ORIGINAL

Changes in cannabis use in Spanish consumers during the COVID-19 lockdown according to gender, age, living situation and addiction level

Cambios en el consumo de cannabis en consumidores españoles durante el confinamiento por la COVID-19 según sexo, edad, situación de convivencia y nivel de adicción

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Abstract

The objective was to analyze the changes in cannabis use during lockdown considering sex, age, living situation and level of addiction. This descriptive and non-probabilistic study used a convenience sample of 208 participants with ages between 18-57 years (64.3% men; mean age = 31.39 years), that reported consuming cannabis. The frequency of distinct typologies of cannabis use was analyzed and the level of addiction with the Cannabis Abuse Screening Test (CAST). An online survey was used to collect the variables under study. A total of 25% consumers increased their spliff (marijuana mixed with tobacco) consumption, 11.9% increased their joint (marijuana cigarette) consumption and 11.8% increased their hashish spliff consumption. Men had higher levels of cannabis addiction, however, during lockdown they reduced their marijuana spliff consumption while both men and women increased their joint consumption. Marijuana spliff consumption showed a greater increase in the 25-29 age group, in those living with people other than relatives or a partner, alone, or with a partner and was reduced mainly in those living with parents or other relatives. The living alone 18-24 years old group, and the living with parents 35-44 years old group showed higher levels of cannabis addiction (CAST). The rate of dependent consumers who increased their marijuana spliff consumption (49%) doubled compared to consumers with no addiction and moderate addiction. Regarding joints, consumption was 1.5 times higher than for moderate addiction consumers and three times higher than those with no addiction. The risk of cannabis addiction increased in certain groups during lockdown.

Keywords: cannabis, addiction, gender, age, living situation

Resumen

El objetivo fue analizar el consumo de cannabis durante el confinamiento según sexo, edad, situación de convivencia y nivel de adicción. Estudio descriptivo no probabilístico con una muestra de conveniencia de 208 participantes con edades entre 18-57 años (64,3% hombres; edad media = 31,39 años) que reportaron consumir cannabis. Se analizó la frecuencia de distintas tipologías de consumo de cannabis y el nivel de adicción con el Cannabis Abuse Screening Test (CAST). La recogida de datos se realizó mediante encuesta online. El 25% de consumidores aumentó su consumo de porros de marihuana mezclada con tabaco; el 11,9% de cigarros de marihuana; y el 11,8% de porros de hachís mezclado con tabaco. Los hombres presentaron mayor nivel de adicción al cannabis. Sin embargo, redujeron su consumo de porros durante el confinamiento. Hombres y mujeres incrementaron su consumo de cigarros de marihuana. El consumo de porros se incrementó mayormente en el grupo de 25-29 años, entre quienes convivían con personas distintas a familiares y pareja, vivían solas, o en pareja; y se redujo entre quienes vivían con progenitores o familiares. Mostraron mayor nivel de adicción al cannabis (CAST) el grupo entre 18-24 años que vive solo y el grupo entre 35-44 años que convive con sus progenitores. Los consumidores con dependencia que incrementan su consumo de porros (49%) fue dos veces superior respecto a los grupos sin adicción y con adicción moderada. El consumo de cigarros de marihuana (20,8%) fue 1,5 veces superior que para adicción moderada y más del triple que para sin adicción. El riesgo de adicción a cannabis aumentó en ciertos grupos durante el confinamiento.

Palabras clave: cannabis, adicción, género, edad, situación de convivencia

Even though cannabis availability saw a decline during the COVID-19 pandemic lockdown period, it remained the most widely available illegal drug (Boehnke, McAfee, Ackerman & Kruger, 2021; Rolland et al., 2020; Van Laar et al., 2020) and one of the most sought-after (European Monitoring Center for Drugs and Drug Addiction & Europol, 2020). Its sale increased between January and March 2020 (EMCDDA & Europol, 2020), when recreational consumers seemed to stock up before the lockdown (Cherkasova, 2020). Despite several studies suggesting that there has been an increase in cannabis use during the pandemic (Bartel, Sherry & Stewart, 2021), cannabis use patterns in Europe remained relatively stable during lockdown compared to before the pandemic (EMCDDA, 2020). However, these studies do not report how the lockdown affected the frequency of use or the amount of cannabis consumed on each occasion; important factors linked to negative health consequences (Fischer et al., 2017). Nor have studies considered the role of certain sociodemographic variables, such living situation during lockdown, something only Vanderbruggen et al. (2020) and Villanueva-Blasco, Villanueva-Silvestre, Vázquez-Martínez, Rial & Isorna (2021) did in the case of alcohol.

