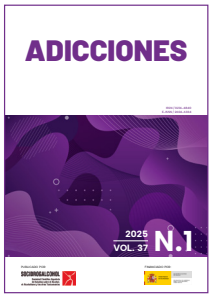
SOCIDROGALCOHOL
Sociedad Científica Española de Estudios sobre el Alcohol, el Alcoholismo y las otras Toxicomanías

ADICCIONES
2025 ■ VOL. 37 ■ N. 1 ■ PAGES 7–18
www.adicciones.es



ORIGINAL

Dismantling stereotypes: Sexual orientation and risk for substance use in adolescence

Desmontando estereotipos: Orientación sexual y riesgo para el consumo de sustancias en la adolescencia

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Abstract

Substance use and abuse is a major public health problem. Research has generally shown that sexual minority groups such as lesbian, gay, bisexual, transgender and other (LGBT+) people are among the most at-risk vulnerable groups for substance use. However, research in the Spanish context is very scarce and has not analyzed these issues. This research, therefore, aimed to analyze substance use in young people according to their sexual orientation through two studies using representative samples of adolescents. The analyses revealed only some differences in substance use by sexual minority groups. Bisexual adolescents showed a higher frequency of use in some indicators of tobacco, cannabis and alcohol, and lesbians showed a higher frequency of heavy alcohol use but no other indicators of differential use. Questioning adolescents, on the other hand, had the lowest rates of use compared to the other groups on many indicators. Results derived from both studies could indicate, at least with these samples and indicators, that there is no generalized and more frequent use of substances by people of sexual minority groups, which could suggest the existence of a stereotype rather than a fact.

Keywords: sexual minorities, substance use, adolescence, drugs

Resumen

El uso y abuso de sustancias es un importante problema de salud pública. La investigación generalmente ha mostrado que los grupos de personas de minorías sexuales como lesbianas, gais, bisexuales, transexuales y otros (LGBT+) se ubican entre los grupos vulnerables de mayor riesgo de consumo. Sin embargo, la investigación en el contexto español es muy escasa y no ha analizado esta cuestión. Esta investigación, por lo tanto, pretendió analizar el consumo de sustancias en jóvenes según su orientación sexual a través de dos estudios utilizando muestras representativas de adolescentes. Los análisis revelaron únicamente algunas diferencias en el consumo de sustancias por parte de los grupos de minorías sexuales. Los y las adolescentes bisexuales presentaron una frecuencia mayor de consumo en algunos indicadores de tabaco, cannabis y alcohol y las lesbianas mostraron una mayor frecuencia de consumo intensivo de alcohol, pero no otros indicadores de consumo diferencial. Por su parte, los adolescentes *questioning* presentaron las tasas de consumo más bajas en comparación con los otros grupos en muchos indicadores. Los resultados de ambos estudios podrían indicar, al menos con estas muestras y con estos indicadores, que no existe un uso generalizado y más frecuente de sustancias por parte de personas de minorías sexuales, lo que podría sugerir la existencia de un estereotipo y no tanto responder a un hecho.

Palabras clave: minorías sexuales, uso de sustancias, adolescencia, drogas

■ *Received: June 2023; Accepted: August 2023.*

■ ISSN: 0214-4840 / E-ISSN: 2604-6334

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In comparison to the general population, members of sexual minority groups, i.e., people belonging to minorities according to their sexual orientation and gender identity (LGBT+), often face additional challenges which can contribute to the emergence of mental health issues. It is not the fact of belonging to such groups that explains the differences in mental health, but rather having to face situations of social stigma, discrimination, rejection by family and community, violence, harassment and lack of acceptance and support, all of which can generate chronic stress and increase the vulnerability of LGBT+ people to presenting mental health problems (Meyer, 2003; Meyer et al., 2021).

Indeed, research has shown an association between belonging to sexual minorities and a greater risk of experiencing mental health problems, including depression, anxiety, post-traumatic stress disorder, suicidal behaviour or substance use disorders (e.g., Pitman et al., 2022; Saha et al., 2023; Spittlehouse et al., 2020).

In relation to substance use, studies have shown greater consumption in the sexual minority population (Goldbach et al., 2014; Marshal et al., 2008; Wallace & Santacruz, 2017). Specifically, greater alcohol use, earlier onset of use (Fish et al., 2017; Talley et al., 2014), greater use of tobacco and cannabis (Corliss et al., 2010; London-Nadeau et al., 2021; Watson et al., 2018), and abuse of prescription opioids and tranquilizers (Kecojevic et al., 2012) by sexual minority youth have all been documented.

However, research has not always taken into account the considerable heterogeneity within these groups. Previous studies have not systematically analysed possible differences between sexual orientation groups, for example, potential differences between bisexual or gay and lesbian groups, or differences based on gender. When these issues have indeed been analysed, the bisexual group and young women have shown a higher risk of substance use (Plöderl & Tremblay, 2015; Talley et al., 2014; Watson et al., 2020). Furthermore, the number of studies considering questioning individuals has been limited (e.g., Birkett et al., 2009).

