

Association of sexual orientation with current alcohol drinking and cigarette smoking in Colombian adults from the general population

Asociación de la orientación sexual con el consumo actual de alcohol y de cigarrillo en adultos colombianos de la población general

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ABSTRACT

Introduction: The available data present an inconsistent association between sexual orientation and alcohol or cigarette consumption in high-income countries. However, such studies are scarce in low- and middle-income countries. **Objective:** The study aimed to estimate the association between sexual orientation and current alcohol drinking and cigarette smoking among Colombian adults. **Methodology:** A secondary analysis of the National Survey on the Consumption of Psychoactive Substances was completed. Lay interviewers asked about sexual orientation, current alcohol drinking, and current cigarette smoking. Participants also completed the Patient Health Questionnaire-2 (PHQ-2) to assess depression risk. **Results:** 46,197 adults between 18 and 65 years ($M=39.82$, $SD=13.83$) participated; 59% were female. Lesbian/gay or bisexual (LGB) sexual orientation was related to current drinking alcohol ($OR=1.63$, 95%CI 1.37-1.94) and current cigarette smoking ($OR=2.19$, 95%CI 1.78-2.69). **Conclusion:** LGB sexual orientations were significantly related to current alcohol drinking and cigarette smoking. It is crucial to consider sexual orientation in alcohol and cigarette use prevention in Colombian adults.

KEYWORDS Sexual orientation Alcohol drinking Cigarette smoking Colombia Cross-sectional studies

RESUMEN

Introducción: Los datos disponibles muestran una asociación inconsistente entre la orientación sexual y el consumo de alcohol o de cigarrillo en países de altos ingresos. Sin embargo, este tipo de estudios es escaso en países de ingresos bajos y medios. **Objetivo:** Estimar la asociación entre la orientación sexual, el consumo actual de alcohol y el consumo de cigarrillo en adultos colombianos. **Metodología:** Se realizó un análisis secundario de la Encuesta Nacional sobre el Consumo de Sustancias Psicoactivas. Los entrevistadores legos preguntaron sobre la orientación sexual y el consumo de alcohol y tabaco en el último mes. Además, los participantes completaron el Cuestionario de Salud del Paciente (PHQ-2) para evaluar el riesgo de depresión. **Resultados:** Participaron 46.197 adultos de 18 a 65 años ($M = 39,82$, $DE = 13,83$); el 59 % eran mujeres. La orientación sexual lesbiana/gay o bisexual (LGB) se relacionó con el consumo actual de alcohol ($OR=1,63$; IC 95 % 1,37-1,94) y con el consumo actual de cigarrillos ($OR=2,19$; IC 95 % 1,78-2,69). **Conclusión:** Las orientaciones sexuales LGB se relacionaron significativamente con el consumo actual de alcohol y de cigarrillos. Es fundamental considerar la orientación sexual en la prevención del consumo de alcohol y cigarrillos en adultos colombianos.

PALABRAS CLAVE Orientación sexual consumo de alcohol consumo de cigarrillos Colombia estudios transversales

INTRODUCTION

The prevalence of alcohol consumption is high among lesbian, gay, or bisexual (LGB) people (1). It has been documented that those LGB sexual orientations are associated with drinking alcohol. King et al (2). observed in a meta-analysis that alcohol dependence and other substances over 12 months were also 1.5-fold higher among LGB people than their heterosexual counterparts. However, Bloomfield et al (3)., in a case-control study involving 248 gays and lesbians and 3,720 heterosexuals from several countries, found that gay and lesbian men with a partner or recent partner were at no greater risk of heavy drinking than heterosexual controls. Similarly, Tran et al (4)., in cross-sectional research with the participation of 462 LGB and 16,856 heterosexuals older than 50 years, concluded that the last year's alcohol use, abuse, or dependence was independent of sexual orientation, after controlling for psychological distress.

