

# Polydrug use and its relationship with the familiar and social context amongst young college students

## *Policonsumo de drogas y su relación con el contexto familiar y social en jóvenes universitarios*

OLGA HERNÁNDEZ-SERRANO\*, SÍLVIA FONT-MAYOLAS\*\*, MARIA EUGÈNIA GRAS\*\*

\*Escola Universitària de la Salut i l'Esport. Universitat de Girona, Girona

\*\*Instituto de Investigación sobre Calidad de Vida. Universitat de Girona, Girona

### Abstract

The prevalence of polydrug use continues to grow among Spanish college students. The European Observatory for Drugs and Addictions establishes three different types of polydrug use: Pattern A (consumers of alcohol and tobacco), Pattern B (consumers of cannabis plus alcohol and/or tobacco) and Pattern C (consumers of cannabis plus alcohol plus tobacco plus at least one other kind of illegal drug). The objectives are: 1) to study the frequency of substance consumption among a sample of young Spanish undergraduates studying health and sports science according to their sex; 2) to describe the patterns of polydrug use; 3) to study the relationship between the polydrug use of the participants and polydrug use within their closest environment (parents, sisters or brothers, best friend and partner). The sample was composed of 480 Spanish undergraduates (43.7% females) aged 18 to 36. The level of drug consumption of students and their closest reference persons was evaluated by means of a self-report measure. A total of 46% of the participants reported consumption of two or more substances; among them 29.4% corresponded to Pattern A, 50.7% to Pattern B and 16.7% to Pattern C, while 3.2% corresponded to other multiple consumption patterns (alcohol + cocaine; alcohol + cocaine + tobacco; alcohol + inhalants; amphetamines + hallucinogens + Spice). An important correlation was observed concerning polydrug use between participants and their closest reference persons: the more the reference person is a multiple consumer, the more the participant tends to consume. Polydrug use within the closest environment emerges as one of the key elements to be taken into account in further prevention programs.

*Keywords:* polydrug use, contextual factors, college students.

### Resumen

El policonsumo de drogas es cada vez más prevalente entre los jóvenes españoles. El Observatorio Europeo de las Drogas y las Toxicomanías establece tres tipologías de policonsumo: Patrón A (consumidores de alcohol y tabaco), Patrón B (consumidores de cannabis junto con alcohol y/o tabaco) y Patrón C (consumidores de cannabis junto con alcohol y tabaco y al menos otra droga ilegal). Los objetivos son: 1) estudiar la frecuencia de consumo de drogas en una muestra de jóvenes universitarios españoles del ámbito de la salud y el deporte según el sexo; 2) describir los patrones de policonsumo; 3) estudiar la relación entre el policonsumo de los participantes y el policonsumo de las personas de su entorno próximo (padres, hermanos, pareja y mejor amigo). La muestra consta de 480 universitarios (43.7% chicas) entre 18 y 36 años. Se administró un autoinforme para evaluar el policonsumo de los participantes y de sus referentes más próximos. Un 46% de los participantes eran consumidores de dos o más sustancias, de los cuales un 29.4% correspondían al Patrón A, un 50.7% al Patrón B, un 16.7% al Patrón C y un 3.2% a otros patrones de policonsumo (alcohol + cocaína; alcohol + cocaína + tabaco; alcohol + inhalantes; anfetaminas + alucinógenos + Spice). Se observa una elevada concordancia entre el policonsumo de los participantes y el de sus referentes próximos, de modo que si el referente es policonsumidor es más probable que el participante también lo sea. El policonsumo de drogas en el entorno próximo de los jóvenes deviene uno de los elementos clave a tener en cuenta en futuras campañas preventivas.

*Palabras clave:* policonsumo de drogas, factores contextuales, estudiantes universitarios.

