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ORIGINAL ARTICLE

# Prevalence and Gender-Specific Predictors for the Use of Marijuana in the General Population of the Metropolitan Area of Lima, Peru: an Analysis of Contextual and Individual Factors

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**Abstract**
Marijuana is the illegal drug most consumed in Peru and gender-specific predictors have not yet been identified in the general population. This information will be relevant for increasing the knowledge of processes involved in marijuana use. This research has the objective of identifying gender-specific predictive factors for marijuana use in the general population of Lima. The study was cross-sectional, descriptive, and analytical, and used the database of the Study on Drug Prevention and Consumption in the General Population of Metropolitan Lima and Callao—2013. The sample consisted of 18,562 randomly selected participants from 12 to 65 years of age. Descriptive analyzes and logistic regressions were used for complex samples. In general, statistically significant differences were found between males and females in the last 12-month prevalence of marijuana use. For both genders, the perceived access to marijuana was the strongest predictor for marijuana use in the last year. In males, the age group of 30 to 65 years had protective effects against the use of marijuana. On the other hand, illegal drug use in the neighborhood, low risk perception of regular use of marijuana, and low risk perception of occasional use of marijuana were identified as risk factors. In females, the age groups of 19 to 29 years and 30 to 65 years were identified as protective factors. Furthermore, low risk perception of occasional use marijuana was determined as a predictor of marijuana use. The results show differences and similarities between males and females in identifying gender-specific predictors. These findings suggest the need to consider gender-specific risk factors in the design and implementation of preventive programs for marijuana use.

**Keywords** Marijuana use · General population · Perceived access · Risk perception

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## Introduction

There is a broad consensus on the need to recognize the use of drugs as a public health problem with several negative health, psychosocial, and economic implications. The most commonly used illegal drug is marijuana, totaling 183 million users in 2015. There is also evidence of an increasing demand for the treatment of disorders due to the use of marijuana and negative health impacts. In addition, marijuana is the illegal drug with the highest production worldwide. From 2010 to 2015, marijuana cultivation was reported in 135 countries (United Nations Office on Drugs and Crime 2017).

The magnitude of the consumption of marijuana in Peru has been studied in various populations. In 2010, the annual prevalence of marijuana use was estimated at 1% in the 12 to 65 age group of the general population (*National Commission for Development and Life without Drugs* (DEVIDA) 2012a). Thus, around 124,000 people reported having used this substance in the last 12 months. This prevalence was higher than the one reached in a previous study (DEVIDA 2007). Regarding the annual prevalence of marijuana by gender, a significant increase in use within the male population was evidenced in both national studies (DEVIDA 2007, 2012a). In the Metropolitan Area of Lima, marijuana consumption in the general population was stable. In 2010, the annual prevalence was estimated at 1.1% (DEVIDA 2012b), and at 1.2% in 2013 (DEVIDA 2014). Similarly, to what occurs at national level, a higher annual prevalence of marijuana use has been reported among the male population in the Metropolitan Area of Lima.

Apart from the epidemiological aspects, it is necessary to understand that marijuana consumption is associated with a series of social, psychological, and physical problems. For example, the use of marijuana is associated with lower academic achievement (Fergusson et al. 2003; Lynskey and Hall 2000), higher community disorganization (Furr-Holden et al. 2011; Wilson et al. 2005), psychosis (Marconi et al. 2016), and a greater risk of consumption of other illicit drugs (Lynskey et al. 2003). Likewise, regular marijuana consumption is related to anxiety and depressive symptoms (Buckner et al. 2008; Hall and Degenhardt 2007; Wittchen et al. 2007). Moreover, adolescent cannabis use was associated with a lower performance in tasks that require attention, memory, processing speed, visuospatial functioning, and executive functioning (Meruelo et al. 2017).

Along with understanding the negative impacts of marijuana consumption, it is necessary to analyze its associated factors. Scientific research on drug use has a fundamental line of study in risk factors due to its direct implications for prevention intervention. Most studies on risk factors (Hawkins et al. 1992; Stone et al. 2012) have been conducted in a small number of high-income countries (e.g., the USA, Australia, the Netherlands, and New Zealand). In developing countries, there is a limited number of studies, and it is suggested that similar risk and protective factors may be identified (Hall and Degenhardt 2007). Nonetheless, in the case of Peru, there is a need for evidence on risk/protective factors contextualized to our reality, which serves as an input for the formulation of policies and evidence-based interventions (Cabanillas-Rojas 2012).