Similarly, cigarette smoking is often overrepresented among the LGB population in high-income countries (5,6). Li et al (5). found a tobacco use prevalence of 38% among bisexual women, 32% lesbians, 31% gay men, 30% bisexual men, 21% heterosexual men, and 17% heterosexual women. Previously, Lee et al (6)., in another meta-analysis, concluded the existence of a high prevalence of smoking among the LGB population, with odds ratios between 1.5 and 2.5 when compared to heterosexual counterparts. Nevertheless, Ridner et al (7). and Osibogun et al (8). reported that the prevalence of current cigarette smoking was independent of sexual orientation.

The available data show an inconsistent association between sexual orientation and alcohol or cigarette consumption, which may be related to other social and cultural factors (9). Moreover, these studies are scarce in low- and middle-income countries, such as Colombia and Latin America, possibly due to limited research about stigma/discrimination among LGB people (10). The higher prevalence of alcohol drinking and cigarette smoking among LGB people can be explained by minority stress theory (11). Minority stress increases due to the lack of family support and the ongoing struggle of deciding whom to share one's sexual orientation openly (12). LGB people are more vulnerable to new stressors and are more likely to experience depressive symptoms, stress, and dysfunctional coping, such as substance use (13-15).

It is essential to monitor the impact of prevention policies and programs across different communities and disaggregate the data by gender identity and sexual orientation. To this end, it is necessary to conduct population-based epidemiological studies that demonstrate the need for programs grounded in equality and non-discrimination to enable socially excluded groups to enjoy all human rights (16). In the present study, depressive symptoms are controlled, given their high frequency in LGB people who have experienced situations of discrimination related to sexual orientation (17), and these symptoms are often associated with alcohol and cigarette use (18).

The study aimed to estimate the association between sexual orientation and current alcohol drinking and current cigarette smoking in Colombian adults.

METHODOLOGY

A secondary analysis of the National Survey on the Consumption of Psychoactive Substances (ENCSPA) was completed. The general population was selected through a multistage probability sampling of Colombian households. People aged 18 to 65 were included in the study, regardless of gender, sexual orientation, education, marital status, income, or ethnicity.

The survey was conducted in 2019. The Colombian Drug Observatory (COC), attached to the Ministry of Justice, provided the database in response to an email request. This study did not require evaluation by a research ethics board because public information was analyzed without participants' data, in accordance with Colombian norms (19).

Lay interviewers asked about demographic information, gender, sexual orientation, and alcohol and cigarette use. Additionally, participants completed the Patient Health Questionnaire, PHQ-2 (20).

Alcohol and cigarette use in the last month were inquired: Have you smoked cigarettes/tobacco in the last 30 days? Have you consumed alcoholic beverages in the last 30 days? In addition, the number of days of use was asked, between 1 and 30. Current use was defined as consumption over 30 days, including everyday use in the last month.

The PHQ-2 is a two-item instrument derived from the PHQ-9 that explores the central and essential symptoms of a major depressive episode during the last two weeks: depressed mood and decreased interest in pleasurable activities or anhedonia. The PHQ-2 offers dichotomous responses: Yes or No. The affirmative answer to one of the items is considered a depression risk (20). The PHQ-2 previously showed high internal consistency, sensitivity, and specificity in Colombian adults (21). In the present study, the PHQ-2 showed a Cronbach's alpha of 0.81.

Sexual orientation was evaluated with a single question: Which of these alternatives best defines your sexual orientation? The question offered four options: Heterosexual, gay or lesbian, bisexual, and others. This variable was dichotomized into heterosexual and LGB people.

A descriptive analysis was accomplished; frequencies and percentages were observed. Incomplete questionnaires were excluded from the analysis. Sexual orientation was the independent variable, and drinking alcohol and cigarette smoking were the dependent variables. Demographic variables and depression risk were taken as confounding variables. Confounding variables must be simultaneously significantly associated with sexual orientation and alcohol or cigarette consumption. Crude odds ratios (ORs) were calculated with 95% confidence intervals (CIs). The OR values with a lower limit of the 95% CI equal to or greater than 1.00 were considered significant.

