

Relationship of problematic cannabis use among youth in Spain with perceived risk, environmental factors and sociodemographic factors

Relación del consumo problemático de cannabis en la población joven de España con el riesgo percibido, los factores ambientales y los factores sociodemográficos

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Abstract

The relationship of problematic cannabis consumption with perceived risk, socioenvironmental and sociodemographic factors among youth in Spain is not well known. The aims of this study are: 1) to describe the patterns of cannabis consumption (problematic and non-problematic) in Spanish youth, and 2) to explore whether problematic cannabis consumption is related to perceived risk, environmental factors and individual sociodemographic characteristics. A cross-sectional design based on data from the 2015/16 Spanish Household Survey on Alcohol and Drugs (EDADES) was performed. Individuals between 15 and 35 years old having used cannabis during the last year with a complete Cannabis Abuse Screening Test (CAST) were included (N = 1,674). Problematic consumption (CAST \geq 7) was considered as dependent variable. Perceived risk, environmental factors (availability of the substance and exposure to consumption situations) and sociodemographic factors were taken as independent variables. Descriptive analyses of consumption patterns were performed and univariable and multivariable Poisson regression models were done. All analyses were stratified by gender. Problematic cannabis consumption was more frequent among men (38.9 %) than among women (23.2 %). While among men, problematic use was related to environmental factors and educational level, among women it was associated with perceived risk and unemployment. Problematic cannabis consumption among Spanish youth is associated with

Resumen

La relación entre el consumo problemático de cannabis, el riesgo percibido y los factores socioambientales y sociodemográficos no es clara actualmente. Los objetivos del estudio son: describir los patrones de consumo de cannabis (problemático y no problemático) en la población joven de España y explorar como el consumo problemático se relaciona con el riesgo percibido, y los factores ambientales y sociodemográficos. Se llevó a cabo un diseño transversal basado en datos de la edición de 2015/2016 de la Encuesta Domiciliaria sobre Alcohol y Drogas (EDADES). La encuesta incluyó participantes de entre 15 y 35 años que habían consumido cannabis en al menos una ocasión durante el último año y que completaron el *Cannabis Abuse Screening Test* (CAST) (N = 1674). Se consideró el consumo problemático (CAST \geq 7) como variable dependiente. Como variables independientes se consideraron el riesgo percibido, los factores ambientales (disponibilidad de la sustancia y exposición a situaciones de consumo) y los factores sociodemográficos. Se llevaron a cabo análisis descriptivos de los patrones de consumo y se realizaron modelos univariados y multivariados de Poisson. Todos los análisis se estratificaron por género. El consumo problemático fue más frecuente en hombres (38,9 %) que en mujeres (23,2 %). Mientras en hombres el consumo problemático se relacionó con factores ambientales y nivel educativo, en mujeres se asoció con riesgo percibido y desempleo.

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different types of gender-related factors. Due to its representativeness at the population level and the validity of the measures, these results might have important implications on the development of prevention strategies targeted at problematic cannabis consumption.

Key words: Cannabis; Sociodemographic factors; Environmental factors; Perceived risk; Survey studies.

Nowadays cannabis is one of the most consumed recreational drugs among the young population and one of the most burdensome worldwide (United Nations Office on Drugs and Crime, 2016). It has been estimated that around 17.2 million young European adults between 15 and 34 years old (about 14.1% of this segment of the population) have used cannabis at least once during the previous year, and around 9.8 million of those between 15 and 24 years old, 17.4% of this population group (European Monitoring Centre for Drugs and Drug Addiction, 2017). In this context of high prevalence of use, it is essential to determine which factors could lead to the development of a problematic pattern of consumption among sporadic users. It has been shown that problems associated with cannabis use are highly dependent on consumption patterns (Silins et al., 2014), with problematic use being consistently associated with severe and chronic health illnesses as well as with negative psychosocial consequences.

Several studies have been carried out to try to determine which factors are related to problematic cannabis consumption (Colell, Sánchez-Niubò, Delclos, Benavides & Domingo-Salvany, 2015; Kokkevi, Richardson, Florescu, Kuzman & Stergar, 2007; Observatorio Español de las Drogas y las Toxicomanías, 2016; Redonnet, Chollet, Fombonne, Bowes & Melchior, 2012). Gender and age differences have been consistently found, with a higher problematic consumption in male and younger populations (Arias-De la Torre et al., 2019; Rial et al., 2019). However, this literature usually focuses on specific population groups, such as students or specific work environments, and on specific determinants such as socio-economic and/or personality factors.