Gender differences are recognized as an important aspect of the analysis of the use of psychoactive substances, including risk factors related to the initiation, progression, and maintenance of its use. Gender is one of the associated factors that arouses an important interest in the study of health risk behaviors. For example, there is evidence that men are more likely to use illegal drugs (Korn and Bonny-Noach 2017). Despite this evidence, it is observed that the magnitude of consumption associated with gender varies according to the substance.

Males are more likely to smoke tobacco and drink alcohol compared with women, although statistics show that this gap is gradually closing (DEVIDA 2013; Johnston et al. 2006).

Even though it is known that the magnitudes of marijuana consumption are greater in males (Compton et al. 2004), it is recognized that its associated factors may differ according to gender (Copeland and Swift 2009; Guxens et al. 2007), which explains the need to carry out differentiated analyses. This is becoming more relevant as differences between men and women using marijuana are narrowing (Anthony et al. 2016; Chapman et al. 2017).

## Methods

### Participants and Data Collection Procedure

A secondary analysis was carried out using the database of the Study on Drug Prevention and Consumption in the General Population of the Metropolitan Area of Lima and Callao—2013 conducted by the National *Commission for Development and Life without Drugs* (DEVIDA). This study is a population-based, cross-sectional household survey, which followed the methodological guidelines of the Inter-American Uniform Drug Use Data System (SIDUC) proposed by the Inter-American Drug Abuse Control Commission (CICAD). The sample consisted of 18,562 participants aged 12 to 65 from the Metropolitan Area of Lima. A random, multistage, and stratified sampling was used at the cluster level, and the last selection unit consisted of 12- to 65-year-old people living in selected households within the last 30 days before the survey. The Kish method was used to select the members within households. Then, a direct, private and confidential, 30- to 40-min interview was conducted by previously trained personnel. The data collection period included 5 weeks of fieldwork (November 13–December 18, 2013), with a response rate of 95.3%.

### Instrument

A questionnaire was made for the collection of data, following the guidelines of the Inter-American Uniform Drug Use Data System (SIDUC). It included 135 questions with 12 sections: personal data; insecurity feeling among citizens; crime control and prevention; drug sale at a small scale; tobacco consumption; alcohol consumption; offer, access, and intention to use illicit drugs; use of medical and illegal drugs; problems associated to drugs use; access to prevention services; access to treatment services; and measures to deal with drug problems (DEVIDA 2014). Taking into account the need to identify predictive factors that allow us to guide the design of preventive policies and interventions on the use of drugs in Peru, variables with theoretical relevance were prioritized, corresponding to domains of risk factors: sociodemographic (age, sex, educational level), contextual (sale and consumption of illegal drugs in the neighborhood, access to marijuana), and individual (risk perception).

### Data Analysis

This research analyzed seven candidate predictor variables of a sociodemographic (age group, educational level), individual (risk perception of frequent marijuana use, risk perception of occasional marijuana use), and contextual (sale and consumption reports of illegal drugs in the neighborhood, perception of access to marijuana) nature. The response variable would be the marijuana use reported in the last 12 months.

A data analysis plan that included descriptive and inferential statistics was elaborated. Data were analyzed using the STATA 13 program. *The chi-square test* was used to analyze the difference in the prevalence of marijuana use in the last 12 months in each category of qualitative variables according to gender. Then, logistic regressions were performed to calculate odds ratios (OR) with their respective 95% confidence intervals (CI) ($p < 0.05$) for each gender. This measure of association was selected based on the fact that the OR is a good estimator when prevalence is low (Espelt et al. 2016; Schiaffino et al. 2003; Szklo and Nieto 2003). Likewise, raw and adjusted association analyzes were carried out, as well as the analysis of possible confounding factors. The existence of multicollinearity was evaluated using the variance inflation factor (VIF).