International scientific research on LGB health is also limited and very little has been conducted with youth outside the United States or Canada, raising doubts about the generalizability of results. Specifically, to the best of our knowledge, no studies have been carried out in Spain with representative samples of adolescents. In fact, in its assessment of drug use in secondary education in Spain, the ESTUDES survey (Plan Nacional sobre Drogas, 2022) fails to ask whether or not respondents belong to sexual minorities and, therefore, does not provide results on sexual diversity and gender as a potential risk factor for Spanish adolescents.

Given this research context, two studies were carried out with the main objective of analysing substance use in young people by their sexual orientation.

Study 1

In Study 1, the aim was to analyse possible differences in the age of onset of use of various substances by sexual orientation and gender. Likewise, the lifetime prevalence of tobacco, alcohol, tranquilizer and cannabis use was studied based on sexual orientation and the current frequency of use of the different substances in the previous month and previous year according to sexual orientation and gender.

Method

Sample

The sample was selected using stratified random cluster sampling of the population of students aged between 14 and 18 years (approximately 15,000 students) in La Rioja. A total of 1,972 young people in 98 classrooms belonging to 30 schools participated in data collection. The sample comprised students in secondary education and vocational training in state schools (45.2%) and charter schools (54.8%), and from different socioeconomic levels. The variables used for stratification were geographical area and educational level. Participants with more than two points (n = 146) on the Oviedo Infrequency Scale–Revised (Fonseca-Pedrero et al., 2019) or aged over 18 years (n = 36) were removed from the sample, which finally comprised 1,790 students. Of the total, 816 were boys (45.6%), 961 were girls (53.7%) and 13 were intersex and transsexual (0.7%). The mean age was 15.70 years (SD = 1.26). The distribution by sexual orientation (attraction) was: heterosexual (n = 1,518), gay/lesbian (n = 18), bisexual (n = 197), and questioning or uncertain (n = 44).

Given the very large size of the heterosexual group, it was necessary to establish an equivalent comparison group, so a group (n = 150) was randomly drawn, leading to a final selection of 309 participants in total.

Instruments

Sexual orientation scale

The Kinsey Scale (Kinsey et al., 1948) was used to examine sexual orientation. This scale covers different categories of sexual orientation, designating a sexual continuum ranging from exclusive attraction to people of the opposite sex to exclusive attraction to people of the same sex, with intermediate degrees of non-exclusivity, used to define the group of bisexual participants. Similarly, the scale has an "I am not sure" category that was used for the group of questioning individuals.

Oviedo Infrequency Scale-Revised (INF-OV-R) (Fonseca-Pedrero et al., 2019)

The scale was administered to participants to detect those who responded randomly, pseudo-randomly, or dishonestly. The INF-OV-R instrument is a self-report composed of 10

items with a dichotomous response format (*yes/no*). Students with two or more incorrect answers on the INF-OV-R scale were eliminated from the sample.

Substance use indicators

Questions from the ESTUDES survey (Plan Nacional sobre Drogas, 2019, 2022) were used. This analysed drug use among young people in Spain. The questions selected for inclusion in the study were: a) age of onset of tobacco, alcohol, tranquilizers and cannabis use, b) frequency of use in the last month, c) frequency of alcohol and cannabis use in the last year, as well as the frequency with which they have got drunk or participated in a *botellón* (heavy drinking in a public space) in the last year.

Procedure

The research was carried out in the winter of 2019 and is part of a broader project on emotional well-being in adolescence. It was approved by the General Directorate of Education of the Government of La Rioja and the Ethical Committee for Clinical Research of La Rioja (CEICLAR). Schools were randomly selected, and their school principals were visited to explain the research project. The process of administering the instruments was standardized through a protocol for all researchers. The questionnaires were administered by computer and collectively in a 50-minute session during school hours in a classroom specifically prepared for this purpose. Informed consent was requested from families or legal guardians for participants aged under 18, and confidentiality and the voluntary nature of the study were guaranteed. Students did not receive any incentive for their participation in the study.

Data analysis

Firstly, descriptive statistics were calculated to analyse possible differences in the age of onset of the use of different substances. The effects of sexual orientation and gender on the age of onset were studied using various analyses of variance (ANOVAs) since the high frequency of missing values (indicative of non-consumption) did not allow for a multivariate analysis of variance (MANOVA) nor a recoding without affecting the results. The partial eta squared statistic was used as an index of effect size (*partial* η^2: small = .01; medium = .06; large = .14).

Secondly, to obtain the lifetime prevalence of these substances, the age of onset variable was recoded. Participants who had stated that they had used a substance were coded as positive for that substance, and those who had stated that they had never smoked, for example, were coded as negative. In this way, analyses could be carried out on the possible differences in lifetime use depending on the sexual orientation of the participants using the chi-square statistic. As a measure of effect size, Cramer's *V* was used, which ranges from 0 to 1 to indicate association strength.