Lockdown measures led to the modification of multiple social dynamics, such as the closure of educational centers and universities and changes in family living situations. This meant that young people spent more time with family and less time in contexts conducive to substance use (Bollen et al., 2021; Graupensperger et al., 2021).

Family living conditions also led to an increase in care obligations due to school closures. Children were attending school online from their own home or were carrying out their educational tasks there. Lockdown also implied greater attention to sick or dependent relatives (Beach, Schulz, Donovan & Rosland, 2021; Lee, Ward, Chang & Downing, 2021). Such care responsibilities fell disproportionately on females (Giurge, Whillans & Yemiscigil, 2021; Zamarro & Prados, 2021) and were associated with higher anxiety and depression symptoms (Russell, Hutchison, Tambling, Tomkunas & Horton, 2020).

The different forms of cannabis use are a topic of interest for the development of public policies and for the design of preventive and treatment interventions. The most common form of cannabis use in Europe and Spain is mixed with tobacco, mainly in the format known as spliffs. Spliffs can be of two types: tobacco with marijuana (the crushed mixture of the bud and leaves near the plant) or tobacco with hashish (the resinous secretions of the plant), being in Spain the majority consumption of marijuana spliffs mixed with tobacco (Isorna, Villanueva-Blasco, Veiga & Otero-Requeijo, 2020). This dual consumption establishes a difference with respect to the consumption of cannabis cigarettes alone, as it encourages the continued use of both substance (Hindocha, Freeman, Ferris, Lynskey & Winstock, 2016), and is associated with increased symptoms of cannabis dependence (Richter, Pugh & Ball, 2016; Schauer & Peters, 2018). Analyzing how COVID-19 confinement may have modified cannabis use pattern is of particular interest in the case of dual use mixed with tobacco.

The objective of the present study was to analyze the changes in cannabis use patterns during the COVID-19 lockdown period. In contrast to other studies, several typologies of cannabis use were considered in this study, including dual cannabis-tobacco use, as well as analyzing possible changes according to several sociodemographic variables, such as gender, age and cohabitation status. We also explored whether these variables and their interaction mediated the level of cannabis addiction. Finally, we analyzed whether the number of marijuana spliffs that users obtained with one gram of marijuana increased or decreased during confinement, considering their level of addiction.

Method

Design
This study is descriptive and non-probabilistic, and uses convenience sampling. An online survey was used to collect the variables under study. Age ranges were established based on those that showed adequate Internet access, as stated in the Equipment and Use of Information and Communication Technologies at Home Survey (Instituto Nacional de Estadística, 2019).

Participants
Of the total sample of participants ($N = 3,780$), 7.86% ($n = 208$) reported using cannabis in at least one of its forms before and/or during lockdown, this being the sample on which the analyses were performed. A total of 35.7% ($n = 74$) were female and 64.3% ($n = 134$) were male, aged between 18 and 64 ($M = 31.4$, $SD = 9.5$). As for age, 27.7% ($n = 58$) were between the ages of 18 and 24, while 24.5% ($n = 51$) were between 25 and 29, some 18% ($n = 37$) were between 30 and 34, a further 17% ($n = 35$) between 35 and 44, only 10% ($n = 21$) were between 45 and 54, and 2.8% ($n = 6$) between 55 and 64.

Regarding living situation during lockdown, 6.1% ($n = 13$) of the participants reported living alone, 32.1% ($n = 67$) lived with their parents or other relatives, 31.9% ($n = 66$) lived with a partner, 9.1% ($n = 19$) shared a flat with people other than relatives or a partner, and 9.40% ($n = 20$) were in various living situations. A total of 11.5% of consumers did not answer this question, so they were excluded from subsequent analyses in which this variable was taken into account. Regarding the level of education, more than half (66.7%) had university studies, 20% had

completed vocational training, 8.9% had completed high school, 3.2% had secondary education and only 1.1% had primary education.