*Received: September 2014; Accepted: February 2015*

#### Send correspondence to:

Dra. Olga Hernández Serrano. Escola Universitària de la Salut i l'Esport (EUSES). Universitat de Girona (UdG). Departament de Fisioteràpia. Campus de Salt. Carrer Francesc Macià, 65 – 17190. Salt (Girona). España. E-mail: olga.hernandez@cadscrits.udg.edu/ ohernandez@euses.cat

According to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2011), polydrug use has become one of the most common patterns of substance consumption in Europe. This observatory classifies the main types of polydrug use among adolescents into Pattern A (consumers of alcohol and tobacco), Pattern B (consumers of cannabis plus alcohol and/or tobacco consumers) and Pattern C (consumers of cannabis plus alcohol plus tobacco plus at least one other kind of illegal drug). Among young adults between the ages of 15 and 34, the most widely used substances in all European countries are alcohol and tobacco, followed by cannabis. Despite the fact that the EMCDDA (2009a) does not classify types of polydrug use specifically among young people, a link has been found between frequent or excessive consumption of alcohol and a high probability of consuming cannabis or cocaine compared with the general population. At the same time, many cocaine users also consume cannabis. Nevertheless, the majority of cannabis users do not consume illicit drugs.

According to the Spanish Observatory on Drugs (Observatorio Español de la Droga y las Toxicomanías, 2011), the situation in Spain is similar to the rest of Europe, with alcohol, tobacco and cannabis being the most widely consumed substances in the population aged 15-64. During the last year, 49.3% of psychoactive substance users have admitted taking two or more drugs. Among the users of two substances, alcohol and tobacco are the most frequently consumed, while alcohol, tobacco and cannabis are the most widely used among consumers of three substances. Consumers of four or more drugs, however, mostly take alcohol, tobacco, cannabis, cocaine in powder form and ecstasy/designer drugs (OEDT, 2011). In this regard, and specifically among the university population, some studies have explored whether the consumption of one substance increases the likelihood of using other drugs, and have found positive correlations depending on the type of substance. Thus a link exists between the occasional consumption of ecstasy and the use of marijuana, and there is a greater likelihood that other substances such as cocaine, heroin, LSD or inhalants will be consumed by users of ecstasy than by users of marijuana (Wish, Fitzelle, O'Grady, Hsu, & Arria, 2006). Other studies find a strong association between tobacco and cannabis consumption: nine out of ten adolescents who have never smoked and only 1.5 of every ten smokers have never consumed cannabis (Font-Mayolas, Gras, & Planes, 2006). Similarly, a study of cocaine consumption found that young people who normally take cocaine are also mostly consumers of alcohol and cannabis (Patiño-Masó, Gras-Pérez, Font-Mayolas, & Baltasar-Bagué, 2013). Likewise, Tirado, Aguaded, & Marin (2009) show that polydrug use (low strength alcohol + tobacco) is the prime risk factor for the consumption of spirits among university students.

In demographic terms, recent years have seen research into the differences in polydrug use according to the sex and age of young consumers. Many of these studies suggest that men exhibit greater polydrug use than women (Substance Abuse and Mental Health Services Administration, 2009; Whitehorne-Smith et al., 2012). With regard to age, data on young adults confirm links with polydrug use (Ramo, Liu, & Prochaska, 2012). Polydrug consumption is moreover associated with serious issues such as low cognitive performance, physical problems, traffic accidents, injuries, infectious and sexually transmitted diseases, suicide, fighting and other violent behaviour, as well as the risk of developing into a pattern of permanent abuse of various substance (Connor, Gullo, White, & Kelly, 2014; EMCDDA, 2011, 2014; Halley, Forster, Wood, Baezconde-Garbanati, & Beth, 2014; Hughes et al., 2009; Mariño, Castro, & Torrado, 2012; Trenz et al., 2012).

Understanding the risk and protection factors linked to polydrug consumption is important for developing interventions aimed at preventing these problems. The review carried out by Stone, Becker, Huber, & Catalano (2012) of risk and prevention factors in young adults (18-26 years of age) deserves special attention in this connection. Following Hawkins, Catalano, & Miller (1992), they establish a classification of contextual factors (sex, ethnicity, biological indicators, pre- and postnatal indicators, socioeconomic status, educational level of parents, parental status, family history of substance use, psychopathological problems of parents, poor neighborhoods, social norms, laws and taxes, availability), interpersonal aspects (background of substance abuse, family relations, family management, external and internal attributions, drug consumption and expectations in adolescence, positive attitudes and expectations, life circumstances, status/level of employment, university attendance, peer group relationships, moral beliefs, participation in religion, educational factors, marital status or engagement, stressful events). The present study focuses on contextual factors and in particular on the substance consumption of members of the subject's closest circle as possible risk factors for polydrug use.

