

Original

## Drug use, family support and related factors in university students. A cross-sectional study based on the uniHcos Project data

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### ABSTRACT

**Objective:** To assess the prevalence of illegal drug use in college students on any previous occasion, during the previous year and the previous month, and to analyze the relationship between illegal drug use and family support and other factors.

**Methods:** A cross-sectional study using data from students participating in the uniHcos project (n = 3767) was conducted. The prevalence and age of onset of consumption of cannabis, non-prescription sedatives, stimulants and depressants was evaluated. Polyconsumption was also assessed. The independent variables were: family support, age, residence, and employment status. To determine the factors related to drug use multivariate logistic regression models stratified by gender were fitted.

**Results:** Differences between men and women in prevalence of illegal drug use except non-prescription sedatives were observed. In both genders, less family support was associated with higher consumption of all drugs, except depressants, and with polyconsumption. To be studying and looking for work was related to cannabis and stimulant use and to polyconsumption among women, but only to cannabis use among men.

**Conclusions:** These results support the notion that the start of university studies is a particularly relevant stage in the onset of illegal drug use and its prevention, and that consumption may be especially associated with family support.

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**Palabras clave:**  
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## Consumo de drogas ilegales, apoyo familiar y factores relacionados en estudiantes universitarios. Un estudio transversal basado en datos del Proyecto uniHcos

### R E S U M E N

**Objetivo:** Evaluar la prevalencia del consumo de drogas ilegales en estudiantes universitarios y analizar la relación entre dicho consumo, el apoyo familiar y otros factores.

**Método:** Se realizó un diseño transversal basado en datos de participantes en el proyecto uniHcos (n = 3767). Se evaluaron la prevalencia y la edad de inicio del consumo de cannabis, tranquilizantes sin receta, estimulantes y depresores, y el policonsumo. Como variables independientes se consideraron el apoyo familiar, la edad, la residencia y la situación laboral. Para la determinación de los factores asociados al consumo de drogas se ajustaron modelos de regresión logística estratificados por sexo.

**Resultados:** Se observaron diferencias entre hombres y mujeres en la prevalencia del consumo de todas las drogas ilegales, excepto tranquilizantes sin receta. En ambos sexos, cuanto peor apoyo familiar, mayor consumo de todas las drogas, excepto depresores y policonsumo. Encontrarse estudiando y buscando trabajo se relacionó con el consumo de cannabis, estimulantes y policonsumo en las mujeres, y solo con cannabis en los hombres.

**Conclusiones:** Los resultados de este estudio aportan nueva evidencia a favor de que el inicio de la etapa universitaria es un momento de especial relevancia en el inicio del consumo de drogas ilegales y su prevención, pudiendo este consumo estar especialmente relacionado con el apoyo familiar.

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## Introduction

It is widely accepted that drug use and its consequences represent a major public health problem among young people worldwide.<sup>1-3</sup> For young people entering university for the first time, this stage is a period of maturation and changing health-related habits and lifestyles, including drug use; thus, it is important to assess students' consumption at the beginning of this period.<sup>4-7</sup> While some studies evaluating illegal drug use in university populations have evaluated the prevalence of specific substances, such as cannabis or psychostimulants,<sup>8,9</sup> it would be advantageous to consider consumption more generally, i.e. taking into account various substances, as well as factors related to consumption.

Various theoretical models have proposed that family environment and family support are key elements when starting to use drugs.<sup>3,10-13</sup> This information is usually found in studies that consider people from dysfunctional families to be at higher risk of consumption.<sup>14-16</sup> Moreover, student employment status could be associated with substance use, such that individuals who are only studying may have lower risk of starting drug use than those who are working.<sup>17,18</sup>

In relation to other factors associated with drug use, a weak relationship has been observed between gender and consumption, with a higher prevalence of consumption among men in particular, except for hypnotosedatives, where consumption is higher among women.<sup>2,19,20</sup> In addition, previous studies have shown that marital status and home address may be related to substance use, although with mixed results.<sup>21,22</sup>

Only some of the studies performed to date have taken the age of onset of consumption into account, despite the importance of this variable for delimiting at-risk groups, and groups that are need to be targeted with intervention programs.<sup>1,2</sup> Furthermore, some studies suggest that age of onset is an important determinant of the magnitude of the consequences of drug use, in that younger individuals suffer greater health consequences.<sup>1,20</sup>

Therefore, the objectives of this study were:

- To describe the prevalence of illegal drug use among Spanish college students on any previous occasion, during the previous year,

and during the previous month, and describe the age of onset of consumption.