Instruments

The sociodemographic variables were: a) gender (male, female); b) age, using the age ranges established by the EDADES survey (Observatorio Español de las Drogas y las Adicciones, 2021) (18-24 years, 25-29 years, 30-34 years, 35-44 years, 45-54 years, 55-64 years); and c) living situation: (1) lives alone; (2) lives with parents or other relatives; (3) lives with a partner; (4) shares a flat with people who are neither relatives nor a partner; (5) another living situation.

To analyze the consumption of cannabis and its derivatives, the following types were considered: a) marijuana spliff; b) joint (marijuana cigarette); c) hashish spliff; d) marijuana mixed with hashish; e) CBD oil; and f) synthetic cannabis. For each, the following were evaluated:

  a. Days of consumption per month during the previous six months, using the EDADES survey (Plan Nacional Sobre Drogas, 2020) as a reference for consumption in the last 30 days.
  b. Frequency of days of consumption in the previous seven days (from 0 to 7 days) during lockdown.
  c. Daily average amount before the pandemic and during lockdown.
  d. Number of joints obtained with 1 gram of marijuana and with 1 gram of hashish, before the pandemic and during lockdown.

The Cannabis Abuse Screening Test (CAST) scale (Legleye, Karila, Beck & Reynaud, 2007), in the validated Spanish translation (Klempova et al., 2009) that consists of 6 items, was used for the detection of cannabis abuse patterns. Although the original authors proposed a binary coding of the items, the study on the psychometric properties of the instrument with a Spanish sample by Cuenca-Royo et al. (2012) showed that the full coding of the CAST is more informative and has greater criterion validity than the binary version. For this reason, the present study used the cut-off points proposed by Cuenca-Royo et al. (2012) in full coding: 7 for moderate addiction (DSM-5) and 9 for dependence (DSM-IV).

Procedure

Data collection started on April 14th 2020, after the first 30 days of confinement measures, and ended on May 29th, when the de-escalation measures started. The data collection strategy was a survey hosted on a web, with dissemination using posts on social media and advertisements via e-mail and smartphone messaging applications. Participants were informed that participation was voluntary, in accordance with the Spanish Organic Law 3/2018, of December 5, of Personal Data Protection and Digital Rights Guarantee (2018). They were asked to give their consent

to participate. Selection criteria were: a) age between 18 and 64; b) explicit agreement to participate; and c) properly filling out the survey. The exclusion criteria were: a) missing values or inconsistent response patterns; b) age outside the range of 18-64 years.

Statistical analysis

A preliminary exploratory analysis of sociodemographic variables and consumption patterns was carried out.

At the univariate level, descriptive analyses of sociodemographic variables were carried out to describe the research participants. Likewise, the student's *t-test* (or its non-parametric z Wilcoxon equivalent) of repeated measures was used to examine the differences in the average daily consumption of cannabis before and during lockdown, and the chi-square test was used to evaluate the relationship between categorical variables.

The prevalence in the reduction, increase and maintenance of the average cannabis consumption in its different forms was calculated according to gender, age, living situation, and level of addiction to cannabis. For these analyses, only the typologies with the highest prevalence of use and/or had shown significant differences were considered in the average daily consumption of cannabis before and during lockdown. Note that maintenance can refer both to the lack of changes in those who consumed each specific form of cannabis or its derivatives, and among cannabis users who used some type of use before the pandemic and continued without using it during the lockdown.

In order to analyze whether the sociodemographic variables gender, age (recoded in intervals) and living situation and their interaction mediate differences in the level of cannabis addiction, a three-factor analysis of variance was carried out.

The results for the difference of means and the relationships between categorical variables were transformed to Cohen's *d* effect size and to correlation (phi), respectively.

The data was analyzed with the IBM SPSS Statistics package version 25.

Results

The most common form of cannabis use was the marijuana spliff, both before (72.9%) and during lockdown (52%), followed by hashish spliff (22.4% before, 21.2% during). A total of 69.2% of females and 75% of males reported daily cannabis use before lockdown, and 22.2% of females and 22.5% of males reported daily use of hashish spliff.