Regarding other variables related to problematic cannabis use, several studies have pointed out a strong relationship with risk perception (Grevenstein, Nagy & Kroeninger-Jungaberle, 2015; Kirst, Mecredy, Borland & Chaiton, 2014; Salloum, Krauss, Agrawal, Bierut & Grucza, 2018). However, many of these studies were carried out within general population samples, including both substance users and non-users. Carrying out separate studies may contribute to improving our understanding about how perceived risk could lead to the development of a problematic pattern of consumption. In addition, other variables that have been pointed out as being influential over can-

nabis problematic use are factors from the environment in which the individual lives, as the availability of the substance, the social exposure to consumption, and the socio-economic correlates (Kirst et al., 2014; Parnes, Smith & Conner, 2018). Knowing how environmental factors are related to problematic use could be helpful to propose more effective and efficient preventive strategies adapted to the context in which they will be implemented. Nevertheless, there is a lack of knowledge on the relationship between this type of variables and problematic use. Regarding socio-economic correlates, several studies have indicated that both employment status and educational level might be related to cannabis consumption in the young population (Colell et al., 2015; Teixidó-Compañó et al., 2018). Consequently, bearing in mind these variables when studying cannabis use may contribute to a better understanding of the different patterns of consumption.

Palabras clave: Cannabis; Factores sociodemográficos; Factores ambientales; Riesgo percibido; Estudios de encuestas.

Therefore, the aims of the present study are: (1) to describe the patterns of cannabis consumption (problematic and non-problematic) in the Spanish young population, and (2) to test whether problematic cannabis consumption is related to perceived risk, environmental and socio-demographic factors.

Material and methods

Design and study population

A cross-sectional design based on data from the 2015/2016 edition of the Spanish Household Survey on Alcohol and Drugs (EDADES) (Observatorio Español de las Drogas y las Toxicomanías, 2016) was carried out. EDADES is a representative survey of the Spanish population aged 15 to 64 years old. The sample was selected using a three-stage clustered sampling method without replacement, obtaining a response rate of 50.5%. The survey questionnaire contains information on cannabis consumption and its patterns, as well as environmental and socio-demographic variables.

As study population, individuals aged less than 36 years that have used cannabis at least once during the year prior to the interview and that completed the *Cannabis Abuse Screening Test* (CAST) were selected (n=1,674). Individuals without information on educational level (n=2; 0.1%), employment status (n=51; 3.1%), perceived risk regarding regular use (n=10; 0.6%), perception on the availability

of the substance (n=29; 1.7%) and/or social exposure to situations of consumption (n=11; 0.7%) were excluded. Finally, a total sample of 1,579 individuals was considered for the analyses.

Study variables

The dependent variable of the present study was problematic cannabis use evaluated through the CAST. This questionnaire, is a valid and reliable screening tool to detect a problematic pattern of cannabis use (Cuenca-Royo et al., 2012). This questionnaire is composed of 6 Likert-type items regarding the frequency of 5 different events within the 12 months prior to its administration: non-recreational smoking (2 items), memory problems related to consumption (1 item), preoccupation of parents or friends about consumption (1 item), unsuccessful attempts to quit (1 item) and other possible problems related to consumption. The items are scored on a 5-point Likert scale from 0 (“never”), to 4 (“very often”). A total score is obtained by adding each item of the scale, ranging from 0 to 24. The cut-off point for problem cannabis use was fixed at 7 or higher (AUC=0.83) as proposed by a Spanish population validation study (Cuenca-Royo et al., 2012).