- To test for association between family support and illegal drug use.
- To test for association between illegal substance use and residence, employment status, and age, separately for men and women.

## Methods

### Study design and participants

This study was carried out as part of the uniHcos project (a dynamic cohort of university students to study drug use and other addictions), a multicenter project studying habits and lifestyles and their development during university years by creating a dynamic cohort of freshmen in their first term.<sup>23</sup> One of uniHcos' main objectives is to study drug use habits.

We carried out a cross-sectional observational study based on data from students enrolled in the first year of various degrees offered by Spanish universities participating in the uniHcos project (León, Cantabria, Jaen, Vigo, Granada, Huelva, Salamanca, Valladolid, Alicante, and Valencia). These students received an email with a link to information about the project and a self-administered questionnaire created by the SphinxOnline® platform. All students gave informed consent to participate and the project has the approval of the Ethics Committee of the University of León regarding the use of personal data.

The self-administered uniHcos questionnaire includes 373 items on various areas: sociodemographic characteristics (sex, age, marital status, etc.), habits and lifestyles (exercise, food, problematic Internet use, etc.), and consumption of legal or illegal substances (alcohol, tobacco and others); this questionnaire was based on that used by the EDADES survey.<sup>2</sup>

Since the purpose of uniHcos is to create a cohort and track it, we did not determine a minimum sample size for this study. We included in this study all students who completed the self-administered form and signed the informed consent between October 2011 and March 2015 (overall response rate 4.2%; N = 4166). We excluded students over 25 years of age (n = 314, 7.5%)

due to characteristic differences with respect to the target population. Also we excluded, due to the differences found in previous analyses realized in the same sample, students residing in their own flat ( $n = 29$ , 0.8%) and those who could not determine their type of residence (57, 1.5%) both due to differences with the study population and the small number that these students represent regarding to the total sample; thus, the final sample included 3767 students. Furthermore, in order to avoid possible misinterpretations individual (psychological) factors were excluded of our analyses. These factors were excluded due its possible relationship with the family support and the difficulty to take this relationship into account adequately related to the indicators used in our survey to measure psychological factors.<sup>23</sup>

#### Dependent variables

Data on substance use was collected by the uniHcos questionnaire, which includes items regarding consumption of the following illegal drugs on any previous occasion, during the previous year, and during the previous month: cannabis, non-prescription sedatives, central nervous system (CNS) stimulants (collectively considered as cocaine, ecstasy, speed, and hallucinogens), and other CNS depressants (collectively considered as heroin, GHB, and inhalants). Cannabis and non-prescription sedatives were evaluated separately, both because of the large number of people who reported having used them and because of the differences in consumption patterns compared to other drugs analyzed. We considered stimulants and other depressants together because few people reported having used them, and we also recorded the number of substances tried by each participant, evaluating each individual substance with a specific question. We considered polydrug users to be those who reported having used two or more substances or groups of substances when one of them was a stimulant or a depressant, and non-users to be people who had not tried any of the drugs mentioned; the latter was used as the reference category for analysis.

We also evaluated the average age of onset of use or average age of first use for each drug and each group of drugs. In substance groups (stimulants and depressants), we considered the averages of the ages of onset for the different drugs in each group.

#### Independent variables

- Gender: men; women.
- Age: in years, analyzed as a continuous variable.
- Employment status: studying and looking for work; studying and working; studying but not looking for work.
- Residence: family home; university residence; rented apartment.
- Family support: We used the valid and reliable FAMILY APGAR questionnaire to assess each participant's perception of the state of his family's functioning at a given time.<sup>24</sup> The questionnaire consists of 5 Likert items with a 3-point scale from 0 to 2. We categorized the scores as follows: 7-10 points, normal support; 3-6 points, slightly dysfunctional; and 0-2 points, extremely dysfunctional. In addition to using this variable as a predictor, we also used it as a stratifying variable to evaluate consumption rates, with the aim of exploring its association with substance use.

#### Data analysis

A descriptive analysis of substance use and polyconsumption stratified by gender and family support were performed. Statistically significant differences were tested at the bivariate level using the chi-squared test for categorical variables and Mann-Whitney U test for mean age taken as a continuous variable with non-normal

**Table 1**

Characteristics of the population, stratified by gender.