## Results

### Gender Differences in Annual Prevalence of Marijuana Use

In general, there is a significant difference in the annual prevalence of marijuana use between men and women of the general population of the Metropolitan Area of Lima (Table 1). These significant differences can be observed as well in most of the variables. It should be noted that in the 12 to 18 age group, the annual prevalence of marijuana use is similar in both men and

**Table 1** Gender differences in last 12-month prevalence of marijuana use among females and males in the general population in Metropolitan Area of Lima, Peru

| Variable | Prevalence | | | | |
|---|---|---|---|---|---|
| | Male (%) | Female (%) | Total (%) | $\chi^2$ | $p$ |
| Age group | | | | | |
| From 12 to 18 | 2.5 | 2.1 | 2.3 | 0.25 | 0.62 |
| From 19 to 29 | 3.8 | 0.6 | 2.3 | 23.23 | 0.00 |
| From 30 to 65 | 1.0 | 0.0 | 0.5 | 16.16 | 0.00 |
| Educational level | | | | | |
| Up to elementary school | 0.6 | 0.2 | 0.3 | 0.89 | 0.35 |
| High school | 2.1 | 0.3 | 1.2 | 30.20 | 0.00 |
| Non-university higher education | 2.6 | 0.4 | 1.5 | 7.63 | 0.01 |
| University higher education | 1.6 | 0.9 | 1.3 | 1.83 | 0.18 |
| Illegal drug sale in the neighborhood | | | | | |
| Does exists | 2.6 | 0.4 | 1.5 | 30.18 | 0.00 |
| Does not exists | 1.4 | 0.4 | 0.9 | 11.23 | 0.00 |
| Illegal drug use in the neighborhood | | | | | |
| Does exists | 2.5 | 0.5 | 1.5 | 35.34 | 0.00 |
| Does not exists | 1.0 | 0.3 | 0.6 | 5.20 | 0.02 |
| Risk perception—smokes marijuana sometimes | | | | | |
| Low risk | 4.0 | 1.1 | 2.8 | 11.00 | 0.00 |
| High risk | 1.7 | 0.4 | 1.0 | 30.33 | 0.00 |
| Risk perception—smokes marijuana frequently | | | | | |
| Low risk | 11.5 | 1.6 | 7.6 | 6.67 | 0.00 |
| High risk | 1.8 | 0.4 | 1.1 | 35.93 | 0.00 |
| Access to marijuana | | | | | |
| It would be easy | 5.1 | 1.6 | 3.8 | 19.94 | 0.00 |
| It would be difficult | 0.4 | 0.1 | 0.2 | 5.03 | 0.03 |
| Total | 2.0 | 0.4 | 1.2 | 40.01 | 0.00 |

women. On the other hand, although there are statistically significant differences between men and women, higher prevalence of marijuana consumption is observed in both genders among those who self-report low risk perception for frequent marijuana use, low risk perception for the occasional use of marijuana, and perception of easy accessibility to marijuana.

## Gender-Specific Predictors of Marijuana Use

Table 2 shows the crude odds ratios (COR) and adjusted odds ratios (AOR), 95% confidence intervals, and $p$ values of adjusted and unadjusted associations between candidate predictor variables and the use of marijuana in the last 12 months. As can be seen in both men and women, various educational levels and illegal drug sale in the neighborhood is not significantly associated with marijuana consumption.

It is observed that men aged 30 to 65 have a lower risk of past year marijuana use (AOR = 0.20; 95% CI, 0.11–0.34; $p < 0.001$) compared with men aged 12 to 18. In women, there is a

**Table 2** Sociodemographic, contextual, and individual predictors of last 12-month prevalence of marijuana use among males and females in the general population in Metropolitan Area of Lima, Peru