Based on Bandura and Walters' (1979) social learning theory, learning can be seen as the observation of other models of behavior or modelling, and this can for example lead young people to start consuming substances and increase their use. There is evidence showing links between the consumption of certain substances in families, among partners and friends, and the consumption behavior of undergraduates. Font-Mayolas & Planes (2000), for example, found that young smokers tended to have a father and/or a mother and/or friends who also smoked, while they did not discover differences among partners and siblings. However, most of this research is focused on the independent study of substances like alcohol, tobacco, marijuana and medicines (Becoña et al., 2012; Buu et al., 2009; Martín-Montañez et

al., 2011; Mason et al. 2009), and studies looking at the relationships between polydrug use and these contextual factors are few and far between. With regard to the polydrug use of friends, research findings support a positive link between the consumption of various substances and having friends who are multiple consumers. Varela, Salazar, Cáceres, & Torvar (2007), for example, identified a strong association between the consumption of marijuana, opiates, cocaine and ecstasy among Brazilian university students and maintaining friendships with other drug users in which consumption can increase. Other studies have found that using cannabis for the first time is strongly associated with being a member of a group of friends in which drugs are consumed (Vázquez & Becoña, 2000). In terms of finding out about the polydrug use of psychoactive substances, a large percentage of undergraduates assert that the most frequently used way is through a friend (Herrera et al., 2012; Riquelme et al., 2012; Veloza et al., 2012). It has recently been found that having three or four close friends who are substance users is a significant predictor of drug consumption issues when compared to those with friends who are not consumers (Halley et al., 2014). On the other hand, the findings regarding a possible link between the consumption of more than one substance and polydrug use of parents is not conclusive. Some authors claim that consumption of alcohol and tobacco of 12% of university students is linked to learning from a close family member such as father, mother or sibling, or through other relatives (Veloza et al., 2012). Other authors find, however, that having a parent who consumes drugs is not a relevant predictor of their children developing consumption problems during adolescence (Halley et al., 2014). In the case of partners, Veloza et al. (2012) identify a link in 13% of their sample between the polydrug use of alcohol and tobacco among undergraduates and having a boy/girlfriend who is a multi-consumer.

In general, the majority of studies on polydrug use focus on the adolescent population (Connell, Gilreath, Aklin, & Brex, 2010; Font-Mayolas et al., 2013; Martínez, Fuentes, García, & Madrid, 2013). Regarding university students, many studies deal with a single substance (for example Font-Mayolas et al., 2006), and those which focus on the consumption of various drugs analyze a limited number of substances (mostly tobacco, alcohol, cannabis, cocaine, ecstasy and medicines). In addition, data available on polydrug use include research in the social studies, humanities and health fields which were carried out in geographic and socio-cultural contexts different to the Spanish ones (Gómez, Herde, Laffee, Lobo, & Martín, 2007; Herrera et al., 2012; Prieto et al., 2012; Veloza et al., 2012; Whitehorne-Smith et al., 2012). Indeed, a variety of authors highlight the importance of studying university students in the health and also sports areas because they are considered a vulnerable population (Lores, Murcia, Gutiérrez, & Sicilia, 2003; Oliveira & Furegato, 2008; Urrego, 2002) with responsibilities

for health, wellbeing and quality of life in society as a whole. Furthermore, a new feature of European markets is the growing availability of “new psychotropic substances” which are not regulated by international drug control treaties (EMCDDA, 2014). Substances like *Spice* (synthetic marijuana), which is included in the range of drugs covered by this study, is very popular among young people and the second most consumed illicit drug after marijuana (EMCDDA, 2009b). Therefore, we highlight the importance of understanding the issues involved in polydrug use bearing in mind the new generation of substances. The objectives of the present study, then, are: 1) to analyze the frequency of drug consumption in a sample of young Spanish undergraduates studying in the areas of health and sports according to sex; 2) to describe the patterns of polydrug use among these young people; 3) to study the association between the consumption of more than one substance and the polydrug use of people in the subjects’ closest circle (parents or guardians, siblings, best friends, partners).

## Method

### Participants

The target population is students enrolled in Girona University (Escola Universitària de la Salut i l’Esport, EUSES) on its campus at Salt (Girona). A descriptive cross-sectional study of prevalence was carried out. Of a total of 804 enrolled students, 324 did not attend class on the day and time of data collection, so the participation percentage of 59.7% is not due to lack of interest on the part of the students. The sample is made up of all the students who were present at the moment of data collection, and of these 480 undergraduates 43.7% were women and 56.3% men, aged between 18 and 36 ( $M = 21.3$ ;  $DT = 2.8$ ), in their first (32.5%), second (29.3%) and third (38.2%) years of study respectively

### Instruments

**Sociodemographic questionnaire.** Information about type of course, year, age, sex, occupation and academic performance was collected.