The OR was adjusted using binomial logistic regression, following Greenland's recommendations. The recommendations for adjustment included considering only confounding variables that induce variation in the OR of more than 10% (22). The analysis was completed using IBM SPSS Statistics, version 27 (23).

RESULTS

The study had the participation of 46,197 adults between 18 and 65 years (M=39.82, SD=13.83); 59% were female; 43% had a secondary education; 51% were single or widowed; 18% belonged to an ethnic minority (Afro-Colombian and other); 64%, low income; 1%, LGB sexual orientation; 14%, depression risk; 10%, current cigarette smoking; and 31%, current alcohol use. The variable distribution was different between the LGB participants and heterosexual participants. A single grouping category was preferred small sample size of the LGB people. See more details in Table 1.

The crude association of LGB sexual orientation with current alcohol use (OR=2.29, 95%CI 1.94-2.71) and current cigarette smoking (OR=2.63, 95%CI 2.15-3.21) were statistically significant. The associations remained significant 95%CIs within significant ranges after adjustment for confounding variables. LGB sexual orientation was associated with current alcohol use (OR=1.63, 95%CI 1.37-1.94) after adjusting for depression risk and demographic variables excluding ethnicity. Similarly, LGB sexual orientation was associated with current cigarette smoking (OR=2.19, 95%CI 1.78-2.69) after adjusting for depression risk and demographic variables excluding age.

TABLE 1. PARTICIPANT CHARACTERISTICS, DEPRESSION RISK, AND CURRENT ALCOHOL DRINKING AND CIGARETTE SMOKING AMONG LGB AND HETEROSEXUAL ADULTS (N=46,197).							
		Sexual orientation (%)					
Variable	LGB [n=562]			Heterosexual [n=45,635]			p
Age, year	18-29	30-45	46-65	13,219 (28.97)	15,736 (34.48)	16,680 (36.55)	0.001
Gender	Female	Male		26,842 (58.82)	18,793 (41.18)		0.001
Education	Primary	Secondary	University	7,019 (15.38)	19,663 (43.08)	16,819 (36.86)	0.001
No answer			40 (7.11)		2,134 (4.68)		
Marital status	Single or widowed	Married or free union		22,985 (50.37)	22,650 (49.63)		0.001
Ethnic	General	Minority		37,289 (81.71)	8,346 (18.29)		0.002
Income	Low	Middle	High	28,989 (63.52)	14,725 (32.27)	1,664 (3.65)	0.001
No answer			3 (0.53)		257 (0.56)		
Depression risk	Yes	No		6,300 (13.81)	39,335 (86.19)		0.035
Current alcohol drinking	Yes	No		13,850 (30.35)	31,785 (69.65)		0.001
Current cigarette smoking	Yes	No		4,603 (10.09)	41,032 (89.91)		0.001

DISCUSSION

The present study's findings show a statistically significant association between LGB sexual orientations and cigarette and alcohol consumption in the general Colombian population after adjusting for sociodemographic covariates and depressive symptoms.

The current findings are consistent with studies in high-income countries that show that people with LGB sexual orientations have an increased risk of alcohol use and cigarette smoking. Similarly, King et al (2). found that last year, alcohol dependence and other substances were also 1.5 times higher among LGBs than among heterosexual people. Besides, Ridner et al (7). documented that sexual orientation was unrelated to cigarette smoking. However, Bloomfield et al (3). found that gays and lesbians have a similar risk of heavy drinking or common drinking as heterosexual participants. Tran et al (4). reported that last year, alcohol use, abuse, or dependence was unrelated to sexual orientation among people over 50 years.

Li et al (5). reported that tobacco use was higher for bisexual, lesbian, gay, and bisexual men than for heterosexual men and women. Lee et al (6). found that smoking rates were between 1.5 and 2.5 times higher among LGB and heterosexual people. Nevertheless, Osibogun et al (8). documented the equivalent prevalence of current cigarette smoking among heterosexual and LBG people.

Differences in relationships among variables are common across studies and are influenced by the variety of demographic backgrounds, research designs, measurement tools, and statistical methods used to assess causality (24). Additionally, it is crucial to recognize that alcohol and cigarette use are complex issues shaped by numerous personal, family, social, cultural, and structural factors that are not addressed in the current analysis (9).