As explanatory variables, perceived risk, environmental (availability of the substance and exposure to consumption situations) and socio-demographic factors were selected. Perceived Risk was assessed by using a Likert-type item with a four-point response scale from 1 (“any problems”), to 4 (“many problems”) regarding to the consequences of use of cannabis one or more times a week. Availability of the substance was evaluated through a Likert-type item with a 4-point response scale from 1 (“practically impossible”), to 4 (“very easy”) regarding the difficulty to obtain the substance within 24 hours. Due to the low number of individuals in the levels of the variable “practically impossible” and “difficult”, these categories were collapsed into “difficult”. Exposure to consumption situations was assessed using a Likert-type item with a four-point response scale from 1 (“usually”) to 4 (“never”) about how often people were found smoking cannabis in their nearby environment. Additionally, the following socio-demographic factors were considered: gender, age as a dichotomous variable (from 16 to 25 years and from 26 to 35 years), educational level (university studies, secondary/high school and primary/no education) and employment status (working, unemployed and studying).

Statistical analyses

A descriptive analysis of the distribution of problematic cannabis use across the explanatory factors by gender was done. Differences were evaluated using Chi-square and Fisher F exact tests. Subsequently, bivariable and multivariable level Poisson regression models were used to test the association between explanatory factors and the dependent

variable. From these models, crude Risk Ratio (RR), adjusted Risk Ratio (aRR) and their 95% Confidence Intervals (95%CI) were obtained. All multivariable models were adjusted for all the explanatory variables. The goodness of fit of multivariable models was assessed using a Chi Square test. Besides, the absence of multi-collinearity and the absence of interactions between variables were verified. The *p* values for the global statistical significance for each variable were obtained from Wald tests. All models were stratified by gender based on the theoretical framework proposed by previous studies (Arias-De la Torre et al., 2019; Colell et al., 2015; Kirst et al., 2014; Redonnet et al., 2012), and were carried out considering the weights derived from the complex sample design. All analyses were carried out using the statistical software Stata v.14 (StataCorp, 2015).

Results

Table 1 shows the characteristics of the studied sample and the patterns of cannabis consumption by gender. It can be observed that problematic cannabis consumption is more frequent in men (38.9%) than in women (23.2%). Among men, statistically significant differences in the patterns of consumption in all explanatory variables excluding age were found. However, among women, these differences were found in perceived risk, educational level and employment status.

In addition, Table 2 shows the relationship between problematic cannabis consumption and all explanatory variables. After adjustment, the availability of the substance, the exposure to consumption situations and the educational level were significantly related to problematic consumption ($p < .05$) among men. In contrast, among women only the perceived risk was associated with this pattern of consumption. In addition, and considering the specific categories for each of the variables included, a higher risk of problematic consumption was shown in men usually exposed to consumption situations (aRR: 1.42; 95%CI: 1.02-1.98 taking “never exposed” as reference category) and among those with educational level primary or illiterate (aRR: 1.68; 95%CI: 1.22-2.30 taking university studies as reference category). Among women, a higher risk of problematic consumption was exhibited among those that do not perceive “any problems” related to the consumption (aRR: 1.96; 95%CI: 1.01-3.80 taking “many problems” as reference category) and among those unemployed (aOR: 1.95; 95%CI: 1.27-2.98 taking working as reference category).

Discussion

The results show that, nowadays, the prevalence of problem cannabis use among the young population of Spain is high, particularly among men. Additionally, while among

Table 1. Characteristics of the studied sample and differences in patterns of cannabis consumption in Spanish young population by gender. Spanish Household Survey on Alcohol and Drugs 2015/2016.

	Men (N = 1,117)				p value	Women (N = 462)				p value
	Non-Problematic users (n = 683; 61.1%)		Problematic users (n = 434; 38.9%)			Non-Problematic users (n = 355; 76.8%)		Problematic users (n = 107; 23.2%)		
	n	%	n	%		n	%	n	%	
Perceived risk					< .001					.008
Many problems	107	15.7	57	13.1		56	17.8	10	9.4	
Some problems	179	26.2	74	17.1		101	28.5	25	23.4	
Few problems	253	37.0	163	37.6		127	35.8	34	31.8	
Any problems	144	21.1	140	32.3		71	20.0	38	35.5	
Availability (within 24 hours)					< .001					.271
Difficult	49	7.2	21	4.8		23	6.5	5	4.7	
Relatively easy	182	26.7	69	15.9		103	29.0	24	22.4	
Very easy	452	66.2	344	79.3		229	64.5	78	72.9	
Exposure to situations					< .001					.438
Never	92	13.5	34	7.8		37	10.4	9	8.4	
Rarely	125	18.3	57	13.1		60	16.9	12	11.2	
Frequently	249	36.5	157	36.2		130	36.6	44	41.1	
Usually	217	31.8	186	42.9		128	36.1	42	39.3	
Educational level					< .001					.022
University studies	95	13.9	45	10.4		83	23.4	14	13.1	
Secondary or high school	525	76.9	301	69.6		251	70.7	81	75.7	
Primary or illiterate	63	9.2	87	20.1		21	5.9	12	11.2	
Working					< .001					.010
Employment status	309	45.2	194	44.7		173	48.7	45	42.1	
Unemployed	166	24.3	150	34.6		59	16.6	32	29.9	
Student	208	30.5	90	20.7		123	34.7	30	28.0	
Age					.086					.670
16-25 years old	304	44.5	216	49.8		151	42.5	48	44.9	
26-35 years old	379	55.5	218	50.2		204	57.5	59	55.1	