	Men (n = 1043; 27.7%)		Women (n = 2724; 72.3%)		p
	n	%	n	%	
<i>Employment situation</i>					0.081
Studying and looking for work	212	20.3	614	22.5	
Studying and working	76	7.3	154	5.7	
Studying only	755	72.4	1956	71.8	
<i>Home address</i>					0.235
Family home	502	48.1	1227	45.0	
University residence	121	11.6	336	12.4	
Rented flat	420	40.3	1161	42.6	
<i>Family APGAR</i>					0.189
Normal support	747	71.6	2012	73.9	
Slightly dysfunctional	223	21.4	511	18.8	
Severely dysfunctional	73	7.0	201	7.4	
<i>Average age (SD)</i>	19.2 (1.9)	19.1 (1.8)	0.083		

SD: standard deviation.

distribution. To analyze the relationship between any previous consumption and each of the independent variables, multivariate logistic regression models were fitted and adjusted odds ratios (aOR) and their respective 95% confidence intervals (95%CI) were calculated. All models were stratified by gender, and adjusted for all covariates. Statistical analyses were carried out using STATA v. 13 software.<sup>25</sup>

#### Results

Table 1 shows the sample characteristics stratified by gender. We do not observe significant differences in the study variables between men and women. The total sample size was 3,767, with 72.3% women. The average age among women and men was 19.1 (standard deviation [SD]: 1.8) and 19.2 (SD: 1.9) years, respectively. Most participants were non-working students, lived in the family home, and considered their family functioning to be normal (73.9% of women, and 71.6% of men).

Table 2 shows the percentage of students who reported having tried drugs at least once in the previous year and the previous month, and the average age of first use. We found that men were significantly more likely than women to have tried drugs and to have been polyconsumers, with the exception of non-prescription sedatives. In both genders, cannabis was the most commonly consumed substance, both in terms of any previous use, as well as during the previous year or month; depressants were the least commonly consumed drugs. In terms of polyconsumption, all polyconsumers had tried cannabis ( $n = 264$ ). The average age at first use was lowest for cannabis (men 16.6 years and women 16.7 years), and the age of onset of stimulant use was lower among women than among men (women 18.1 years and men 18.7 years). Not statistically significant differences by gender in average age at first use of all considered drugs were found.

In relation to family support (Table 3), the prevalence of any previous consumption increased as the level of perceived family support decreased, with significant differences for all drugs except depressants. We observed significantly higher rates of polyconsumption among people who perceived their families as slightly dysfunctional (9.8%) or severely dysfunctional (12.4%) than those who perceived normal family support (5.7%).

Regarding the factors associated with drug consumption (Table 4), we found that age was associated with both consumption of all drugs and groups of them and with polyconsumption among men and women, with the exception of depressants in women. Furthermore, perception of severe family dysfunction among men was associated with the use of cannabis (aOR: 1.77; 95%CI: 1.07-

**Table 2**  
Prevalence of any previous drug consumption, in the previous year, and in the previous month.

	Men (n = 1043; 27.7%)		Women (n = 2724; 73.3%)		p
	n	% <sup>a</sup>	n	% <sup>a</sup>	
<b>Cannabis</b>					
Ever used	513	49.2	1143	42.0	<0.001
Previous year	500	47.9	1094	40.2	<0.001
Previous month	478	45.8	1048	38.5	<0.001
Average age of onset (SD)	16.6 (1.6)	16.7 (1.8)	0.406		
<b>Non-prescription sedatives</b>					
Ever used	27	2.6	67	2.4	0.820
Previous year	23	2.2	64	2.4	0.792
Previous month	23	2.2	62	2.3	0.896
Average age of onset (SD)	17.2 (3.3)	17.3 (2.7)	0.960		
<b>Stimulants</b>					
Ever used	89	8.5	143	5.3	<0.001
Previous year	86	8.3	133	4.9	<0.001
Previous month	80	7.7	122	4.5	<0.001
Average age of onset (SD)	18.7 (1.9)	18.1 (1.9)	0.058		
<b>Other depressants</b>					
Ever used	13	1.3	11	0.4	<0.001
Previous year	13	1.3	9	0.3	0.001
Previous month	12	1.2	9	0.3	0.002
Average age of onset (SD)	18.4 (2.1)	18.0 (1.7)	0.859		
<b>Polyconsumption</b>					
Ever used	100	9.6	164	6.0	<0.001
Last year	97	9.3	153	5.6	<0.001
Last month	91	8.7	143	5.3	<0.001

SD: standard deviation.