Regarding average daily cannabis use (Table 1), a significant decrease in the use of marijuana spliffs was observed during lockdown compared to before lockdown, $t(169) = 2.25$, $p = .026$, $d = 0.21$. By contrast, the average

daily consumption of joints increased significantly during lockdown, $Z = -3.20$, $p = .005$, $r = -.44$. The other forms of consumption remained stable.

Disaggregating the data by gender (Table 1), a statistically significant decrease in marijuana spliff consumption during lockdown was found in males, and a significant increase in the use of joints for the same period. For females, the average daily consumption of marijuana spliffs was similar in both periods, but the consumption of joints increased significantly during lockdown.

Taking into account the CAST results (Table 2), 30.7% ($n = 64$) of the users did not show addiction, 58.3% ($n = 121$) had moderate addiction, and 11% ($n = 23$) showed dependency. The distribution of frequencies by gender

revealed that 56.7% of females and 76.1% of males showed moderate addiction or dependence on cannabis.

The analysis of the relationship between consumers' gender and consumption levels (Table 2) was statistically significant, $\chi^2(2) = 8.63$, $p = .013$, Cramer's V = .20. Specifically, post hoc analysis only showed a significantly higher percentage of males than females, $\chi^2(1) = 8.75$, $p = .003$, $\phi = .22$ with moderate cannabis addiction (73.1%, $n = 87$ males vs. 51.5%, $n = 34$ females) compared to those who did not present any addiction.

Before lockdown, almost half of the moderately addicted sample (47.2% females and 46.2% males) and more than half of the dependent sample (66.7% females and 55.6% males) reported using cannabis 20 days or

Table 1
Differences in mean daily cannabis use before and during lockdown (paired samples t - test)

Substance	Sample	Consumption before lockdown M (SD)	Consumption during lockdown M (SD)	t/Z	p	d/r
Marijuana spliff	Overall ($n = 170$)	1.8 (1.8)	1.4 (1.7)	2.25	**.026**	0.21
	Female ($n = 59$)	1.6 (2.1)	1.2 (1.4)	1.09	.279	
	Male ($n = 110$)	2.0 (1.7)	1.6 (1.9)	2.01	**.047**	0.22
Joint (marijuana cigarette)	Overall ($n = 52$)	0.6 (0.6)	1.4 (1.3)	-3.20	**.001**	-0.44
	Female ($n = 16$)	0.7 (0.5)	1.5 (1.4)	-1.97	**.048**	-0.49
	Male ($n = 36$)	0.6 (0.68)	1.3 (1.3)	-2.52	**.011**	-0.42
Hashish spliff	Overall ($n = 57$)	1.8 (2.3)	2.0 (2.8)	-0.58	.563	
	Female ($n = 29$)	1.4 (1.7)	2.0 (3.7)	-1.05	.294	
	Male ($n = 44$)	2.0 (2.6)	2.0 (2.2)	-1.08	.280	
Marijuana mixed with hashish	Overall ($n = 13$)	0.7 (0.4)	0.9 (0.9)	-0.79	.426	
	Female ($n = 5$)	0.6 (0.5)	1.2 (1.1)	-1.13	.257	
	Male ($n = 8$)	0.7 (0.4)	0.7 (0.8)	-0.10	.914	
Oil (CBD)	Overall ($n = 15$)	0.8 (0.5)	0.8 (0.6)	-0.31	.755	
	Female ($n = 5$)	1.2 (0.4)	1.0 (0.5)	-1.00	.317	
	Male ($n = 10$)	0.6 (0.5)	0.8 (0.7)	-0.58	.557	
Synthetic cannabis	Overall ($n = 6$)	0.6 (0.5)	1.1 (0.4)	-1.73	.083	
	Female ($n = 2$)	1.0 (0.0)	0.5 (0.7)	-1.00	.317	
	Male ($n = 4$)	0.5 (0.5)	1.0 (0.0)	-1.41	.157	

Note. Z = Wilcoxon test when *n* < 50; *r* = effect size when using the Wilcoxon test.