Information regarding polydrug use was collected through a self-report in which the following variables were assessed:

**Subjects’ frequency of consumption.** This is made up of 9 items with multiple responses (“never”, “occasionally”, “once a week”, “more than once a week”, “daily”) which assess how often these are taken: tobacco, alcohol, cannabis, cocaine, heroin, inhalation sprays, speed or amphetamines, hallucinogens and *Spice*.

**Frequency of consumption of close circle.** This is made up of 9 items with multiple responses (“never”, “occasionally”, “once a week”, “more than once a week”, “daily”) which assess the beliefs of students about how often these

drugs (tobacco, alcohol, cannabis, cocaine, heroin, inhalation sprays, speed or amphetamines, hallucinogens and *Spice*) are consumed by father/guardian, mother/guardian, brother of sister, best friend, partner.

The internal consistency of the instrument as assessed by Cronbach's alpha is 0.81.

### Procedure

Data collection was carried out among students in their first three years of Physiotherapy and Sports Science degrees. The present study was approved by the Research Committee of Girona University. Prior to data collection, we spoke to the school management in order to explain the characteristics of the investigation and ask for their cooperation. We then spoke to the corresponding teaching staff to set a date for the administration of the questionnaire. The self-report was administered by the research team at a specific time on a single day during the academic year 2013/14. We asked students to participate voluntarily, and guaranteed that their responses would be confidential and used solely for research purposes.

## Results

Table 1 shows the consumption of substances by sex and frequency of consumption by substance. Tobacco is the substance most often consumed daily, followed by cannabis. Daily alcohol consumption is low among these participants, although those who report never drinking it are in a minority. Only one participant claims to take cocaine and hallucinogens daily and none report daily consumption of heroin, inhalation sprays, speed or amphetamines, and *Spice*.

Cannabis is the most widely used illegal drug, with three out of ten participants reporting consumption more or less frequently. Between 10 and 21 participants report occasional consumption of cocaine, speed/amphetamines, inhalation sprays or hallucinogens. Heroin and *Spice* are the least frequently consumed substances: only two men reported occasional use of heroin and a further two used *Spice* (one occasionally and the other more than once a week).

There were no statistically significant differences between men and women in terms of frequency of substance use (Tobacco:  $\chi^2_{(4)} = 7.47$ ;  $p = 0.11$ ; Alcohol:  $\chi^2_{(4)} = 1.84$ ;  $p = 0.77$ ; Cocaine:  $\chi^2_{(3)} = 3.62$ ;  $p = 0.31$ ; Heroin:  $\chi^2_{(1)} = 1.56$ ;  $p = 0.21$ ; Inhalants:  $\chi^2_{(1)} = 0.37$ ;  $p = 0.55$ ; Speed or amphetamines:  $\chi^2_{(2)} = 2.27$ ;  $p = 0.32$ ; Hallucinogens:  $\chi^2_{(3)} = 1.62$ ;  $p = 0.65$ ; *Spice*:  $\chi^2_{(2)} = 1.56$ ;  $p = 0.46$ ) except in the case of cannabis ( $\chi^2_{(4)} = 14.07$ ;  $p = 0.007$ ) where we found significantly more wo-

men than men who had never tried the drug ( $z = -2.24$ ;  $p = 0.025$ ) and more men than women report using it more often than once a week ( $z = 2.58$ ;  $p = 0.001$ ).

Forty-six percent of participants (45.7% of men and 46.4% of women) report using two or more substances, with no significant differences by sex ( $z = 0.14$ ;  $p = 0.88$ ). Among multiple consumers, 29.4% (20.3% of men and 41.2% of women) corresponded to Pattern A (alcohol and tobacco), 50.7% (53.7% of men and 46.4% of women) to Pattern B (cannabis and alcohol and/or tobacco), 16.7% (22% of men and 10.3% of women) to Pattern C (cannabis and alcohol and/or tobacco and at least one other illegal drug), and 3.2% (4.1% of men and 2.1% of women) to other atypical patterns of polydrug use. The proportion of women with Pattern A consumption exhibits significant differences with regard to that of men, with women more strongly represented ( $z = -3.18$ ;  $p = 0.0014$ ), while in Pattern C the proportion of men is significantly higher compared to that of women ( $z = 2.41$ ;  $p = 0.016$ ). No statistically differences by sex are observed in either Pattern B ( $z = 1.07$ ;  $p = 0.28$ ) or in the atypical patterns of consumption ( $z = 0.87$ ;  $p = 0.38$ ).