Alcohol and tobacco use are complex public health problems that overlap biological and sociocultural factors (9). Alcohol drinking and cigarette smoking are essential factors contributing to morbidity and mortality worldwide, including in low- and middle-income countries such as Latin America (25,26). Alcohol and nicotine are Colombia's main gateways to illegal substance use (27). Additionally, in LGB people, drinking alcohol is associated with sexual behaviors that increase the risk of sexually transmitted infections (28).

The prevention and reduction of alcohol and cigarette smoking must consider the particularities of each population. Healthcare professionals working in addictions play a crucial role in the prevention and evaluation of people at high risk for alcohol, tobacco, and other substance use. Physicians, nurses, and other healthcare professionals can help increase public health knowledge about substance use through education, leadership, care innovations, and epidemiological data (29). Sexual orientation is a variable that has been repeatedly undervalued in prevention programs for the consumption of legal and illegal substances (16). Sexual identity is a social determinant that influences substance use and mental health, and it should always be considered an important variable, measured accurately and reliably (30). The public health impact will be huge if preventive and rehabilitation programs are designed to help LGB people cope with stressors related to sexual identity (31).

Seventy percent of the Colombian LGB population reports experiencing some form of discrimination (32). Then, it is necessary to continue actions to reduce stigma and discrimination related to sexual identities or orientations in all areas and contexts of daily social life; to date, most interventions have been carried out in the school context (33).

The present study has the novelty of showing the association of sexual orientation with the consumption of alcohol and cigarettes in a Colombian representative sample. Besides, depressive symptoms were controlled because they are a variable that can generally confuse the association of LGB orientations with alcohol drinking and cigarette smoking (13-15,34).

However, it was impossible to analyze each sexual orientation independently, as sexual orientation is not a homogeneous category (35). There are differences in alcohol and tobacco use among LGB people (2,5,6). Furthermore, lay interviewers' evaluation of sexual orientation has a high possibility of bias due to social desirability (30). Additionally, the estimates were not adjusted for the sampling method because insufficient information was available about the process (36). Future research should consider broader populations to enable stratified analyses by sexual orientation. Likewise, it is crucial to use a more valid and reliable method of assessing sexual orientation.

In conclusion, LGB people have a higher risk of current smoking and alcohol use than their heterosexual counterparts. It is necessary to consider sexual orientation to prevent and reduce alcohol and cigarette consumption in Colombian adults.

Editorial note

The opinions expressed in this article, as well as the methodological approach and results presented, are the sole responsibility of the authors. This work was reviewed and approved by external reviewers as part of the editorial process, but does not necessarily reflect the official position of the journal, its editorial committee, or its editor-in-chief.

Author contributions

All authors participated in the research's conception and design and accepted the final version for publication.

Data availability

The data are available upon request to the corresponding author: Adalberto Campo Arias. Email: acampo@unimagdalena.edu.co

Reviewer Comments

The external reviewers' reports and their official verdicts are available at the following link: [Dictamen 547](#)