Table 2
Cases depending on the level of cannabis addiction by gender

Gender	No addiction % (n)	Moderate addiction % (n)	Dependence % (n)
Total	30.7 (64)	58.3 (121)	11 (23)
Female	43.2 (32)	45.9 (34)	10.8 (8)
Male	23.9 (32)	64.9 (87)	11.2 (15)

Table 3
Changes in cannabis consumption during lockdown by gender and addiction level

Substance	Consumption	Total % (n)	Gender			Addiction Level (CAST)		
			Male % (n)	Female % (n)		No addiction n = 64 % (n)	Moderate addiction n = 121 % (n)	Dependence n = 23 % (n)
Marijuana spliff	Decreased	35.9 (75)	35 (47)	37.5 (28)		33.6 (21)	36.8 (45)	37.5 (9)
	Maintained	39.1 (81)	40 (54)	37.5 (28)		45.5 (29)	40.6 (49)	13.5 (3)
	Increased	25 (52)	25 (33)	25 (19)		20.9 (13)	22.6 (27)	49 (11)
Joint (marijuana cigarette)	Decreased	5.4 (11)	6.3 (8)	3.8 (3)		11.2 (7)	1.4 (2)	10.4 (2)
	Maintained	82.7 (172)	80 (107)	87.5 (65)		82.8 (53)	85.2 (103)	68.7 (16)
	Increased	11.9 (25)	13.8 (18)	8.7 (6)		6 (4)	13.4 (16)	20.8 (5)
Hashish spliff	Decreased	6.8 (14)	6.3 (8)	7.7 (6)		3.3 (2)	9.8 (12)	0
	Maintained	81.4 (169)	81.2 (109)	81.7 (61)		93.3 (60)	78.3 (95)	64.6 (15)
	Increased	11.8 (25)	12.5 (17)	10.6% (8)		3.3 (2)	11.8 (14)	35.4 (8)

Note. n = 208.

more per month, while the majority of those who did not show addiction (31.4% females and 40% males) reported a monthly consumption of one to two days. Regarding consumption during lockdown, evaluated in the last week, both females and males with moderate addiction (41.2% vs. 34.4%, respectively) and with dependence (75% vs. 42.1%, respectively), indicated using marijuana and/or hashish every day. Among those who did not show addiction to cannabis, more than half (65.4% females; 74.1% males) indicated that they had not used cannabis in the last 7 days.

Table 3 shows the complementary analysis regarding the percentage of consumers who decreased, maintained, or increased their consumption of cannabis and other derivatives for the before and during lockdown periods. In general, 25% of consumers increased their marijuana spliff consumption, 11.8% increased their consumption of hashish spliff, and 11.9% increased their use of joints.

Concerning gender (Table 3), 25% of females and males increased their average daily consumption of joints during lockdown while 35% of males and 37.5% of females decreased their overall consumption. Regarding other types of consumption, 10.6% of females increased their consumption of hashish spliff, while 13.8% of males increased their consumption of joints.

Based on the classification of levels of addiction to cannabis (CAST) (Table 3), people with dependence increased their use of all forms of cannabis to a greater extent compared to those with moderate or no addiction. Among those who showed moderate addiction, 22.6% increased their marijuana spliff consumption, and 13.4% increased their consumption of joints while 36.8% and 9.8% reduced their consumption of marijuana spliffs and hashish spliff, respectively. Regarding people without an addiction, 20.9% of the consumers increased their consumption of marijuana spliffs and 6% their use of joints while 33.6% and 11.2% reduced their consumption of marijuana spliffs and joints, respectively.

The analysis of the changes in the average daily consumption of cannabis for the before and during lockdown periods, based on the established age ranges, showed very heterogeneous results (Table 4). For all types of consumption of cannabis and derivatives, the maintenance of consumption was predominant (between 70% and 100% of consumers). The exception was found in the marijuana spliff consumption, which experienced a greater increase among the 18-44 age groups and especially in the 25-29 group.

Similarities were observed in the living situation during lockdown and the changes in the average daily consumption of cannabis and its derivatives (Table 5). The maintenance of the average daily consumption or non-consumption, depending on the type of consumption, predominates (between 80% and 100% of consumers). Likewise, the exception to this pattern is found in marijuana spliff consumption, which increased by 44.3% for those living with people other than relatives and a partner, 35.8% for those living alone, and 32% for those living with a partner. However, more than half of marijuana spliff users, who lived with their parents or other relatives, reduced their consumption.