Table 1  
Frequency (percentage) of substance consumption by sex.

		Never	Occasional consumption	Once a week	More than once a week	Daily
Tobacco (n = 478)	Men	64.7%	10.0%	4.5%	3.0%	17.8%
	Women	60.4%	17.4%	1.9%	3.4%	16.9%
	Total	62.8%	13.2%	3.4%	3.2%	17.4%
Alcohol (n = 476)	Men	6.7%	43.9%	27.5%	20.4%	1.5%
	Women	5.4%	46.8%	28.3%	17.1%	2.4%
	Total	6.1%	45.1%	27.8%	19.0%	1.9%
Cannabis (n = 479)	Men	65.1%	20.1%	3.0%	4.8%	7.1%
	Women	74.5%	20.7%	1.9%	1.0%	1.9%
	Total	69.2%	20.3%	2.5%	3.1%	4.8%
Cocaine (n = 479)	Men	93.7%	5.6%	0.4%	0%	0.4%
	Women	97.1%	2.9%	0%	0%	0%
	Total	95.2%	4.4%	0.2%	0%	0.2%
Heroin (n = 479)	Men	99.3%	0.7%	0%	0%	0%
	Women	100%	0%	0%	0%	0%
	Total	99.6%	0.4%	0%	0%	0%
Inhalation sprays (n = 480)	Men	96.7%	3.3%	0%	0%	0%
	Women	97.6%	2.4%	0%	0%	0%
	Total	97.1%	2.9%	0%	0%	0%
Speed or amphetamines (n = 480)	Men	95.2%	4.5%	0.4%	0%	0%
	Women	97.6%	2.4%	0%	0%	0%
	Total	96.2%	3.6%	0.2%	0%	0%
Hallucinogens (n = 480)	Men	97%	2.2%	0%	0.4%	0.4%
	Women	98.1%	1.9%	0%	0%	0%
	Total	97.5%	2.1%	0%	0.2%	0.2%
<i>Spice</i> (n = 480)	Men	99.3%	0.4%	0%	0.4%	0%
	Women	100%	0%	0%	0%	0%
	Total	99.6%	0.2%	0%	0.2%	0%

Table 2

Porcentaje de participantes que consumen más de una sustancia según el policonsumo de sus referentes más próximos y resultados de la prueba ji-cuadrado.

	Best friend (n= 465)	Father (n= 466)	Mother (n= 467)	Any sibling (n= 453)	Partner (n= 361)
Reference person is not multiple consumer	20.3%	41.9%	42.8%	32.4%	30.5%
Reference person is multiple consumer	59.9%	58.4%	58.1%	68.0%	69.5%
$\chi^2$ [p]	66.0 (<0.001)	10.5 (0.001)	7.6 (0.006)	55.1 (<0.001)	49.3 (<0.001)

Of the seven participants (3.2% of multiple consumers) who reported other polydrug use patterns, four consumed alcohol and cocaine, one used tobacco, alcohol and cocaine, one alcohol and inhalants and one amphetamines, hallucinogens and *Spice*.

Table 2 shows the percentage of multiple consumers in the sample in relation to the polydrug use of their closest reference persons: best friend, father, mother, siblings and partner and the results of the chi-square test. A close correlation can be observed between the polydrug use of the participants and that of their closest reference persons, so that if the reference person is a multiple consumer it is more likely that the participant will be one, too.

Table 3 shows the binary logistic regression results to predict polydrug use by age, sex and polydrug use of their closest reference persons. On analysis of the variables which predict the consumption by participants of more than one substance, the strongest is found to be the polydrug use of best friends, siblings and partners. If the best friend of the participant is a multiple consumer, the likelihood of the participant being a multiple consumer is between 3.29 and 11.43 times higher compared to those participants whose best friends are not multiple users; if a brother or sister is a multiple consumer, this likelihood is between 1.92 and 5.67 higher than for those who do not have a brother or sister who is a multiple consumer; if the partner is a multiple consumer, the likelihood is between 2.33 and 7.14 times higher than for those without a partner

Table 3

Results of binary logistic regression to predict polydrug consumption of the participants (n=342).