<sup>a</sup>Prevalence of consumption.

**Table 4**  
Association between drug consumption and independent variables, stratified by gender.

	Cannabis		Non-prescription sedatives		Stimulants		Other depressants		Polyconsumption		
	aOR	95%CI	aOR	95%CI	aOR	95%CI	aOR	95%CI	aOR	95%CI	
<b>Men</b>											
<i>Employment situation</i>											
Only studying	1.00		1.00		1.00		1.00		1.00		
Studying and looking for work	1.45	1.05-2.02 <sup>a</sup>	0.50	0.18-1.44	1.50	0.89-2.55	0.56	0.14-2.25	1.46	0.87-2.42	
Studying and working	1.52	0.52-1.92	0.80	0.22-2.95	1.50	0.70-3.20	0.44	0.05-3.87	1.67	0.82-3.40	
<i>Home address</i>											
University residence	1.00		1.00		1.00		1.00		1.00		
Family home	0.79	0.53-1.20	2.33	0.19-18.45	0.55	0.22-1.15	0.89	0.10-7.98	0.50	0.24-1.07	
Rented flat	1.08	0.71-1.64	2.58	0.34-20.44	0.71	0.32-1.58	0.91	0.10-8.16	0.65	0.31-1.35	
<i>Family support</i>											
Normal	1.00		1.00		1.00		1.00		1.00		
Slightly dysfunctional	1.42	1.05-1.94 <sup>a</sup>	1.18	0.45-3.09	1.61	0.94-2.76	2.06	0.58-7.29	1.52	0.91-2.55	
Severely dysfunctional	1.77	1.07-2.92 <sup>a</sup>	2.39	0.75-7.57	2.27	1.06-4.85 <sup>a</sup>	2.74	0.53-14.30	2.45	1.21-4.96 <sup>a</sup>	
Age	1.23	1.06-1.23 <sup>c</sup>	1.40	1.18-1.66 <sup>c</sup>	1.51	1.36-1.68 <sup>c</sup>	1.56	1.23-1.97 <sup>c</sup>	1.46	1.32-1.62 <sup>c</sup>	
<b>Women</b>											
<i>Employment situation</i>											
Only studying	1.00		1.00		1.00		1.00		1.00		
Studying and looking for work	1.43	1.17-1.74 <sup>c</sup>	1.66	0.95-2.90	2.10	1.41-3.11 <sup>c</sup>	1.40	0.34-5.85	1.84	1.27-2.67 <sup>b</sup>	
Studying and working	1.44	1.01-2.04 <sup>a</sup>	0.74	0.21-2.55	1.28	0.64-2.57	1.49	0.15-14.66	1.28	0.67-2.44	
<i>Home address</i>											
University residence	1.00		1.00		1.00		1.00		1.00		
Family home	0.67	0.52-0.87 <sup>b</sup>	0.57	0.22-1.47	0.87	0.38-1.99	1.17	0.02-1.31	0.62	0.31-1.26	
Rented flat	1.17	0.91-1.52	1.44	0.59-3.51	2.10	0.94-4.67	0.62	0.12-3.30	1.61	0.83-3.10	
<i>Family support</i>											
Normal	1.00		1.00		1.00		1.00		1.00		
Slightly dysfunctional	1.33	1.09-1.63 <sup>b</sup>	2.26	1.28-3.98 <sup>b</sup>	1.93	1.29-2.88 <sup>b</sup>	1.06	0.22-5.20	1.76	1.20-2.58 <sup>b</sup>	
Severely dysfunctional	1.60	1.19-2.17 <sup>b</sup>	3.87	1.98-7.59 <sup>c</sup>	2.13	1.22-3.74 <sup>b</sup>	2.93	0.59-14.64	2.20	1.30-3.71 <sup>b</sup>	
Age	1.18	1.13-1.24 <sup>c</sup>	1.15	1.01-1.31 <sup>a</sup>	1.36	1.25-1.48 <sup>c</sup>	1.29	0.96-1.73	1.36	1.25-1.47 <sup>c</sup>	

aOR: adjusted odds ratio for all independent variables; 95%CI: 95% confidence interval.

<sup>a</sup> p < 0.05.

<sup>b</sup> p < 0.01.

<sup>c</sup> p < 0.001.

**Table 3**  
Descriptive analysis of drug consumption among Spanish university students according to the Family APGAR test.