| Variables | Men | | Women | |
|---|---|---|---|---|
| | COR (95% CI) | AOR (95% CI) | COR (95% CI) | AOR (95% CI) |
| Age | | | | |
| 12–18 years | 1.00 | 1.00 | 1.00 | 1.00 |
| 19–29 years | 1.49 (0.97–2.28) | 1.00 (0.62–1.6) | 0.39 (0.18–0.85) | *0.25 (0.11–0.59)* |
| 30–65 years | 0.25 (0.15–0.41) | *0.20 (0.11–0.34)* | 0.08 (0.03–0.20) | *0.07 (0.03–0.18)* |
| Educational level | | | | |
| Up to elementary school | 1.00 | 1.00 | 1.00 | 1.00 |
| High school | 2.04 (0.64–6.54) | 0.99 (0.3–3.29) | 2.57 (0.34–19.56) | 1.15 (0.15–8.97) |
| Non-university higher education | 2.00 (0.60–6.65) | 0.80 (0.23–2.83) | 3.24 (0.39–26.94) | 1.99 (0.23–17.11) |
| University higher education | 1.91 (0.59–6.27) | 1.04 (0.3–3.58) | 6.65 (0.86–51.18) | 4.47 (0.56–35.58) |
| Illegal drug sale in the neighborhood | | | | |
| Does exists | 1.00 | 1.00 | 1.00 | 1.00 |
| Does not exists | 1.73 (1.20–2.48) | 0.96 (0.62–1.49) | 1.32 (0.65–2.65) | 0.61 (0.26–1.39) |
| Illegal drug use in the neighborhood | | | | |
| Does exists | 1.00 | 1.00 | 1.00 | 1.00 |
| Does not exists | 2.76 (1.71–4.45) | *1.90 (1.06–3.4)* | 2.59 (1.00–6.72) | 2.63 (0.87–7.99) |
| Access to marijuana | | | | |
| It would be easy | 1.00 | 1.00 | 1.00 | 1.00 |
| It would be difficult | 11.74 (7.28–18.95) | *10.22 (6.22–16.78)* | 11.63 (5.40–25.06) | *8.91 (4–19.82)* |
| Perception of risk related to the frequent use of marijuana | | | | |
| Low risk | 1.00 | 1.00 | 1.00 | 1.00 |
| High risk | 7.62 (4.32–13.44) | *4.97 (2.51–9.82)* | 4.74 (1.13–20.00) | 2.45 (0.47–12.73) |
| Perception of risk related to the occasional use of marijuana | | | | |
| Low risk | 1.00 | 1.00 | 1.00 | 1.00 |
| High risk | 3.29 (2.28–4.76) | *2.15 (1.41–3.27)* | 4.07 (1.93–8.57) | *2.65 (1.19–5.87)* |

Significant values with 95% CI are in italics. All the variables presented in the tables were included in the logistic regression model to adjust

*COR*, crude odds ratio; *AOR*, adjusted odds ratio

lower risk of marijuana use in the age group of 19 to 29 (AOR = 0.25; 95% CI, 0.11–0.59; $p < 0.001$) and 30 to 65 (AOR = 0.07; 95% CI, 0.03–0.18; $p < 0.001$).

The risk perception of frequent marijuana use has been predictive of the use of marijuana in the last 12 months in men, but not in women. Men who perceive low risk of frequent marijuana use have about 5 times more risk of consuming marijuana than those who have a higher risk perception (AOR = 4.97; 95% CI, 2.51–9.82; $p < 0.001$). On the other hand, it is identified that the risk perception of occasional marijuana use is a predictor of marijuana use both in men (AOR = 2.15; 95% CI, 1.41–3.27; $p < 0.001$) and in women (AOR = 2.65; 95% CI, 1.19–5.87; $p < 0.05$). For both genders, it is observed that a low risk perception of occasional marijuana use has increased twice the risk of the use of marijuana in the last 12 months.

Regarding the contextual predictors, it is evident that the consumption of illegal drugs in the neighborhood was a significant predictor of marijuana use in men (AOR = 1.90; 95% CI, 1.06–3.40; $p < 0.05$), but not in women. Regarding the perception of accessibility, it was found that men who perceive easy access to marijuana have ten times more risk of smoking marijuana in the last 12 months than those who perceive difficult access (AOR = 10.22; 95% CI, 6.22–16.78; $p < 0.001$). On the other hand, women who perceive easy access to marijuana have eight times more risk of smoking marijuana (AOR = 8.91; 95% CI, 4.00–19.82; $p < 0.001$).

## Discussion

Our main objective was to test the predictive value of sociodemographic (age and educational level), individual (risk perception of occasional marijuana use and risk perception of frequent marijuana use), and contextual (sale of illegal drugs in the neighborhood, illegal drug use in the neighborhood, and access to marijuana) variables in past-year marijuana use in the population. Then, analyses were carried out to determine significant use within the differences in the annual prevalence of marijuana use according to gender and variables of interest. Our objectives and analyses helped to improve the knowledge about the problem of marijuana use in the Metropolitan Area of Lima.

Although greater magnitudes of marijuana consumption correspond to the male population, and whether there are significant differences between both genders in most of the variables studied, it must be noted that there is no significant difference in the annual prevalence of marijuana use between men and women aged 12 to 18. It has been reported that the prevalence of use between genders is very close. Evidence on the reduction of gaps in the consumption of marijuana between men and women, mainly among younger generations, is supported by this finding Anthony et al. 2016; Champman et al. 2017).