After checking the assumptions of normality and homoscedasticity, the factorial variance analysis yielded a significant model $F_{(52, 211)} = 2.170$; $p < .001$ with an effect size of $\eta2 = 0.35$, such that the selected factors (gender, age and living situation) together with their interactions explain 34.8% of the variance in cannabis addiction. Regarding simple effects, only gender showed differences in the level of cannabis addiction $F_{(1,211)} = 8.133$, $p = .005$, $\eta2 = 0.04$, with males reporting higher addiction (M = 6.155, SD = 0.371) than females (M = 4.367, SD = 0.507). Regarding

Table 4
Changes in cannabis consumption during lockdown by age

Substance	Consumption	18-24 years % (n)	25-29 years % (n)	30-34 years % (n)	35-44 years % (n)	45-54 years % (n)	55-64 years % (n)
Marijuana spliff	Decreased	42.5 (25)	33.2 (17)	32.5 (12)	32.5 (11)	34.5 (7)	41.6 (3)
	Maintained	34.7 (20)	28 (14)	43.9 (16)	42.5 (15)	58.6 (12)	58.4 (3)
	Increased	22.7 (13)	38.8 (20)	23.6 (9)	25 (9)	6.9 (1)	0
Joint (marijuana cigarette)	Decreased	15.3 (9)	3.3 (2)	1.9 (1)	0	0	0
	Maintained	70.6 (41)	89.2 (46)	91.7 (34)	83.8 (30)	85.1 (18)	70.8 (4)
	Increased	14.1 (8)	7.5 (4)	6.4 (2)	16.2 (6)	14.9 (3)	29.2 (2)
Hashish spliff	Decreased	4.1 (2)	6.1 (3)	8.3 (3)	13.5 (5)	3.4 (1)	0
	Maintained	78.1 (45)	86 (44)	79 (30)	80.4 (28)	80.5 (17)	100 (6)
	Increased	17.8 (10)	8 (4)	12.7 (5)	6.1 (2)	16.1 (3)	0

Note. n = 208.

Table 5
Changes in cannabis consumption during lockdown byliving situation

Substance	Consumption	Living situation				
		LA % (n)	LF % (n)	LP % (n)	SF % (n)	OLS % (n)
Marijuana spliff	Decreased	18.9 (2)	53.6 (36)	24.5 (16)	12.6 (2)	30.5 (6)
	Maintained	45.3 (6)	33.6 (22)	43.5 (29)	43 (8)	54.9 (11)
	Increased	35.8 (5)	12.9 (9)	32 (21)	44.3 (8)	14.6 (3)
Joint (marijuana cigarette)	Decreased	0	8.6 (6)	1.1 (1)	0	15.9 (3)
	Maintained	94.4 (12)	81.8 (55)	89.2 (59)	87.4 (16)	71.9 (14)
	Increased	5.6 (1)	9.7 (6)	9.7 (6)	12.6 (2)	12.2 (2)
Hashish spliff	Decreased	0	8.2 (5)	9.3 (6)	0	0
	Maintained	100 (13)	79.6 (53)	80.9 (54)	100 (18)	81.7 (16)
	Increased	0	12.2 (8)	9.7 (6)	0	18.3 (4)

Note. LA = Living alone; LF = Living with parents or other relatives; LP = Living with a partner; SF = Sharing a flat with people who were not a partner or family; OLS = Other living situation.

Table 6
Changes in the cannabis-tobacco consumption quantity during lockdown by gender and addiction level