	Family APGAR						
	Normal support		Slightly dysfunctional		Severely dysfunctional		p
	n	%	n	%	n	%	
<b>Cannabis</b>							
No	1619	58.7	366	49.9	126	46.0	<0.001
Yes	1140	41.3	368	50.1	148	54.0	
<b>Non-prescription sedatives</b>							
No	2708	98.2	708	96.5	257	93.8	<0.001
Yes	51	1.9	26	3.5	17	6.2	
<b>Stimulants</b>							
No	2623	95.1	667	90.9	245	89.4	<0.001
Yes	136	4.9	67	9.1	29	10.6	
<b>Other depressants</b>							
No	2745	99.5	728	99.2	270	98.5	0.133
Yes	14	0.5	6	0.8	4	1.5	
<b>Polyconsumption</b>							
No	2601	94.7	662	90.2	240	87.6	<0.001
Yes	158	5.7	72	9.8	34	12.4	

Family APGAR: ≥7 normal support, 3-6 slightly dysfunctional, ≤2 severely dysfunctional.

2.92) and stimulants (aOR: 2.27; 95%CI: 1.06-4.85), as well as with polyconsumption (aOR: 2.45; 95%CI: 1.21-4.96), but not with consumption of non-prescription sedatives or depressants. Among women, poor perceived family support was associated with a gradient of increased likelihood of having consumed cannabis, non-prescription sedatives, and stimulants, as well as with polyconsumption. Moreover, we observed that students who lived in the family home were less likely to have consumed cannabis than those living in a university residence. Also, women who were studying and looking for work were more likely to have consumed cannabis (aOR: 1.43; 95%CI: 1.17-1.74), stimulants (aOR: 2.10; 95%CI: 1.41-3.11), and polyconsumption (aOR: 1.84; 95%CI: 1.27- 2.67) than those dedicated solely to studying.

## Discussion

This study, based on data from the uniHcos project, shows that about half of college freshmen and first term students had consumed cannabis at some time in their life, which is more than five times higher than the prevalence of students who had tried stimulants and depressants. In addition, the prevalence of people who had used any of the listed drugs during the previous year or month is similar but slightly lower than those who had ever used, which highlights the importance of the start of university as a key point in the onset of drug use and its evaluation.

Our results suggest that family support is related to the consumption of the various substances we considered, especially among women, because as perceived family support worsens, the proportion of people who have tried drugs increases.

### *Prevalence of use and age of onset*

Regarding the prevalence of people who had ever consumed the substances evaluated, the results regarding the use of cannabis and non-prescription sedatives are notable. The prevalence of stimulant and depressant consumption was similar to that observed in previous studies, and even lower for non-prescription sedatives, with no differences in consumption between men and women; however, the prevalence of cannabis use (men: 49.2%; women: 42.0%) was higher than that observed in data from a representative sample of the Spanish youth population (about 40%).<sup>2,26,27</sup> Similarly, we observed that everyone reporting polyconsumption had tried cannabis, which could be important for designing prevention strategies.

For all drugs evaluated, we observed much higher prevalence in consumption during the previous year and month than in the general youth population.<sup>2</sup> This again highlights the start of university as a particularly important moment, both in terms of drug use among young people as well as for prevention, since many who reported having tried drugs at some point in their life had also consumed in the last year or month.

Notably, the high prevalence of cannabis consumption could be related to differences between the university population and the general youth population, an also to a decrease in perception of the risk associated with consumption observed in recent years. Various studies have found that low perception of risk is associated with higher rates of drug use.<sup>28-31</sup> The ages of first use were slightly lower than those found in the general population, around 18 years for first cannabis use and slightly higher for other drugs.<sup>2</sup> In addition, while the age of first cannabis use was similar in men and women, that for stimulants was lower among women. These results differ from those of previous studies, where the age of onset was generally lower among

men, and provide new evidence to support previous results that point to a possible decrease in the age of onset of consumption, which could be more pronounced among women.<sup>19</sup> This should also be taken into account for subsequent studies because people who use drugs at an earlier age have greater risk of developing addiction later, such that consumption may have a greater impact on health and cognitive development at older ages.<sup>1,5</sup>

### *Family support*

We observed that more than 70% of college students perceived that their family support was normal, which is consistent with previous reports from studies in non-university populations.<sup>24,32</sup> Additionally, we also observed that when perceived support is worse, the proportion of people who reported having consumed illegal drugs is higher. These findings provide new evidence to support the hypothesis that family functioning influences drug use,<sup>3,11,14,16</sup> and highlights the importance of considering this factor when evaluating consumption. This factor is also involved in prevention because improving support at the family level or providing families with strategies that culminate in increased perceived support may help prevent substance use.<sup>3</sup>