Note. n: total sample analysed; %: percentage by column; 95% CI: 95% Confidence Interval. p value: Chi square and Fisher exact tests. Non-problematic users: CAST <7; problematic users CAST ≥7.

men problematic use seems to be related to environmental factors and educational level, among women problem cannabis use might be associated with perceived risk and unemployment. Focusing on factors related to problematic consumption, it should be highlighted that problematic use prevalence is higher among men than in women, and for men, external and contextual factors seem to be closely related to this pattern of use. Among women, however, internal and personal factors seem to be particularly relevant. These results are consistent with those obtained by some previous studies (Bonar et al., 2017; Foster, Jeffries, Zvolensky & Buckner, 2016; Haug, Núñez, Becker, Gmel & Schaub, 2014; Kirst et al., 2014), and could be partially explained by gender differences in stress coping strategies among youngsters. While in countries with traditional family values such as Spain young men are expected to have an externally focused coping style and might be more driven by impulse and opportunity, young women are expected

to have an internally focused coping style and might adjust their attitudes more to behavioural experiences (Casajuana Kögel et al., 2021; Foster et al., 2016; García-Sánchez et al., 2016). Therefore, as was suggested by previous research (Casajuana Kögel et al., 2021; Haug et al., 2014; Kokkevi et al., 2007; López-Pelayo, Miquel De Montagut, Casajuana Kögel & Balcells Oliveró, 2018), providing adaptive stress management strategies (focused on external factors in men, and on internal factors in women) might be an effective approach to face the problematic cannabis consumption. Nevertheless, to explore the possible bi-directional influence between the explanatory variables and problem cannabis use, it might be particularly relevant to establish specific preventive measures focused on the cause of problematic use, as is the case of unemployment among women though, as previous longitudinal research has suggested, the direction of this relationship is unclear (Popovici & French, 2014).

Table 2. Relationship between problematic cannabis consumption with perceived risk, availability of the substance, exposure to consumption situations and socio-demographic factors in Spanish young population. Bivariable and multivariable analysis. Spanish Household Survey on Alcohol and Drugs 2015/2016.