		No addiction			Moderate addiction			Dependence		
		BL M (SD)	DL M (SD)	t(p)	BL M (SD)	DL M (SD)	t(p)	BL M (SD)	DL M (SD)	t(p)
Number of spliffs with 1 gr. marijuana	Total	2.7 (3.7)	2.8 (4.2)	-0.33 (.737)	2.8 (2.0)	3.2 (3.5)	-0.84 (.407)	2.8 (2.0)	3.2 (3.5)	-0.84 (.407)
	Female	3.0 (4.6)	3.2 (5.3)	-0.36 (.715)	4.3 (4.3)	3.7 (3.8)	1.41 (.165)	3.8 (2.5)	4.8 (5.4)	-0.84 (.428)
	Male	2.3 (2.5)	2.3 (2.6)	0.00 (1.00)	4.3 (3.5)	3.7 (3.8)	**2.01 (.047)**	2.3 (1.5)	2.4 (1.8)	-0.25 (.806)
Number of spliffs with 1 gr. hashish	Total	3.4 (11.7)	2.5 (5.9)	0.65 (.51)	3.1 (2.8)	3.3 (3.9)	-0.40 (.692)	3.1 (2.8)	3.3 (3.9)	-0.40 (.692)
	Female	5.1 (15.8)	3.3 (6.9)	0.65 (.51)	2.8 (4.0)	2.7 (4.0)	0.57 (.570)	3.4 (3.6)	4.6 (5.8)	-1.07 (.320)
	Male	1.7 (4.7)	1.7 (4.7)	0	3.1 (4.1)	3.2 (4.6)	-0.07 (.939)	3.0 (2.5)	2.6 (2.4)	0.88 (.392)

Note. BL = Before lockdown; DL = During lockdown.

interactions, significant differences were found as a function of age and living situation (F (21, 211) =1.691; p = .034, η2= 0.03. In the post hoc contrasts, the differences were: a) the living alone 18-24 years group showed a higher level of cannabis addiction than the 30-34 years group, b) the levels of cannabis addiction in the 35-44 years age group, when living with their parents or families, were significantly higher than those reported by the 18-24, 25-29 and 45-54 years age groups.

Regarding the number of marijuana spliffs obtained with one gram of cannabis by levels of addiction (Table 6), statistically significant differences were only found in males with moderate addiction who reduced the number of marijuana spliffs they obtained with one gram of cannabis, $t(86) = 2.01$, $p = .047$, although the effect was small, $d = 0.15$.

Discussion

The objective of the present study was to analyze the possible changes in cannabis use patterns during the COVID-19 lockdown period, across various types of cannabis use. Changes were analyzed as a function of gender, age and cohabitation situation, analyzing whether these variables and their interaction mediated the level of cannabis addiction. And, finally, the possible changes in the number of marijuana spliffs that users obtained with one gram of marijuana, given their level of addiction. The findings allow a better understanding of the changes that occured during this period and help determine vulnerable groups whose cannabis use was negatively affected by lockdown. From a psychosocial approach, these findings have important implications at a preventive level.

The most common way to consume cannabis continues to be by smoking it (with or without tobacco) (Hindocha et al., 2016). Among its various forms of consumption, marijuana spliff consumption was preferred both before the pandemic and during lockdown, which is in line with studies in the Spanish and European population (OEDA, 2021; Pirona, Noor & Burkhart, 2015). This relationship has important implications. Tobacco use can increase the addictive potential of cannabis and possible relapse in those who intend to quit cannabis (Hindocha et al., 2015), and has worse consequences both at the addiction level and in terms of its associated physical and mental health problems (Davis, Slutske, Martin, Agrawal & Lynskey, 2019; Tucker et al., 2019). In addition, if the synergies and mutual implications between the two are ignored, the results for cessation and maintenance of abstinence will be worse (Esteban, Olano, Moreno, Pinet & Duaso, 2019).

During lockdown, there were more consumers who reduced their marijuana spliffs consumption than those who increased it. This would explain why, generally, the average daily marijuana spliff consumption was significantly reduced compared to consumption prior to the pandemic. This variation is mainly explained by males, who showed significant changes. In general terms, the average daily consumption of joints increased, since those who increased their consumption were double as many as those who reduced it. The variation in this type of consumption was significant for both genders. The same was found regarding the dual consumption of hashish spliff. Regarding age, maintenance of the average daily consumption predominates, with the exception of the marijuana spliff consumption. Marijuana spliff consumption increased for the 18-44 age groups, especially for the 25-29 group (almost four out of 10). The largest decreases were observed in the 18-24 and 55-64 age groups. All these findings could be explained by considering psychosocial variables such as unemployment, affective disorders, responsibilities with children or care of the elderly, which could be mediating the use of cannabis for both genders (Brotto et al., 2021) as well as age. Specifically, the consumption decrease of the youngest age group (18-24) can be explained, in part, because of the link to festive events (Buckner, Walukevich & Henslee, 2018). In the case of the oldest age group, between 55-64, the decrease could be explained by the greater concern for cannabis use increasing the risk of SARS-CoV-2 infection and worse outcomes of COVID-19 (Gaiha, Cheng & Halpern-Felsher, 2020).