The fact that family functioning is more strongly linked to illegal drug use among women than men supports gender differences in associated factors and consumption patterns, as proposed in previous studies.<sup>16,19</sup> Among other factors, this difference could be related to the social role of women in countries with traditional family structures like Spain, which non-explicitly assigns women the chief role within the family.<sup>33,34</sup> Thus, policies that promote equality and reduce social inequalities between men and women may help prevent unhealthy habits, like drug use, as well as physical and mental health problems.<sup>3</sup>

### *Factors related to use*

In terms of factors associated with having tried drugs previously, we found lower rates of cannabis use among women who lived in the family home, as previously noted by Molina et al.<sup>21</sup> This may be because women who live in the family home have an authority figure who has greater control over them, compared to those living in university residences or shared flats.

Regarding employment status, we found higher a prevalence of cannabis use among in both men and women who were studying and looking for work, and of stimulant use and polyconsumption among women. This has not been observed in previous studies, as far as we know, and represents a new perspective on the relationship between drug use and employment in university students, although it may be related to increased stress and economic vulnerability, among other things. Moreover, the results compared to other employment situations evaluated in this study are different to those obtained in previous studies where employment was found to be protective against substance use.<sup>17,18</sup> Therefore, in future studies assessing factors associated with drug use among university students, especially among women, it may be useful to consider home address and employment status, the influence of parental or institutional control, and economic stress.

Finally, the differences we found in factors related to consumption could have important implications for prevention. As suggested previously,<sup>19,35</sup> it might be appropriate to consider introducing the gender perspective in prevention programs, both in school and at home. Also, we consider it important in future studies to take into account other variables not considered in our analyses as the country of origin of the students and their fami-

lies, or the social class that they belong. These variables could be related to drug use in the university student population (as protective factors or as risk factors) due to the differences previously found between countries and social classes,<sup>36–39</sup> and might allow having a wider view in order to develop more specific drug-use prevention programs.

### Limitations

Due to the population characteristics, type of questionnaire, and the objectives of the uniHcos project, the main limitation of our study is that we were unable to use a probabilistic sampling approach, which may affect our inferences about the student population in this sample and the corresponding results. Despite this limitation, the study population could be considered valid for our objective, both in this paper and in the uniHcos project, because our aims are to describe the illegal drug use in this population and to analyze some related factors, and the aim of the uniHcos project is to create a cohort of students to study long-term habits and lifestyles. Furthermore, we are currently working to improve recruiting programs and the response rate so that in the near future we expect a substantial increase in the size of the sample and its representativeness.

Another possible limitation is that the questionnaire used has not yet been validated. However, this questionnaire consists of validated questions and scales from previously validated national questionnaires, such as the National Health Survey of Spain or the EDADES survey among others.<sup>2</sup>

Other limitation of our study is its design. While cross-sectional studies can determine prevalence, they cannot establish causality between drug use and the other variables considered, especially family support. Nevertheless, based on biological plausibility and the results of previous longitudinal studies, the observed direction of effect, at least in the case of family support, might be correct.<sup>40</sup> It may be appropriate in the future to verify these results with longitudinal data.

Finally, we emphasize a possible limitation related to drawing conclusions about consumption during the previous year and month, since models were only fit for consumption at any previous time in life. Despite this limitation, we fit models using this variable because one of the objectives of this study was to determine whether family support and other factors were related to drug use on any previous occasion. Moreover, our approach allows us to include more participants in the sample, and thereby obtain more robust conclusions.

### Conclusions

Currently, the prevalence of any previous illegal drug use among young people starting university is similar to that of use in the previous year and month, which highlights the beginning of university as a key period for the onset of illegal drug use as well as for developing habitual use or dependence.

The prevalence of illegal drug use in the previous year and month was higher among people starting university than in the general youth population. We observed gender differences in factors associated with any previous drug use, mainly employment situation and family support. These variables could be considered as key factors for the onset of drug use in university students. Thus, we propose that drug use preventive measures should take into account gender differences as well as other related factors, including family support.

### What is known about the topic?

The beginning of the university period is a decisive moment in the establishment of habits and lifestyle including drug use. Family support can be a determining factor of any of these habits and could be related to drug use.