Variable	B	O.R.	CI 95%	p
Sex	-0.09	0.91	0.53:1.57	0.74
Age	0.05	1.05	0.97:1.14	0.26
Polydrug use of best friend	1.81	6.13	3.29:11.43	<0.001
Polydrug use of father	0.12	1.12	0.62:2.02	0.70
Polydrug use of mother	-.02	0.98	0.52:1.86	0.95
Polydrug use of a sibling	1.19	3.30	1.92:5.67	<0.001
Polydrug use of partner	1.41	4.08	2.33:7.14	<0.001

who is a multiple consumer. The model has a good fit ( $\chi^2 = 123.05$ ;  $p < 0.001$ ), explains more than 40% of variability of polydrug use (Nagelkerke's  $R^2 = 0.41$ ) and correctly classifies 76.3% of the participants.

## Discussion

The present study allows us to consolidate our knowledge of drug consumption behavior among Spanish undergraduates on health and sports science degrees. To this end, apart from providing results relative to the frequency of consumption of legal and illegal substances, the central features of polydrug use and their associations in the family and social contexts of the young students are described.

Firstly, one of the primary aims of this study to discover the link between the use of more than one substance and the polydrug use of other people in the subject's most immediate environment (parent/guardian, siblings, best friend, partner). A high correlation was found between the polydrug use of the participants and that of their closest reference persons, so if the reference person is a multiple consumer, there is a greater likelihood of the participant being one, too. Similarly, the polydrug use of best friends, brothers or sisters, or partners are the variables which most accurately predict the use of more than one substance by young people. In line with social learning theory, referred to at the beginning of this study, substance use is conceptualized as intentional behavior and socially learned through a process of modelling and reinforcement, as well as the interaction of personal and socio-environmental factors. Thus, the repeated exposure to substance using models directly influences the behavior of young people. The polydrug use of parents, however, is not relevant in predicting the multiple substance use among their children in comparison with the multiple consumption of other reference persons of similar age such as friends, siblings or partners. It is worth noting two points in connection with this result. Firstly, following Bandura's (1987) theory, the influence of the model is determined by the factors which facilitate the modeling effect; for example, similarity with the model in terms of factors such as age and/or sex, the attractiveness or interest the model holds for the partici-

pant, the emotional bonds forming part of the relationship, the level of normal interaction with the model or the social position of the model. Secondly, the features of this stage of a young person's development, together with the special experiences of university life, are emphasized. Life at university offers the student a period of personal growth, expectations, career plans and new challenges. Many of these students move away from home and start making new contacts with peers and with people of the opposite sex, which means adapting to new social surroundings. Polydrug consumption happens mostly in recreational contexts (e.g. raves) with other young people, and in such contexts polydrug use can represent a greater threat to health (Fernández-Calderón, Lozano-Rojas, & Rojas-Tejada, 2013). As a result, the influence of parents, once the primary reference persons (Ferrer & Ayneto, 1991), diminishes (Halley et al., 2014). In other words, as the adolescent grows and becomes more independent, the influence of parental attachment weakens (Becoña, Fernández, Calafat, & Fernández-Hermida, 2014). Finally, age and sex do not predict the use of two or more substances among young people if the patterns of polydrug use are not differentiated. The fact that consumption is undifferentiated by sex is supported by other authors who stress the importance of seeing polydrug use of tobacco and cannabis in the same way for both men and women (Ramo et al., 2012). Nevertheless, other studies have found sex differences in polydrug use (Substance Abuse and Mental Health Services Administration, 2009; Whitehorne-Smith et al., 2012). In terms of age, the results of this study are not consistent with differences found by other authors (OEDT, 2011; Ramo et al., 2012). More studies are therefore necessary in order to clear up possible inconsistencies with regard to sociodemographic variables of sex and age.