Thirdly, for analyses of the frequency with which participants used different substances, descriptive statistics were calculated based on the sexual orientation and gender subgroups. A MANOVA was also carried out with sexual orientation and gender as independent factors and frequencies of use as dependent variables. Wilks' lambda value (Wilks' λ) was used to check for significant main effects and interactions between the sexual orientation and gender variables. The partial eta squared statistic was used as an index of effect size. ANOVAs were then performed to analyse the individual effects on the different substances.

All analyses were carried out with the IBM SPSS statistical package (version 28).

Results

Age of onset of substance use

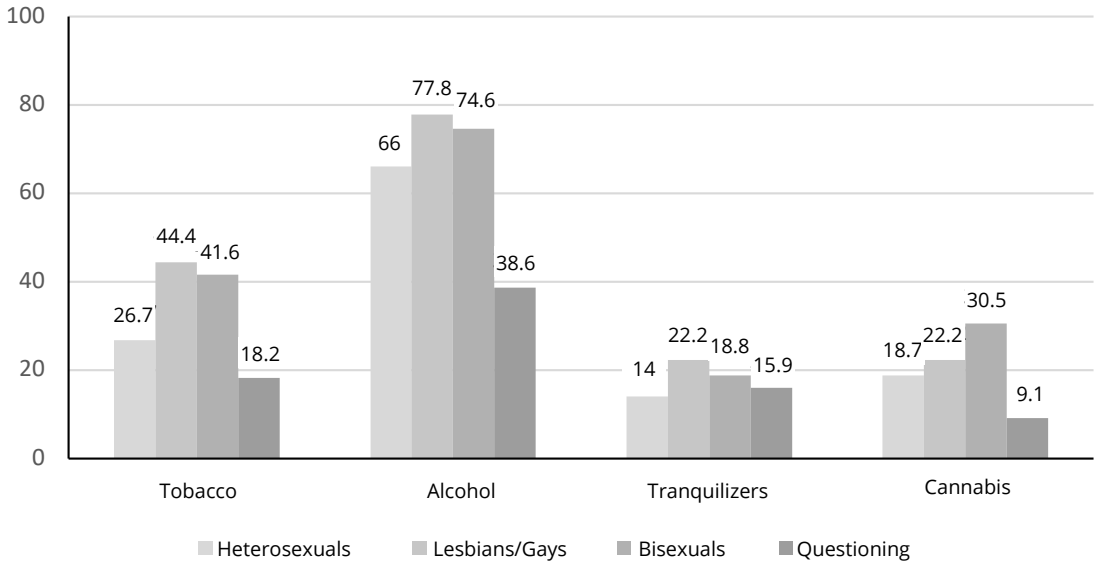
Table 1 presents the descriptive statistics (means and standard deviations) for all study variables by sexual orientation and gender. The average ages of onset for

Table 1
Means (standard deviation) for age of initiation of substance use according to sexual orientation and gender

	HE			LG			BI			Q		
	T	F	M	T	F	M	T	F	M	T	F	M
Tobacco	14.22 (1.54)	14.03 (1.56)	14.57 (1.50)	14.25 (.88)	14.50 (.57)	14.00 (1.15)	13.76 (1.67)	13.73 (1.67)	14.14 (1.86)	14.12 (1.24)	14.42 (.97)	12.00 -
Alcohol	13.95 (1.24)	13.93 (1.17)	14.00 (1.35)	14.14 (1.02)	14.42 (1.13)	13.85 (.89)	13.93 (1.26)	13.94 (1.25)	13.90 (1.37)	14.11 (1.49)	14.25 (.75)	13.80 (2.68)
Tranquilizers	14.09 (1.84)	14.28 (1.68)	13.71 (2.21)	15.75 (.95)	15.75 (.95)	- -	14.05 (1.89)	13.97 (1.91)	15.00 (1.73)	13.60 (1.14)	13.66 (1.52)	13.50 (.70)
Cannabis	14.60 (1.79)	14.62 (1.66)	14.58 (2.02)	14.25 (.95)	15.00 (.00)	13.50 (.70)	14.91 (1.41)	14.90 (1.30)	15.00 (2.23)	13.75 (2.06)	14.33 (2.08)	12.00 -

Note. T = total; F = female; M = male. HE= heterosexuals; LG = lesbians/Gays; BI = bisexuals; Q = questioning. The number of participants is not shown in the table since it varies for each substance.

Figure 1
Lifetime prevalence (%) in the use of tobacco, alcohol, tranquilizers and cannabis according to participants' sexual orientation



different substances (tobacco, alcohol, tranquilizers and cannabis) were around 14 years.

The ANOVA results indicated that the age of onset did not differ according to the sexual orientation of the participants for tobacco [F (3, 130) = .67, p > .05; *partial* η^2 = .015], nor for alcohol [F (3, 269) = .13, p > .05; *partial* η^2 = .001], nor tranquilizers [F (3, 60) = 1.23, p > .05; *partial* η^2 = .058] nor cannabis [F (3, 88) = 1.30, p > .05; *partial* η^2 = .043]. Nor was a significant main effect of gender or a significant interaction between sexual orientation and gender observed (p > .05).