References

1. Liu Y, Qian HZ, Ruan Y, Yin L, Ma J, Dahiya K, et al. Alcohol use among Chinese men who have sex with men: An epidemiological survey and meta-analysis. *BioMed Res Int*. 2014;2014:414381. <https://doi.org/10.1155/2014/414381>
2. King M, Semlyen J, Tai SS, Killaspy H, Osborn D, Popelyuk D, et al. A systematic review of mental disorder, suicide, and deliberate self-harm in lesbian, gay and bisexual people. *BMC Psychiatry*. 2008;8:70. <https://doi.org/10.1186/1471-244X-8-70>
3. Bloomfield K, Wicki M, Wilsnack S, Hughes T, Gmel G. International differences in alcohol use according to sexual orientation. *Subst Abuse*. 2011;32(4):210-219. <https://doi.org/10.1080/08897077.2011.598404>
4. Tran CK, Casarez RL, Nash AJ, Wilkerson JM, Cron S. Associations of psychological distress and alcohol use patterns among older adults of sexual minority status and heterosexual peers. *J Addiction Nurs*. 2023;34(4):E153-62. <https://doi.org/10.1097/JAN.0000000000000556>
5. Li J, Berg CJ, Weber AA, Vu M, Nguyen J, Haardörfer R, et al. Tobacco use at the intersection of sex and sexual identity in the US, 2007-2020: A meta-analysis. *Am J Prev Med*. 2021;60(3):415-424. <https://doi.org/10.1016/j.amepre.2020.09.006>
6. Lee JG, Griffin GK, Melvin CL. Tobacco use among sexual minorities in the USA, 1987 to May 2007: A systematic review. *Tob Control*. 2009;18(4):275-282. <https://doi.org/10.1136/tc.2008.028241>
7. Ridner SL, Ma JZ, Walker KL, Vu THT, Groom A, Landry RL, et al. Cigarette smoking, ENDS use and dual use among a national sample of lesbians, gays and bisexuals. *Tob Prev Cessation*. 2019;5:51. <https://doi.org/10.18332/tpc/114229>
8. Osibogun O, Erinoso O, Gautam P, Bursac Z, Osibogun A. Marijuana use modifies the association between heavy alcohol consumption and tobacco use patterns among US adults: Findings from Behavioral Risk Factor Surveillance System, 2020. *Addict Behav*. 2022;135:107435. <https://doi.org/10.1016/j.addbeh.2022.107435>
9. Bobo JK, Husten C. Sociocultural influences on smoking and drinking. *Alcohol Res Health*. 2000;24(4):225-232. [URL](https://doi.org/10.1016/j.amepre.2020.09.006)
10. Palacio E. (Humiliated bodies. An analysis between Colombian heteronormativity and the desire for the self-fulfillment of LGBTI people). *Saga*. 2017;18(1):16-27. [URL](https://doi.org/10.1136/tobaccocontrol-2011-050181)
11. Meyer IH. Minority stress and mental health in gay men. *J Health Soc Behav*. 1995;36(1):38-56. <https://doi.org/10.2307/2137286>
12. Salerno JP, Pease MV, Gattamorta KA, Fryer CS, Fish JN. Impact of racist microaggressions and LGBTQ-related minority stressors: Effects on psychological distress among LGBTQ+ young people of color. *Prev Chron Dis*. 2023;20:E63. <https://doi.org/10.5888/pcd20.220371>
13. Blossnich J, Lee JG, Horn K. A systematic review of the aetiology of tobacco disparities for sexual minorities. *Tob Control*. 2013;22(2):66-73. <https://doi.org/10.1136/tobaccocontrol-2011-050181>
14. Gilbert PA, Zemore SE. Discrimination and drinking: A systematic review of the evidence. *Soc Sci Med*. 2016;161:178-194. <https://doi.org/10.1016/j.socscimed.2016.06.009>
15. Wilchek-Aviad Y, Oren L. Linking minority stress to substance abuse in LGB adults: The mediating effect of sexual harassment. *Curr Psychol*. 2023;42(30):26535-26544. <https://doi.org/10.1007/s12144-022-03636-4>
16. World Health Organization, UNAIDS, UNDP, and the International Centre on Human Rights and Drug Policy. International guidelines on human rights and drug policy. Geneva: United Nations; 2019. [URL](https://doi.org/10.1111/acps.13405)
17. Wittgens C, Fischer MM, Buspavanich P, Theobald S, Schweizer K, Trautmann S. Mental health in people with minority sexual orientations: A meta-analysis of population-based studies. *Acta Psychiatr Scand*. 2022;145(4):357-372. <https://doi.org/10.1111/acps.13405>
18. Li J, Wang H, Li M, Shen Q, Li X, Zhang Y, et al. Effect of alcohol use disorders and alcohol intake on the risk of subsequent depressive symptoms: A systematic review and meta-analysis of cohort studies. *Addiction*. 2020;115(7):1224-1243. <https://doi.org/10.1111/add.14935>
19. Resolución 8430. (Which establishes the scientific, technical, and administrative standards for health research). Bogotá: Ministerio de Salud de Colombia; 1993. [URL](https://doi.org/10.1046/j.1525-1497.2001.016009606.x)
20. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
21. Scoppetta O, Cassiani-Miranda CA, Arocha-Díaz KN, Cabanzo-Arenas DF, Campo-Arias A. Validity of the patient health questionnaire-2 (PHQ-2) for the detection of depression in primary care in Colombia. *J Affect Disord*. 2021;278:576-582. <https://doi.org/10.1016/j.jad.2020.09.096>
22. Greenland S. Modeling and variable selection in epidemiologic analysis. *Am J Public Health*. 1989;79(3):340-349. <https://doi.org/10.2105/AJPH.79.3.340>
23. IBM Corp. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp; 2020.
24. Wang C, Liu F. Text of clinical epidemiology for medical students. Cham: Springer; 2023.
25. Giraldo-Osorio A, Pérez-Ríos M, Rey-Brandariz J, Varela-Lema L, Montes A, Rodríguez A, et al. Smoking-attributable mortality in South America: A systematic review. *J Global Health*. 2021;11:04014. <https://doi.org/10.7189/jogh.11.04014>
26. Heilig M, MacKillop J, Martinez D, Rehm J, Leggio L, Vanderschuren LJ. Response to "Addiction is a social disease: Just as tenable as calling it a brain disease". *Neuropsychopharmacology*. 2021;46(10):1713-1714. <https://doi.org/10.1038/s41386-021-01037-y>
27. Posada-Villa JA, Herazo E, Campo-Arias A. (The gateway to illegal substance use in Colombia: violations of the gateway rule). *Rev Salud Publica*. 2009;11(3):406-13. [URL](https://doi.org/10.1038/s41386-021-01037-y)
28. Sandfort TG, Knox JR, Alcalá C, El-Bassel N, Kuo I, Smith LR. Substance use and HIV risk among men who have sex with men in Africa: A systematic review. *J AIDS*. 2017;76(2):e34. <https://doi.org/10.1097/QAI.0000000000001462>