### What does this study add to the literature?

In the student population of Spain, the start of university stage is a particularly relevant moment in the onset of drug use and its prevention. Additionally, this is one of the first studies in this population which shows that the prevalence and the age of onset of drug use are narrowly related to the family support.

### Editor in charge

Enrique Castro Sánchez.

### Transparency declaration

The corresponding author on behalf of the other authors guarantee the accuracy, transparency and honesty of the data and information contained in the study, that no relevant information has been omitted and that all discrepancies between authors have been adequately resolved and described.

### Authorship contributions

All authors conceived the design of the study. V. Martín, T. Fernández-Villa and A.J. Molina supervised all aspects of job performance. J. Arias-de la Torre and A.J. Molina conducted the statistical analysis. J. Arias-de la Torre and T. Fernández-Villa wrote the manuscript with input from the other authors. All authors contributed to the conceptualization of the project and its objectives, and to the data collection. In addition, all authors have critically reviewed and accepted the final version of the manuscript.

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### Conflicts of interest

None.

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### References

1. Degenhardt L, Chiu WT, Sampson N, et al. Toward a global view of alcohol, tobacco, cannabis, and cocaine use: findings from the WHO World Mental Health Surveys. *PLoS Med.* 2008;5:e141.
2. Ministry of Health Social Services and Equality. Encuesta Domiciliaria sobre Alcohol y otras Drogas 2013/2014. Madrid: Secretaría de Estado de Servicios Sociales e Igualdad, Delegación del Gobierno para el Plan Nacional sobre Drogas; 2015. (Accessed 14/02/2017.) Available at: <http://www.pnsd.msssi.gob.es/ca/profesionales/sistemasInformacion/sistemaInformacion/encuestas.EDADES.htm>