Lifetime prevalence of substance use

Secondly, possible differences in lifetime prevalence were analysed (see Figure 1) for the use of tobacco, alcohol, tranquilizers and cannabis. The results indicated statistically significant differences in lifetime consumption by participants' sexual orientation for tobacco [χ^2 (3, 409) = 14.52, p < .01; V = *.18*], alcohol [χ^2 (3, 409) = 22.35, p < .01; V = *.23*], and cannabis [χ^2 (3, 407) = 12.36, p < .01; V = *.17*], but not tranquilizers [χ^2 (3, 409) = 1.79, p > .05; V = *.06*], although the effect sizes were very small.

For tobacco use, post-hoc Bonferroni contrasts indicated that a greater proportion of participants in the bisexual orientation group had smoked compared to the other groups, except for the group comprising lesbians and gays, who in turn presented similar tobacco use to heterosexuals and questioning individuals. For alcohol use, participants in the questioning group drank the least and thus differed significantly from the other groups. Finally, for cannabis, the bisexual group presented higher lifetime prevalence than questioning participants and heterosexuals, although they did not differ from the group made up of lesbians and gays, which in turn presented levels of use similar to the heterosexual and questioning groups.

Frequency of substance use in the previous month and previous year

Descriptive statistics (means and standard deviations) of the frequency of use indicators in the last month and in the last year were calculated according to sexual orientation and gender (see Table 2).

Additionally, to check for the possible existence of statistically significant differences, a MANOVA was performed with the frequencies of use as dependent variables and participants' sexual orientation and gender as fixed factors.

The MANOVA did not reveal significant main effects for the sexual orientation variable [*Wilk´s* λ= .92, $F_{(27, 1139)}$ = 1.13; p > .05; *partial* η^2 = .026], nor for gender [*Wilk´s* λ= 0.97, $F_{(9, 390)}$ = 1.03; p > .05; *partial* η^2 = .023] nor for the interaction between the two [*Wilk´s* λ= 0.91, $F_{(27, 1139)}$ = 1.23; p > .05; *partial* η^2 = .028].

While the MANOVA was not significant, the individual ANOVAs showed main effects on the basis of sexual orientation for the frequency of alcohol use in the previous month and the previous year [F (3, 398) = 3.16, p < .05; *partial* η^2 = .023 and F(3, 398) = 4.72, p < .05; *partial* η^2 = .034, respectively], and a significant interaction effect between sexual orientation and gender for the frequency of

Table 2
Means (standard deviation) for frequency of use (previous month and previous year) according to sexual orientation and gender

	HE			LG			BI			Q		
	T *n*=150	F *n*=88	M *n*=62	T *n*=18	F *n*=8	M *n*=10	T *n*=196	F *n*=161	M *n*=35	T *n*=42	F *n*=32	M *n*=10
Frequency previous month												
Tobacco	.40 (.92)	.48 (.99)	.29 (.81)	.44 (1.04)	.63 (1.18)	.30 (.94)	.69 (1.13)	.80 (1.18)	.20 (.63)	.21 (.64)	.22 (.65)	.20 (.63)
Alcohol	1.35 (1.63)	1.23 (1.52)	1.53 (1.79)	2.11 (2.05)	2.88 (1.95)	1.50 (2.01)	1.59 (1.85)	1.68 (1.89)	1.17 (1.58)	.52 (1.13)	.41 (1.07)	.90 (1.28)
Drunkeness	.54 (1.19)	.47 (.89)	.65 (1.52)	.94 (1.47)	1.88 (1.80)	.20 (.42)	.65 (1.21)	.69 (1.22)	.49 (1.19)	.45 (1.08)	.41 (1.13)	.60 (.96)
Cannabis	.44 (1.41)	.33 (1.15)	.60 (1.72)	.06 (.23)	.13 (.35)	.00 (.00)	.61 (1.75)	.69 (1.82)	.26 (1.35)	.12 (.39)	.13 (.42)	.10 (.31)
Frequency previous year												
Alcohol	3.78 (2.95)	3.74 (2.78)	3.84 (3.21)	5.22 (2.92)	5.75 (2.86)	4.80 (3.04)	4.27 (2.89)	4.41 (2.83	3.60 (3.07)	1.93 (2.68)	1.66 (2.37)	2.80 (3.49)
Drunkeness	1.53 (2.29)	1.65 (2.21)	1.37 (2.41)	2.89 (2.90)	4.38 (3.20)	1.70 (2.11)	2.20 (2.61)	2.43 (2.62)	1.14 (2.29	1.00 (2.01)	.72 (1.61)	1.90 (2.85)
Botellón	1.01 (1.33)	1.06 (1.28)	.94 (1.42)	1.44 (1.24)	2.13 (1.24)	.90 (.99)	1.15 (1.39)	1.24 (1.39)	.71 (1.29)	.48 (.94)	.38 (.83)	.80 (1.22)
Cannabis	.96 (2.25)	.85 (1.99)	1.11 (2.60)	.89 (1.81)	1.13 (2.10)	.70 (1.63	1.37 (2.46	1.53 (2.57)	.63 (1.75)	.38 (1.37)	.34 (1.33)	.50 (1.58)

Note: T = total; F = female; M = male. HE= heterosexual; LG = lesbians/Gays; BI = bisexuals; Q = questioning.

drunkenness in both the previous month and the previous year [$F(3, 398) = 3.42$, $p < .5$; *partial* $\eta^2 = .025$ and $F(3, 398) = 3.45$, $p < .05$; *partial* $\eta^2 = .025$, respectively].

