internal migration, sex work, alcohol and drug use, experiencing gender identity stigma from the police, and being arrested. However, in the final multivariable model, only education, hazardous drinking, and any drug use remained associated with higher odds of current cigarette smoking.

TABLE 1 Characteristics of transgender women and current cigarette smoking ($n=393$).

Characteristics	Total n (%)	No current cigarette smoking n (%)	Current cigarette smoking n (%)	<i>p</i>
	393	229 (58.3)	164 (41.7)	
Age, M (SD)	32.0 (8.96)	31.9 (8.94)	32.1 (9.04)	0.827
Educational level				0.001
Less than high school	199 (50.6)	99 (43.2)	100 (61.0)	
High school completed or more	194 (49.4)	130 (56.8)	64 (39.0)	
Born in different country, yes	121 (30.8)	83 (36.2)	38 (23.2)	0.006
Internal migration, yes	190 (69.9)	94 (64.4)	96 (76.2)	0.034
Receive social and income assistance, yes	183 (46.7)	97 (42.5)	86 (52.4)	0.053
Unstable housing, yes	165 (42.0)	97 (42.4)	68 (41.5)	0.859
Lifetime sex work, yes	308 (78.4)	169 (73.8)	139 (84.8)	0.009
Perceived health status				0.008
Poor	14 (3.6)	9 (3.9)	5 (3.0)	
Fair	79 (20.1)	47 (20.5)	32 (19.5)	
Good	140 (35.6)	88 (38.4)	52 (31.7)	
Very good	100 (25.4)	63 (27.5)	37 (22.6)	
Excellent	60 (15.3)	22 (9.6)	38 (23.2)	
HIV status, positive	170 (43.3)	92 (40.2)	78 (47.6)	0.054
Depression, positive ^a	129 (32.8)	75 (32.8)	54 (32.9)	0.971
Past suicide attempts, yes	100 (25.4)	59 (25.8)	40 (24.4)	0.757
Hazardous alcohol drinking, yes ^b	78 (19.9)	30 (13.2)	48 (29.3)	<0.001
Any substance use, yes, past year	248 (63.1)	123 (53.7)	125 (76.2)	<0.001
Marijuana use, yes, past year	181 (46.1)	73 (40.8)	108 (50.5)	0.055
Cocaine use, yes, past year	117 (29.8)	29 (16.2)	88 (41.1)	<0.001
Ectasis use, yes, past year	20 (5.1)	5 (2.8)	15 (7.0)	0.058
Physical violence, lifetime, yes	155 (52.7)	82 (50.0)	63 (56.2)	0.294
Sexual violence, lifetime, yes	85 (29.6)	45 (28.5)	40 (31.0)	0.641
GIS from the police, past year, yes	93 (23.7)	42 (18.3)	51 (31.1)	0.003
GIS from healthcare workers, past year, yes	117 (29.8)	117 (29.7)	117 (29.7)	0.626
Arrested by the police, lifetime, yes	162 (41.2)	83 (36.2)	79 (48.2)	0.018

Bold indicates statistical significance at $p < 0.05$.

^aCES-D score ≥ 16 .

^bAUDIT score ≥ 8 . GIS: gender identity stigma.

In 2021, Wolford-Clevenger et al. conducted a systematic review of correlates of tobacco and nicotine use among transgender and gender diverse people guided by the MSM (21). Findings from our study support prior research demonstrating that police discrimination (22), indicators of poverty (e.g., less completed education levels) (23–25), and indicators of stress (e.g., alcohol and drug use) (23–25), are associated with an increased likelihood of cigarette use. However, our findings challenge prior research by indicating that engagement in sex work was not associated with cigarette use (23). Importantly, our findings shed light on new identity-related factors of the MSM (e.g., external and internal migration) that are correlated to current cigarette smoking. Specifically, our study findings show that external migration (i.e., living in a country different from the country of birth) was associated with decreased likelihood of cigarette use. Among

transgender individuals, external migration due to gender identity-based stigma and oppression experienced in their home country has been reported (26, 27). One possible explanation that external migration is associated with a decreased likelihood of cigarette use is that, in this study, the majority of participants who emigrated to Argentina were born in countries with lower prevalence of cigarette use compared to Argentina (e.g., Paraguay) (28). Moreover, external migration has been reported as a protective factor against smoking in other countries (e.g., the United States of America) in the general population (29). Interestingly, internal migration (i.e., living in a city different from the city of birth) was associated with increased likelihood of cigarette use. One possible explanation for this phenomenon is that, in this study, the majority of participants who migrated to Buenos Aires came from the northwest region of

TABLE 2 Logistic regression models of current cigarette smoking ($n = 393$).