Concerning living situation, the average daily marijuana spliff consumption increased mainly among those living with people other than relatives or a partner, followed by those who living alone and those who living with a partner. However, more than half of those who lived with their parents or other relatives reduced their consumption. This finding suggests the importance of the preventive role of the family environment.

Regarding addiction to cannabis (CAST), the findings clearly indicate that those with cannabis dependence increased their use during lockdown for all types of cannabis and derivatives to a greater extent than those with moderate or no addiction. In the moderate and no addiction subsamples, the rates of those who decreased their consumption were higher than those who increased it, except for joints in the moderately addicted group. In addition, during lockdown moderately addicted males used marijuana spliffs with a higher concentration of cannabis than before lockdown (with 1 gram of cannabis they made fewer joints), so this group increased their risk of developing dependency. These data suggest that the measures used to contain the COVID-19 pandemic could exacerbate various risk factors for the maintenance, worsening and relapse of addictive disorders (Marsden et al., 2020). For people with addiction who were in treatment during this period, lack of access to treatment and social isolation increased their vulnerability to relapse and overdose during the pandemic (Clay & Parker, 2020; Marsden et al.,

2020). Here, the European Monitoring Center for Drugs and Drug Addiction (2020) points out the relevance of low-threshold treatment and harm reduction services to continue to operate even in restricted conditions, especially when there is a risk of withdrawal or relapse. On the other hand, given the difficulties that confinement caused in therapist-user relationships, some therapeutic alternatives in the care of users with problematic cannabis use include telephone contact, videoconferencing, the reduction of barriers to access the care center as much as possible, as well as the adaptation of therapeutic interventions (Alexander, Stoller, Haffajee & Saloner, 2020; Tsai & Wilson, 2020). As Villaverde-González, Fernández-Rodríguez, San Narciso-Izquierdo & Povedano-Suárez (2020) point out, this also requires flexibility and continuous training for professionals to be able to face future situations that alter the normality of care.

In conclusion, the findings of the present study can guide the design of public policies and specific interventions that favor the maintenance of the assistance network in crisis periods similar to COVID-19 lockdown. Although men present a higher level of cannabis addiction, during the COVID-19, marijuana spliff consumption experienced a greater increase in females, the 25-29 age group, among those living with people other than relatives or a partner, alone, or with a partner. Consequently, it is important to expand studies that help to explain the causes of this phenomenon, and, at a practical level, therapeutic follow-up should be increased in women of this age. However, consumption was reduced among those living with parents. Also, the 18-24 age group living alone showed a higher level of cannabis addiction than those aged 30-34 years. This finding suggests the relevance of the family environment as a protective factor (Fuentes, Alarcón, García & Gracia, 2015). And, conversely, the 35-44 age group levels of cannabis addiction for those who live with their parents or families are significantly higher than those reported by the remaining age groups. This finding suggests the importance of analyzing not only the situation of cohabitation, but also the quality of family relationships and the possible presence of family stressors, such as difficulties in reconciling work and family life or caring for dependents. Finally, the rate of dependent consumers who increased their marijuana spliff and joint consumption is greater than users without an addiction and moderate addiction. This fact reinforces the greater vulnerability to increase consumption in those who already had a dependency on cannabis.

In short, gender, age and living situation, as well as the level of dependence, determined changes in the pattern of cannabis use during lockdown.

Among the limitations of this study, we can point out the sample size. It is a convenience sample, without random selection or stratified sampling, and so it is not possible to generalize the obtained results. Likewise, tetrahydrocannabinol (THC) levels were not considered (Chandra et al., 2019) or other forms of consumption such as hookahs, "dabbing", "cannavaping" or vaporizers (Papaseit et al., 2018). There was also no question about self-cultivation, which could be a determining factor for substance accessibility. Finally, in order to broaden the study of cannabis use risk, it is suggested that other sociodemographic, mental health and other drug use variables be included in future studies.

Acknowledgements

Conflict of interests

The authors declare that they have no conflict of interest.

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