Post-hoc Bonferroni analyses revealed the existence of statistically significant differences by sexual orientation for alcohol use both in the last 30 days and for the last year. Questioning participants reported drinking alcohol with a significantly lower frequency than the other groups. Contrary to expectations, the results did not yield differences based on belonging to sexual minorities.

Post-hoc Bonferroni analyses also showed that there was an interaction between sexual orientation and gender for the frequency of drunkenness both in the last month and in the last year. Lesbian women showed a significantly higher frequency of alcohol use to the point of drunkenness than the other groups.

Study 2

The aim in Study 2 was to confirm the results of Study 1, with an increased sample and the introduction of non-prescription tranquilizers to the analysis. To this end, possible differences in the lifetime prevalence of tobacco, alcohol, cannabis and tranquilizer use and the frequency of use of these different substances in the last year were analysed by sexual orientation and gender.

Method

Sample

Within the PSICE La Rioja Study (Fonseca-Pedrero et al., 2023), the sample was selected using stratified random sampling by population clusters of students aged between 12 and 18 years (approximately 15,000 students) in La Rioja. A total of 2,640 young people from 32 schools and a total of 163 classrooms participated in the study. The sample came from state (45%), and charter schools (55%) in secondary education and vocational training, as well as from different socioeconomic levels. The variables used to stratify were geographical area and educational level.

Those participants with more than two points (n = 175) on the Oviedo Infrequency Scale-Revised (Fonseca-Pedrero et al., 2019), or aged over 18 years (n = 247) were excluded from the sample, which finally comprised 2,235 students.

Of the total, 1,045 were boys (46.8%), 1,183 were girls (52.9%) and 7 were intersex (0.3%). Mean age was 14.49 years (SD = 1.76), and the distribution by sexual orientation/attraction was: heterosexual (n = 1,749; 78.3%), lesbian/gay (n = 37; 1.7%), bisexual (n = 326; 14.6%), questioning or uncertain (n = 66; 3%) and others (n = 57; 2.6%).

As in Study 1, given the fact that the heterosexual group was very large and the need to establish an equivalent

comparison group, a sample was randomly drawn (n = 323), so that the final sample had 752 participants.

Instruments

Sexual orientation scale (see Study 1).

Oviedo Infrequency Scale-Revised (see Study 1).

Substance use indicators

Two indicators were used: a) lifetime prevalence of tobacco, alcohol, cannabis and non-prescription tranquilizer use, and b) frequency of use in the previous year of the same substances. As in Study 1, the indicators were extracted from the ESTUDES survey (Plan Nacional sobre Drogas, 2019, 2022).

Procedure

The research was carried out in the winter of 2022 and is part of the PSICE study in La Rioja. It was approved by the Ministry of Education of La Rioja, by the Clinical Research Ethics Committee of La Rioja (CEImLAR), and by the Research Ethics Committee of the University of La Rioja. The procedure was similar to that carried out in Study 1 in terms of the method for administering questionnaires, use of consents and the assurance of confidentiality and voluntariness.

Data analysis

Firstly, the chi-square statistic was used to analyse the lifetime prevalence of different substances according to participants' sexual orientation.

Secondly, for the analyses of the frequency with which participants used the different substances, descriptive statistics were calculated by sexual orientation and gender subgroups. A MANOVA was also performed with sexual orientation and gender as independent factors and frequencies of use as dependent variables. Wilks' lambda was used (Wilks' λ) to observe possible significant main effects and interactions between the sexual orientation and gender variables. The partial eta squared statistic was used as an index of effect size. ANOVAs were subsequently conducted to analyse the individual effects on the different substances.

All analyses were performed with the IBM SPSS statistical package (version 28).