	Men				Women			
	RR (95% CI)	p	aRR (95% CI)	p	RR (95% CI)	p	aRR (95% CI)	p
Perceived risk		.006		.067		.007		.022
Many problems	1.00		1.00		1.00		1.00	
Some problems	0.66 (0.48-0.91)		0.67 (0.49-0.91)		1.17 (0.56-2.45)		1.21 (0.59-2.46)	
Few problems	0.94 (0.73-1.22)		0.91 (0.71-1.18)		1.28 (0.63-2.60)		1.31 (0.65-2.64)	
Any problems	1.21 (0.94-1.56)		1.06 (0.82-1.36)		2.27 (1.15-4.50)		1.96 (1.01-3.80)	
Availability (within 24 hours)		.001		.008				
Difficult	1.00		1.00		1.00	.629	1.00	.897
Relatively easy	1.03 (0.62-1.02)		1.04 (0.63-1.69)		0.63 (0.26-1.65)		0.65 (0.30-1.41)	
Very easy	1.57 (0.98-2.50)		1.41 (0.90-2.21)		0.92 (0.39-2.18)		0.81 (0.41-1.60)	
Exposure to situations		.001		.023		.091		.245
Never	1.00		1.00		1.00		1.00	
Rarely	1.05 (0.70-1.58)		1.11 (0.75-1.64)		0.66 (0.26-1.65)		0.67 (0.27-1.64)	
Frequently	1.24 (0.87-1.76)		1.21 (0.86-1.71)		1.39 (0.65-2.97)		1.24 (0.59-2.63)	
Usually	1.56 (1.11-2.20)		1.42 (1.02-1.98)		1.36 (0.63-2.94)		1.07 (0.51-2.22)	
Educational level		< .001		< .001		.114		.203
University studies	1.00		1.00		1.00		1.00	
Secondary or high school	1.17 (0.87-1.56)		1.14 (0.86-1.52)		1.47 (0.80-2.68)		1.38 (0.75-2.52)	
Primary or illiterate	1.91 (1.39-2.61)		1.68 (1.22-2.30)		1.79 (0.81-3.95)		1.48 (0.65-3.38)	
Employment status		.049		.165		.557		.536
Working	1.00		1.00		1.00		1.00	
Unemployed	1.19 (0.99-1.43)		1.09 (0.91-1.31)		2.21 (1.45-3.36)		1.95 (1.27-2.98)	
Student	0.75 (0.59-0.95)		0.79 (0.61-1.01)		1.10 (0.68-1.76)		1.09 (0.65-1.83)	
Age		.128		.222		.764		.545
16-25 years old	1.00		1.00		1.00		1.00	
26-35 years old	0.88 (0.74-1.04)		0.97 (0.81-1.15)		0.94 (0.64-1.38)		0.91 (0.61-1.35)	

Note. RR: crude Risk Ratio. aRR: adjusted Risk Ratio. 95% CI: 95% Confidence Interval. p: p value from Wald test. Multivariable models were adjusted for all the main explanatory variables and socio-demographic factors. All analyses were carried out considering the weights derived from the complex sample design. All multivariable models had a p-value>0.05 in the Chi Square goodness of fit test.

Regarding the directionality of the relationships between variables it should be noted that, as was shown in previous research, the relationship found between risk perception and problem use might be bi-directional (Salloom et al., 2018). The results from this study confirms the principle that “attitude follows behaviour”. In this sense, longitudinal associations between cannabis use and risk perception could be reciprocal in nature, with a stronger association between cannabis use and lower subsequent risk perception. Further research in the Spanish population with longitudinal data, might be valuable to have a better understanding of this relationship in the Spanish context.

Regarding the employed methods, it should be noted that our study is one of the biggest carried out in Europe aimed at assessing problem cannabis use. Furthermore, a representative sample at country level and a valid and reliable tool designed specifically for this purpose were used.

Previous studies do not commonly use representative samples and valid and reliable tools to determine the consumption patterns. The combination of this type of samples with the use of tools with adequate metric properties, such as the CAST questionnaire (Cuenca-Royo et al., 2012), might provide more accurate estimations of problematic use, and additionally may help improve the accuracy when determining the specific factors related to the different patterns.

Several limitations of the study need to be discussed. Firstly, its cross-sectional design precludes determining the causal direction of the relationship between problematic use and the explanatory factors. Nevertheless, this design could be adequate for identifying possible factors related to the pattern of consumption. Secondly, it should be noted that CAST’s sensitivity and specificity are not optimal. Despite this, the CAST questionnaire has shown adequate metric properties (Cuenca-Royo et al., 2012). Additionally, it is the first time that this tool has been included in the EDADES

survey. Consequently, our results may serve as a baseline for a valid and reliable assessment of problematic cannabis use and its related factors. Finally, there are limitations inherent to the self-reported nature of the information (i.e., some people may be reluctant to answer certain questions related to drug use). Nevertheless, as the questionnaire was anonymous, answers can be considered as *a priori* unbiased. Besides, the sample response rate was 50.5%, with the representativeness at population level having been guaranteed (Observatorio Español de las Drogas y las Toxicomanías, 2016). Therefore, we consider that the studied population is adequate to develop the proposed aims.

In conclusion, our study shows that problem cannabis use among the Spanish youth is high, particularly among men, and might be related to different types of factors according to gender. Additionally, these results may serve as a starting point for further research within and outside Europe and, furthermore, they may help to identify factors associated with the development of problematic patterns of cannabis consumption.

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