3. Medina-Mora ME. Prevention of substance abuse: a brief overview. *World Psychiatry*. 2005;4:25–30.
4. Hicks T, Heastie S. High school to college transition: a profile of the stressors, physical and psychological health issues that affect the first-year on campus college student. *J Cult Divers*. 2008;15:143–7.
5. Hall WD, Patton G, Stockings E, et al. Why young people's substance use matters for global health. *Lancet Psychiatry*. 2016;3:265–79.
6. Suerken CK, Reboussin BA, Sutfin EL, et al. Prevalence of marijuana use at college entry and risk factors for initiation during freshman year. *Addict Behav*. 2014;39:302–7.
7. Fromme K, Corbin WR, Kruse MI. Behavioral risks during the transition from high school to college. *Dev Psychol*. 2008;44:1497–504.
8. Pinchevsky GM, Arria AM, Caldeira KM, et al. Marijuana exposure opportunity and initiation during college: parent and peer influences. *Prev Sci*. 2012;13:43–54.
9. Strote J, Lee JE, Wechsler H. Increasing MDMA use among college students: results of a national survey. *J Adolesc Health*. 2002;30:64–72.
10. López Larrosa S, Rodríguez-Arias Palomo JL. [Risk and protective factors in adolescents' drug use, and differences by age and sex]. *Psicothema*. 2010;22:568–73.
11. Muñoz M, Graña JL. Factores familiares de riesgo y de protección para el consumo de drogas en adolescentes. *Psicothema*. 2001;13:87–94.
12. Kumpfer KL, Johnson JL. Strengthening family interventions for the prevention of substance abuse in children of addicted parents. *Adicciones*. 2007;19:13–25.
13. Oetting ER, Donnermeyer JF. Primary socialization theory: the etiology of drug use and deviance. *I. Subst Use Misuse*. 1998;33:995–1026.
14. Bhatia S. Drug abuse in adolescents in relation to their values and perceived family environment. *Int J Adolesc Med Health*. 2011;20:27–38.
15. Pérez A, Pérez R, Martínez ML, et al. [Family structure and function during adolescence: relationship with social support, tobacco, alcohol and drugs consumption, and psychic discomfort]. *Aten Primaria*. 2007;39:61–5.
16. Adrados JL. The influence of family, school, and peers on adolescent drug misuse. *Int J Addict*. 1995;30:1407–23.
17. Legleye S, Beck F, Peretti-Watel P, et al. [Role of employment or scholar status and gender: drug use among 18 to 25 year-olds in France in 2005]. *Rev Epidemiol Sante Publique*. 2008;56:345–55.
18. Ministry of Health Social Services and Equality. La Encuesta sobre Consumo de Sustancias en el ámbito laboral en España. Informe 2013. Madrid: Secretaría de Estado de Servicios Sociales e Igualdad, Delegación del Gobierno para el Plan Nacional sobre Drogas; 2013. (Accessed 14/02/2017.). Available at: <http://www.pnsd.msssi.gob.es/profesionales/publicaciones/catalogo/catalogo-PNSD/publicaciones/pdf/EncuestaLaboral2013.pdf>
19. Colell E, Sánchez-Niubò A, Domingo-Salvany A. Sex differences in the cumulative incidence of substance use by birth cohort. *Int J Drug Policy*. 2013;24:319–25.
20. Zilberman M, Tavares H, el-Guebaly N. Gender similarities and differences: the prevalence and course of alcohol- and other substance-related disorders. *J Addict Dis*. 2003;22:61–74.
21. Molina AJ, Varela V, Fernández T, et al. Unhealthy habits and practice of physical activity in Spanish college students: the role of gender, academic profile and living situation. *Adicciones*. 2012;24:319–27.
22. Salameh P, Rachidi S, Al-Hajje A, et al. Substance use among Lebanese university students: prevalence and associated factors. *East Mediterr Health J*. 2015;21:332–41.
23. Fernández T, Alguacil J, Ayán C, et al. [UNIHCOS Project: dynamic cohort of Spanish college students to the study of drug and other addictions]. *Rev Esp Salud Publica*. 2011;87:575–85.
24. Bellón JA, Delgado A, Luna JD, et al. Validez y fiabilidad del cuestionario de función familiar Apgar-familiar. *Atención Primaria*. 1996;18:289–95.
25. Stata Corp. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP; 2013.
26. Beck F, Legleye S. [Sociology and epidemiology of consumption of psychoactive substances in adolescents]. *Encephale*. 2009;35(Suppl 6):S190–201.
27. Redonnet B, Chollet A, Fombonne E, et al. Tobacco, alcohol, cannabis and other illegal drug use among young adults: the socioeconomic context. *Drug Alcohol Depend*. 2012;121:231–9.
28. Lopez-Quintero C, Neumark Y. Effects of risk perception of marijuana use on marijuana use and intentions to use among adolescents in Bogotá. Colombia. *Drug Alcohol Dependence*. 2010;109:65–72.
29. Kilmer JR, Hunt SB, Lee CM, et al. Marijuana use, risk perception, and consequences: is perceived risk congruent with reality? *Addict Behav*. 2007;32:3026–33.
30. Merrill RM. Use of marijuana and changing risk perceptions. *Am J Health Behav*. 2015;39:308–17.
31. Beck F, Legleye S, Chomynova P, et al. A quantitative exploration of attitudes out of line with the prevailing norms toward alcohol, tobacco, and cannabis use among European students. *Substance Use & Misuse*. 2014;49:877–90.
32. de la Revilla L, de los Ríos AM, de Dios J. [Factors underlying psycho-social problems]. *Aten Primaria*. 2007;39:305–11.
33. Artazcoz L, Cortés I, Puig-Barrachina V, et al. Combining employment and family in Europe: the role of family policies in health. *Eur J Public Health*. 2014;24:649–55.
34. Arias-de la Torre J, Artazcoz L, Molina AJ, et al. Inequalities in mental health in the working population of Spain: a National Health Survey-based study. *Gac Sanit*. 2016;30:339–44.
35. Luo J, Agle J, Hendryx M, et al. Risk patterns among college youth: identification and implications for prevention and treatment. *Health Promot Pract*. 2015;16:132–41.
36. Kokkevi A, Richardson C, Florescu S, et al. Psychosocial correlates of substance use in adolescence: a cross-national study in six European countries. *Drug Alcohol Depend*. 2007;86:67–74.
37. Nociar A, Sieroslowski J, Csémy L. Substance use among European students: East-West comparison between 1995 and 2011. *Cent Eur J Public Health*. 2016;24:281–8.
38. Chau N, Baumann M, Falissard B, et al. Social inequalities and correlates of psychotropic drug use among young adults: a population-based questionnaire study. *Int J Equity Health*. 2008;7:3.
39. Henkel D, Zemlin U. Social inequality and substance use and problematic gambling among adolescents and young adults: a review of epidemiological surveys in Germany. *Curr Drug Abuse Rev*. 2016;9:26–48.
40. Romero E, Rodríguez C, Villar P, et al. Intervention on early-onset conduct problems as indicated prevention for substance use: a seven-year follow up. *Adicciones*. 2016;29:722.