Results

Lifetime prevalence of substance use

Possible differences in lifetime prevalence were analysed (see Figure 2) for tobacco, alcohol, tranquilizer and cannabis use. Results indicated statistically significant differences in lifetime use according to participants' sexual orientation for tobacco [χ^2 (3, 754) = 17.50, $p < .01$; $V = .15$], alcohol [χ^2 (3, 754) = 22.22, $p < .01$; $V = .17$], and cannabis [χ^2 (3, 754)

Figure 2

Liefetime prevalence (%) in the use of tobacco, alcohol, tranquilizers and cannabis according to participants' sexual orientation

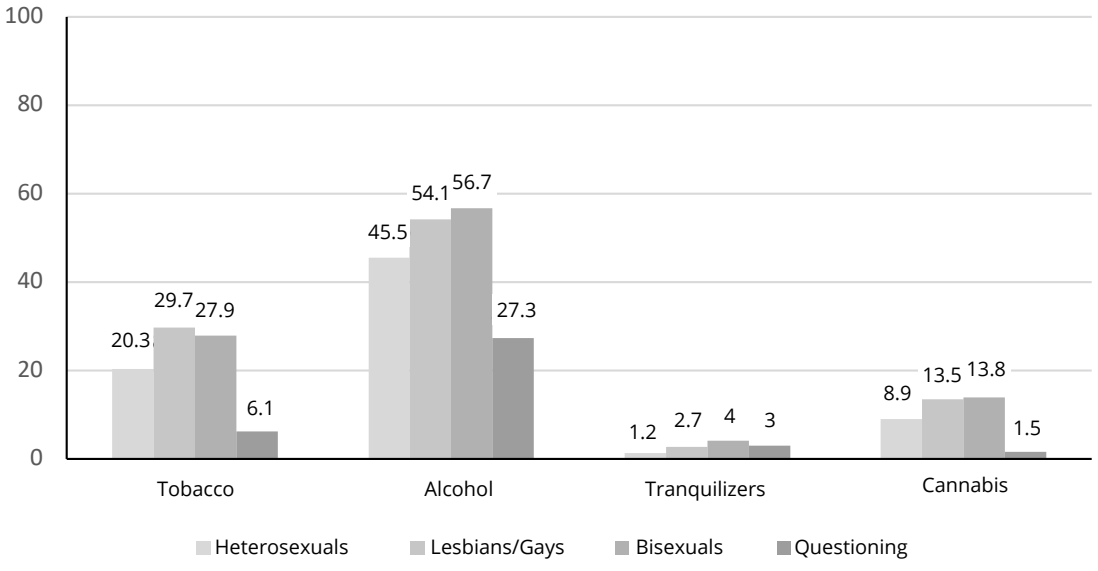


Table 3
Means (standard deviation) for frequency of use in the last year according to sexual orientation and gender

	HE			LG			BI			Q		
	T *n*=323	F *n*=173	M *n*=150	T *n*=37	F *n*=22	M *n*=15	T *n*=326	F *n*=282	M *n*=44	T *n*=66	F *n*=52	M *n*=14
Tobacco	.39 (.94)	.51 (1.14)	.29 (.71)	.65 (1.23)	.77 (1.47)	.47 (.74)	.67 (1.29)	.69 (1.33)	.52 (1.02)	.15 (.70)	.19 (.79)	.00 (.00)
Alcohol	.82 (1.05)	.91 (1.07)	.75 (1.04)	.97 (1.09)	1.09 (1.19)	.80 (.94)	.97 (1.05)	1.00 (1.07)	.82 (.89)	.45 (0.86)	.52 (.91)	.21 (.57)
Tranquilizers	.03 (.30)	.06 (.43)	.01 (.07)	.05 (.32)	.09 (.42)	.00 (.00)	.07 (.40)	.07 (.41)	.05 (.30)	.03 (.17)	.04 (.19)	.00 (.00)
Cannabis	.12 (.44)	.11 (.45)	.13 (.43)	.19 (.56)	.27 (.70)	.07 (.25)	.22 (.65)	.23 (.67)	.16 (.47)	.05 (.36)	.06 (.41)	.00 (.00)

Note. T = total; F = female; M = male. HE= heterosexual; LG = lesbians/Gays; BI = bisexuals; Q = questioning.

= 10.56, $p < .01$; $V = .11$], but not for tranquilizers [χ^2 (3, 754) = 4.83, $p > .05$; $V = .08$].

For smoking, post-hoc Bonferroni contrasts indicated that participants in the questioning group used proportionally less tobacco than the other groups. For drinking, participants in the bisexual group drank significantly more alcohol than the heterosexual group, which in turn drank significantly more than questioning participants. Finally, for use of cannabis, the questioning group differed significantly from the other groups, presenting the lowest level of consumption of all the groups. It is important to note that effect sizes were very low.

Frequency of substance use in the last year

Descriptive statistics (means and standard deviations) for the frequency of use indicators in the previous year were calculated by sexual orientation and gender (see Table 3).

Additionally, to determine the possible existence of statistically significant differences, a MANOVA was performed with the frequencies of use as dependent variables and the sexual orientation and gender of the participants as fixed factors.

The MANOVA did not yield significant main effects for the sexual orientation variable [*Wilks'* λ= .98, $F_{(12, 1960)}$ = 1.19; $p > .05$; *partial* $\eta^2 = .006$], nor for gender [*Wilks'* λ= 0.99, $F_{(4, 741)} = 1.14$; $p > .05$; *partial* $\eta^2 = .006$] nor for the interaction between both [*Wilks'* λ= 0.99, $F_{(12, 1960)} = .30$; $p > .05$; *partial* $\eta^2 = .002$].