29. Tierney M, Finnell DS, Naegle M, Mitchell AM, Pace EM. The future of nursing: Accelerating gains made to address the continuum of substance use. *Arch Psychiatr Nurs*. 2020;34(5):297-303. <https://doi.org/10.1016/j.apnu.2020.07.010>
30. Campo-Arias A. Essential aspects and practical implications of sexual identity. *Colom Med*. 2010;41(2):179-185. [URL](#)
31. Adler NE, Glymour MM, Fielding J. Addressing social determinants of health and health inequalities. *J Am Med Assoc*. 2016;316(16):1641-1642. <https://doi.org/10.1001/jama.2016.14058>
32. Scoppetta O, Cano-Salazar GM, Bustos-Reales JL. (Profiles of discrimination and aggression in the Colombian LGBTIQ+ population). *Duazary*. 2025;22:e6514. <https://doi.org/10.21676/2389783X.6514>
33. Glikman A, Elkayam TS. Addressing the issue of sexual orientation in the classroom-attitudes of Israeli education students. *J LGBT Youth*. 2019;16(1):38-61. <https://doi.org/10.1080/19361653.2018.1526732>
34. Robinson TA, Smith NG, Obasi EM, Reitzel LR. Internalised homonegativity is indirectly associated with smoking status through somatic anxiety. *Health Behav Policy Rev*. 2024;11(3):1549-1557. <https://doi.org/10.14485/HBPR.11.3.1>
35. Moura RGD, Nascimento RP, Barros DF. "There's a lot of woman in him": the feminine as a deviance from the norm. *Org Soc*. 2020;27:620-643. <https://doi.org/10.1590/1984-9270951>
36. West BT, Berglund P, Heeringa SG. A closer examination of subpopulation analysis of complex-sample survey data. *Stata J*. 2008;8(4):520-531. <https://doi.org/10.1177/1536867X0800800404>