An important issue to consider in this epidemiological scenario is the greater number of women from the Metropolitan Area of Lima smoking marijuana (DEVIDA 2012b, 2014). This has relevant medical and preventive implications, especially if it is considered that a "telescoping effect" has been identified in the increased use of marijuana among women. Women are rapidly experiencing a frequent occurrence of disorders associated with marijuana use (Kerridge et al. 2018; Khan et al. 2013). Taking into account that women in the Metropolitan Area of Lima have limited access to treatment, it is necessary to improve healthcare coverage and reinforce therapy for marijuana disorders through gender-sensitive services and programs (Sherman et al. 2016, 2017). From the prevention side, it is essential to adjust preventive

curricula in order to introduce specific content and strategies for men and women (Novák et al. 2013; Vigna-Taglianti et al. 2009).

The significant difference in marijuana use between men and women may be related to traditional masculinity practices still prevalent in the Metropolitan Area of Lima (Hurtado 2009; Salazar and Bustamante 2011), where drug use is linked to masculine values (e.g., assumption of risk, worth, and strength). On the other hand, in this context of traditional gender roles, women should have a lower presence in drug consumption spaces, deeper fear of negative effects of drug use, and greater discretion and self-control (Salazar and Bustamante 2011). Regarding the specific case of marijuana use, rules governing the use of this drug for men and women are similar to the rules for the consumption of alcohol. Men are allowed to smoke marijuana in both public and private settings, while women do it mainly in private settings (Dahl and Sandberg 2015; Warner et al. 1999). These gender peculiarities about drug use suggest possible differentiated effects in different risk factors between men and women.

Therefore, the multivariate analysis revealed some gender differences when identifying predictors of marijuana use. It is observed that age had an important protective effect in women. By the end of adolescence, women are less likely to smoke marijuana. For men, the protective effect of age occurred when they were over 30 years old. Evidence regarding a decreased risk and use of marijuana as age advances is supported by this finding (Bergen-Cico and Cico 2017).

On the other hand, consumption of illegal drugs in the neighborhood and the risk perception of frequent use of marijuana were predictors in men but not in women. This could suggest that women might be less influenced by marijuana use in their neighborhoods and have a less benign perception of the negative effects of frequent use of marijuana. This is consistent with the evidence that women are more likely to perceive a higher risk of regular marijuana use (Pacek et al. 2015). On the other hand, the risk perception of occasional marijuana use had a similar predictive effect in both men and women. This finding contrasts with the study by López-Quintero and Neumark (2010), which identified a greater magnitude of association among women, but in general confirms the evidence of low risk perception as a predictive role in marijuana use (Apostolidis et al. 2006; Grevenstein et al. 2015; Kilmer et al. 2007; Piontek et al. 2013).

Several studies have revealed the relevance of the availability of drugs (Coffey et al. 2000; Freisthler et al. 2005; Gillespie et al. 2009) in the onset of their use and the relationship between perceived access and real use of marijuana (Epstein et al. 2015; Swaim 2003). In this regard, our study identified that the perception of easy access to marijuana presented a similar predictive effect in men and women. This result has implications for the analysis of the relationship between consumption and the illegal drug market in the Metropolitan Area of Lima.

Consumption of illegal drugs is more likely to happen in individuals living in neighborhoods or communities where illegal drugs are easily accessible (Dembo et al. 1979; Van Etten et al. 1997), offered through micro-trafficking or specific networks. According to estimates, there are about 1500 points of sale of marijuana, cocaine, and cocaine paste in the Metropolitan Area of Lima and Callao (Centro de Información y Educación para la Prevención del Abuso de Drogas 2017). However, street sale is not the only form of marijuana supply in the Metropolitan Area of Lima; there is also a social offer, which involves networks of friendship and trust, without participation in criminal activities or drug trafficking organizations (Pastor 2016). The availability and access of marijuana in the Metropolitan Area of Lima makes it more complex, since men and women can access marijuana in different scenarios. This goes against the traditional idea of restriction or exclusion of women in the supply of marijuana.

In our study, the perception of easy access to marijuana was the strongest predictor of marijuana use for both genders. This result is in line with national findings (Saravia et al. 2014). The same is observed in international research studies on illegal drugs, including marijuana (Dembo et al. 1979; Duncan et al. 2014; Keyes et al. 2011; Knibbe et al.2005; Warren et al. 2015).