Although the MANOVA was not significant, it was noted that the individual ANOVAs indicated main effects by sexual orientation for the frequency of tobacco and alcohol use. Post-hoc Bonferroni analyses revealed the existence of statistically significant differences by sexual orientation for smoking, with higher use in the bisexual group compared to heterosexuals and questioning participants. Regarding alcohol use in the previous year, results indicated greater use by bisexuals than the group of questioning participants, but the differences were not significant compared to the heterosexual group.

Discussion

The use and abuse of substances, especially during adolescence, represents an important public health problem (United Nations Office on Drugs and Crime, 2022; Plan Nacional sobre Drogas, 2022), with a relevant impact on the psychological well-being of the young. Belonging to sexual minorities has been shown in the literature to constitute a potential risk factor for substance use, raising the likelihood not only of their use but also abuse during adolescence (Mereish, 2019; Watson et al., 2018).

The common objective of the present studies was to analyse substance use according to sexual orientation in two representative samples of adolescents. We expected to find disparities between sexual minority groups compared to a heterosexual group, in line with previous research. However, results yielded only some differences, with very limited effect sizes and only for some of the indicators analysed.

Regarding the results of Study 1, no statistically significant differences were found in the age of onset of use. In terms of lifetime prevalence of use, differences were observed in the use of tobacco and cannabis between the group of bisexual participants and the other groups. The remaining differences found were related to lower use by the questioning group, but not to higher use by the LGB subgroups compared to their heterosexual peers. With regard to the frequency of use, only a certain tendency towards greater alcohol use by lesbians was observed, but the differences were not always statistically significant in all indicators.

Moreover, these results were not confirmed in Study 2, where a higher lifetime prevalence was found only in alcohol use, but not in tobacco or cannabis, as had been observed in Study 1. Likewise, a trend towards greater

frequency of tobacco use in the previous 12 months was observed in participants of the bisexual group compared to the heterosexual group. Again, the other differences between groups were linked to lower consumption in the questioning group, but not to differences between the LGB and heterosexual subgroups.

These results are in contrast with previous studies reporting a generalized increased risk of substance use among sexual minority youth (Goldbach et al., 2014; Marshal et al., 2008; Padilla et al., 2010; Pesola et al., 2014; Wallace & Santacruz, 2017) and indicate that this relationship may be complex and influenced by various individual, social and cultural factors. The hypothesis on which this research was based is that one of the factors potentially contributing to a greater risk of substance use in sexual minorities includes stress and discrimination. The literature indicates that such chronic stress can increase vulnerability toward substance use as a form of coping (Wojdala et al., 2020). However, the results do not seem to be conclusive when attempting to corroborate this hypothesis.

Despite the systematic observation in both Spanish (e.g., Espada et al., 2012; Pérez de Albéniz et al., 2023) and international studies (e.g., Raifman et al., 2020; Spittlehouse et al., 2020; Williams et al., 2021) that sexual minorities have a greater vulnerability to presenting difficulties related to mental health, the use of substances such as tobacco, alcohol, cannabis or tranquilizers did not seem to be a generalized strategy for regulating such distress among adolescents in our context.

That said, as already indicated in other studies, the results found would reveal the need to consider the diversity existing among sexual minority groups (Fish et al., 2019), as well as to take other contextual variables into account (Watson et al., 2020). The differences are not generalizable to all subgroups or all substances: the data indicate that sexual minority groups may not differ from the heterosexual group to the same extent in substance use.

Firstly, a trend (although not stable and general) was observed in the group of bisexual participants towards greater use of tobacco, alcohol and cannabis in some indicators. This trend is consistent with previous research indicating greater use by this group of different substances (Ford & Jasinski, 2006; Russell et al., 2002), especially among women (Corliss et al., 2010; Ford & Jasinski, 2006), as well as worse mental health indicators (e.g., Hatzenbuehler et al., 2014; Plöderl & Tremblay, 2015; Ross et al., 2018). In any case, the conclusion drawn from these results is not a bleak one: some marginal differences exist, but not in all indicators and with small effect sizes.

Secondly, a result observed in Study 1 is the greater frequency of binge drinking by lesbians. These differences were not confirmed either in the other indicators of alcohol use or in Study 2, but it is consistent with earlier research indicating greater alcohol use in this subgroup (Boyle et al., 2020; Green & Feinstein, 2012). Although more research is needed in this area, risky or harmful patterns of alcohol or drug use may play multiple roles in the lives of sexual minority women, for example, as coping responses to uncontrollable life stressors or to the dynamics of dysfunctional relationships; such a coping strategy focused on the emotions can make them vulnerable to aggression and become a risk factor for their mental health (Tubman et al., 2023). Indeed, some studies support this hypothesis, showing that experiences of discrimination, victimization and social isolation partially explain the disparity of sexual orientation in mental health and substance use (Bränström & Pachankis, 2018).