	Model 1 Unadjusted (OR, 95% CI)	Model 2 Adjusted (AOR, 95% CI)
Education level: Less than high school	1.347 (1.135–1.598)	1.788 (1.023–2.124)
Perceived health status: bad/regular	1.111 (0.692–1.785)	0.848 (0.451–1.597)
Born in different country, yes	1.475 (1.101–1.977)	---
Internal migration, yes	1.282 (1.030–1.595)	1.128 (0.592–2.146)
Lifetime sex work, yes	1.286 (1.085–1.526)	1.076 (0.484–2.391)
Hazardous alcohol drinking, yes ^a	1.639 (1.223–2.198)	2.646 (1.303–5.373)
Any substance use, past year, yes	2.767 (1.781–4.300)	2.138 (1.164–3.935)
Cocaine use, past year, yes	1.733 (1.358–2.212)	1.355 (0.790–2.323)
GIS from the police, past year, yes	1.380 (1.085–1.756)	1.431 (0.641–3.193)
Arrested by the police, lifetime, yes	1.234 (1.031–1.476)	1.047 (0.503–2.183)

Bold indicates statistical significance at $p < 0.05$.

Argentina (e.g., Jujuy) – a region that produces tobacco (30). More research is needed to understand the mechanisms underpinning these correlates.

While assessing the correlates of current cigarette smoking among transgender women in Argentina, it is important to note that Argentina has been praised for having one of the world's most progressive transgender rights laws (31, 32). In 2012, Argentina passed the *Ley de Identidad de Género* (Spanish for “Gender Identity Law”), which allows transgender individuals to be treated according to their gender identity and have their personal documents registered with the appropriate name and gender (31). Under this comprehensive law, modifying personal data is free and does not require a lawyer (31). Moreover, the *Ley de Identidad de Género* mandates gender affirming treatments and procedures to be included in the *Programa Médico Obligatorio* (Spanish for “Compulsory Medical Program”), which guarantees medical coverage throughout the public and private health systems (31). Despite the existence of this law, 29% of participants – regardless of smoking status – reported experiencing gender identity stigma from healthcare workers in the past. Recently, transgender activists passed the *Cupo Laboral Travesti Trans* (Spanish for “Transgender Job Quota Law”) – a law reserving 1% of Argentina's public sector jobs for transgender individuals (33). The *Cupo Laboral Travesti Trans* aims to reduce the high levels of social vulnerability (e.g., engagement in sex work and housing instability) faced by transgender individuals in Argentina (33). These laws, if correctly implemented, have the potential to influence cigarette smoking indirectly by addressing the social determinants of health among transgender individuals. The *TransCITAR* study has the potential to evaluate the longitudinal impact of these comprehensive laws on the social determinants of health and, consequently, the health and well-being of transgender individuals.

4.1 Strengths and limitations

The study has several methodological limitations. First, this study purposely focused on transgender women given their high representation in the *TransCITAR* study (84% of the *TransCITAR* participants). Future studies with appropriate representation of transgender men and non-binary individuals should assess the prevalence and correlates of current cigarette smoking among these

communities. Second, as there are no official registries of transgender women in Argentina, the recruitment strategy was convenience sampling and thus findings may not be representative of transgender women in Argentina. Third, the study was solely conducted in Buenos Aires, limiting participation by transgender individuals from other parts of Argentina. Fourth, the study did not assess the number of cigarettes smoked per day nor type of cigarettes (e.g., menthol or non-menthol cigarettes), limiting the ability to examine whether different levels of cigarette smoking were related to different demographic and psychosocial factors. Fifth, data are self-reported and there is a possibility that participants felt compelled to offer socially desirable responses. Lastly, as a cross-sectional investigation of the *TransCITAR* baseline data, it was not possible to determine the causal nature of any of the observed associations.

Despite the methodological limitations, this study has several strengths. First, this study is among a small but growing number of reports on the prevalence and correlates of current cigarette smoking among transgender individuals in LMICs. This information is urgently needed to develop and implement interventions to decrease the current smoking rates in LMICs. Second, this study builds upon an established history of research with the transgender community (34–39). Third, this work is grounded in principles of community-based participatory research (CBPR). CBPR is a partnership approach to research that involves community members, organizational representatives, and researchers across all phases of research (40). Study results were reviewed and discussed with members of the transgender community. Lastly, this study benefited from an adequate sample size to assess the prevalence of current cigarette smoking among transgender women in Argentina, and to examine the unique associations of current cigarette smoking with demographic and psychosocial factors.

5 Conclusion

Among transgender women in Argentina, current cigarette smoking was more than double the rate for cisgender women. Current cigarette smoking was associated with education, hazardous drinking, and any drug use. These results will inform future smoking cessation interventions among transgender women in Argentina.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

The studies involving humans were approved by the Fundación Huésped's Institutional Review Board (IRB00002014 # FH-41). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

FC-B: Conceptualization, Writing – original draft. RM: Conceptualization, Writing – original draft. PR: Project administration, Validation, Writing – review & editing. NC: Project administration, Writing – review & editing. MD: Project administration, Writing – review & editing. SF: Project administration, Writing – review & editing. RC: Formal analysis, Writing – review & editing. VZ: Project administration, Writing – review & editing. AR-P: Writing – review & editing. AA: Writing – review & editing. AC: Writing – review & editing. CF: Writing – review & editing. IA: Conceptualization, Formal analysis, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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