Regarding the multifactorial nature of marijuana use, it is important to highlight how perceived accessibility to marijuana interacts with other risk factors. For example, impulsivity, the perception of easy access, and low parental supervision are factors influencing the frequent use of marijuana in teens. Teenagers who reported high levels of access and less parental supervision smoked marijuana heavily. This effect was also maximized by impulsivity (Haas et al. 2018). This recent finding demonstrates the complex interaction among the risk factors involved in marijuana use.

While marijuana is the illegal drug used the most in the Metropolitan Area of Lima, a major part of the general population does not perceive this substance is one of easy access (DEVIDA 2012b, 2014). For those who perceive it as easily accessible, marijuana use was significantly higher, and it was also found that this is an important predictor in both men and women. In countries where there is an extensive use of marijuana, a progressive decrease in the perception of easy access (Salas-Wright et al. 2017) and the perception of risk is evidenced (Okaneku et al. 2015). Although there are not enough comparable measurements in the Metropolitan Area of Lima to produce trend reports on these variables, our results suggest the perception of easy access and low risk perception of marijuana helps to create a contextual and individual vulnerability. Recent measures to regulate the medicinal and therapeutic use of marijuana in Peru also provide a sociopolitical context that should be taken into consideration in preventive policies. According to the evidence from recent years, legalization of marijuana for medical purposes is linked to some groups who have a decreased risk perception and an increased perception of accessibility (Chadi et al. 2018; Martins et al. 2016; Wall et al. 2011).

In general, our results reveal a risk scenario for the use of marijuana in both genders, characterized by the perception of easy access to marijuana and a low risk perception. Differentially, the report of drug use in the neighborhood and the low risk perception of frequent marijuana use were significant predictors for the male group.

The findings of our study have implications for marijuana use prevention. Evidence-based prevention programs have been designed based on an adequate identification of factors that can be modified. Contextual and individual predictors were identified in the Metropolitan Area of Lima, which could be considered in the design and implementation of future marijuana prevention programs. The development of these interventions seems quite promising. In that sense, several revisions suggest that specific prevention programs have a positive impact on the reduction of marijuana use in the school environment. Likewise, there is evidence of a need to introduce in these programs, activities, and strategies based on the social influence model (Ariza et al. 2017; Lize et al. 2017; Porath-Waller et al. 2010). These prevention programs help guide individuals away from becoming involved in drug use by promoting identification of resistance to being enticed to drug consumption and making them understand that most people do not use marijuana (or other illegal drugs), thus increasing the perception of risk.

It is necessary to intervene coherently with strategies to reduce drug supply and demand within the framework of policies for reducing the availability of illegal drugs (including marijuana), strengthen the community and families for taking preventive actions, improve individuals' psychosocial skills to face the opportunities of use, and reduce their willingness to consume. At the level of intervention in contextual factors (e.g., perception of accessibility to

illegal drugs), community and environmental prevention programs are a viable option. These interventions promote community organizations for the prevention of drug use. Based on the evaluation of various risk and protective factors, each community creates networks by implementing evidence-based programs in educational and family settings, in addition to promoting actions aimed to reducing drug use opportunities and accessibility (Bloomfield and Stock 2013; Feinberg et al. 2010; Furr-Holden et al. 2011; Mejía-Trujillo et al. 2015; Quinlan et al. 2015).

## Limitations

Some limitations of the study deserve to be mentioned. First, it is possible that collection by direct interview may affect the self-report of marijuana use and the declaration of sale and consumption of illegal drugs in the neighborhood. Second, the exploration of risk perception and accessibility perception to marijuana was assessed based on a single question. A more complete evaluation is needed because of the complexity and multidimensionality of these variables. Finally, the cross-sectional nature of this study does not allow assessing the stability of the perceptions analyzed over time, and how it could impact on the use of marijuana in both genders.

## Conclusion

The results provide empirical evidence for understanding marijuana use in the Metropolitan Area of Lima and for designing interventions. In this sense, more research is especially needed to learn more about the processes leading to marijuana use in men and women. Our findings indicate that this type of research would broaden our understanding of the dynamics and the factors involved in marijuana use and would help implement evidence-based policies.

### Compliance with Ethical Standards

**Conflict of Interest** The author declares that he has no conflicts of interest.

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