Finally, the results indicate that the participants in the questioning group had the lowest general level of use, lower even than their heterosexual peers. This contrasts with the few studies and reports regarding this group, which show their substance use to be more frequent than among heterosexual groups (Birkett et al., 2009; Espelage et al., 2008; National Institute on Drug Abuse, 2022a). These results could indicate that questioning sexuality does not imply a greater risk of use. Indeed, following authors who analyse the development of identity during adolescence (Crocetti et al., 2008), such uncertainty is described as a phase of high exploration, something that should not necessarily imply distress and, in this case, greater substance use. However, earlier research indicates that commitment is a mediator in the relationship between identity styles and well-being/distress variables (Sánchez-Queija et al., 2023). Future studies should thus investigate this issue further in sexual minority groups.

One of the other potential explanations for the divergence of the present results from those found in other studies is that current knowledge in this area may have been built up with studies using convenience samples, which can often constitute contexts of use. Previous studies may have drawn their participants from social settings where LGBT+ people may be exposed, such as bars and nightclubs, and which are often associated with substance use (Hughes, 2003; Meyer & Wilson, 2009). Moreover, it should not be forgotten that many of the studies have focused on comparing groups of heterosexuals to non-heterosexuals (combining gay/lesbian/bisexual and even questioning individuals), without considering the heterogeneity within the non-heterosexual group (e.g., Jorm et al. al., 2002; McDonald, 2018); this could have led to erroneous conclusions assuming that all differences were generalizable to all sexual minority groups.

As mentioned above, while historically it was thought that substance use problems were more prevalent in sexual minority populations, the data indicate the need to correct biased perceptions regarding substance abuse among these groups, as has long been suggested by other

authors (Green & Feinstein, 2012). What can be derived from the present results is that, at least in adolescence and in the context in which the studies were carried out, belonging to a sexual minority does not seem to imply greater vulnerability or, at least, not a disproportionate risk as some other authors have stated (Corliss et al., 2010; Marshal et al., 2008).

The present study has several limitations that must be acknowledged. Firstly, self-reports were used, with their well-known biases. Secondly, as other research has noted (e.g., Gonzales & Henning-Smith, 2017; Jorm et al., 2002), some potentially important risk factors were not analysed, such as feelings of stigma, non-disclosure of sexual orientation to significant others or experiences of discrimination and victimization that may be expected to explain the relationship between sexual orientation and substance use. Thirdly, sample sizes, while large, were reduced by the need to equate the heterosexual groups to the minority groups, thus limiting the statistical power of the analyses. Despite these limitations, the two studies were carried out with two representative samples of adolescents and various substance use indicators, with distinctions between groups of sexual minorities (including a group of questioning adolescents) and gender, which should be of particular value.

In conclusion, the differences found were few and require additional studies, but did not support the existence of greater vulnerability on the part of sexual minority groups (at least not generalizable to all groups, genders and substances). The data, if confirmed in additional studies, suggests a need for interventions that take into account differences between sexual and gender minority groups (Fonseca-Pedrero et al., 2021; González-Roz et al., 2023).

Heterosexual adolescents and those belonging to sexual minorities presented comparable substance use in both studies. This result would, therefore, appear very positive given the well-known close relationship between mental health and substance use in adolescence (National Institute on Drug Abuse, 2022b). There is a bidirectional relationship between the two, so that substance use can affect the mental health of adolescents and mental health problems can increase the risk of substance use (for example, as a form of self-medication to help cope with the mental health problems they are experiencing). It is also necessary to take into account the special vulnerability of the adolescent brain to the effects of substances, given their potential negative impact on cognitive and emotional development, as well as on the functioning of the central nervous system (Lees et al., 2020; López-Caneda et al., 2014).

This nevertheless does not mean that their substance use is unproblematic, given the frequency with which they claim to consume the different substances regardless of the groups they belong to. Substance use in adolescence represents a public health problem of great importance throughout the world, and the data derived from this project do not indicate otherwise. Similar indicators to those found in other studies were observed (Plan Nacional sobre Drogas, 2022; European Monitoring Center for Drugs and Drug Addiction, 2022), which underlines that the development of strategies to intervene in this area must continue.

A confirmation of the differences found in the present study would point to the need to design strategic interventions. In addition to the actions already carried out to prevent substance use in the adolescent population (Al-Halabí et al., 2009; Errasti et al., 2009; González-Roz et al., 2023; Jiménez-Padilla & Alonso-Castillo, 2022; Negreiros de Carvalho et al., 2021), issues related to substance use among sexual minorities would have to be addressed. It would be important to promote inclusive and supportive environments, provide education on responsible use, and ensure access to culturally competent health services that address the specific needs of the LGBT+ community (Watson et al., 2020). Additionally, structural factors such as discrimination and stigma that contribute to stress and may influence patterns of use must be addressed.

Acknowledgements

This study has received funding from a Spanish Ministry of Science and Innovation project, reference number PID2021-127301OB-I00, part of the 2021 call for knowledge generation projects, and from an Institute of Rioja Studies research award (BOR nº147, August 2, 2022).

Conflict of interests

The authors declare no conflicts of interest.

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