A further objective is to discover the frequency of drug consumption in a sample of young Spanish university students according to sex. Thus, the legal substance most often consumed on a daily basis is tobacco. At the same time, however, not many students claim never to drink alcohol (93.9% of the sample are consumers). The highest percentages of consumption on occasions and sometimes during the week belong to alcohol consumers. These data are in line with the last OEDT report (2011) on young people aged 15-34. In terms of illegal drugs, cannabis is the most frequently consumed. Our data on daily consumption of cannabis is above the levels found by the OEDT (2011), although it is in line with the increase in consumption from 2007 to the present and with findings in other studies (Font-Mayolas et al., 2006; Viña & Herrero, 2004). Moreover, cannabis is the only substance exhibiting differences by sex, with more men than women users, as also pointed out in other research (Font-Mayolas et al., 2006; OEDT, 2011). With regard to other substances, cocaine is the illegal substance most frequently used by undergraduates after canna-

bis. This is not unusual given that Spain is the country in Europe, alongside the United Kingdom, with the highest prevalence of cocaine use (OEDT, 2011). Finally, *Spice* is the substance least frequently used among students in the sample. Nevertheless, participation in *Spice* consumption is worth a special mention because although percentages are lower than those found in adolescents (OEDT, 2011), one of the participants uses it daily and all users are men. *Spice* is a mix of herbs for smoking with similar effects to those of cannabis about which little is known (Mustata et al., 2009). One of the first studies on this substance with a broad sample of university students ( $n = 2,349$ ) shows that being male and a consumer of other substances increases the likelihood of consuming these synthetic cannabinoids (Stogner & Miller, 2014). However, not much research has been carried out in Spain in the university population, and more studies on the use of this type emergent drug among young people and earlier ages are needed, with special attention to patterns of consumption and demographics.

A final objective of the study was to describe the patterns of polydrug consumption among young people. Around half of the sample are multiple consumers of two or more substances. Of these, 29.4% correspond to Pattern A (alcohol + tobacco), 50.7% to Pattern B (cannabis + alcohol and/or tobacco) and 16.7% to Pattern C (cannabis + alcohol and/or tobacco + another illegal drug) and 3.2% to other patterns of polydrug use (alcohol + cocaine; tobacco + alcohol + cocaine; alcohol + inhalants; amphetamines + hallucinogens + *Spice*). These results are in line with the scientific literature, indicating a positive association between alcohol and tobacco as the most commonly consumed substances, combined with other drugs such as cannabis (Barret, Darredeau, & Pihl, 2006; McCabe, Cranford, Morales, & Young, 2006; O'Reilly & Jessen, 2005; Riquelme et al., 2012). Similarly, the polydrug use of tobacco and cannabis is also recognized as relevant (Burns, Ivers, Lindorff, & Clough, 2000; Calafat et al., 2000) given its use as one of the most frequent combinations among adolescents and young adults (Barrett et al., 2006; Ramo et al., 2012). Furthermore, Pattern A, is more common among women, and Pattern C among men, while Pattern B does not exhibit any differences by sex. A plausible explanation for these differences might be found by studying the data in OEDT (2011). Here, the type of consumption of certain substances among women in recent years, for example binge drinking and daily smoking, has undergone an increase to match consumption among men. With regard to men, the use of all drugs is more widespread than among women, especially illegal ones.

The present study suffers from some limitations. Given the transversal nature of the study, the direction of the links found cannot be investigated. A longitudinal study observing changes over time would be required to complete this research. A further limitation is related to the

way in which the consumption behaviour of people in the subject's closest circle is assessed. The measurement of this behaviour is based on the young participants' own perceptions. Similarly, given that the consumption of drugs may or may not be generally accepted by society, the answers given by the participants in the self-report could be inflated or deflated by a social desirability bias. Nevertheless, although confidentiality of responses was guaranteed in an effort to minimize this bias, it would be advisable to use other instruments alongside self-reports, such as peer evaluation scales. Future studies should analyze whether the same risk factors associated with the consumption of a single substance like tobacco, alcohol or cannabis could also be related to polydrug use of these substances. Finally, over recent years types of family structure have been changing from the traditional (with biological parents) or extended (living together with other relatives) to monoparental, or ones reconstituted by a new spouse and even those with same-sex parents (Becoña et al., 2012). Given the importance of such changes, it is recommended that future studies address the relationship between new types of family and polydrug use.

Despite these limitations, results suggest that multiple consumption of drugs in the young people's immediate environment is emerging as a key element to be taken into account in future drug prevention campaigns.

### Acknowledgements

This study has been made possible thanks to the support provided by the Escola Universitària de la Salut i l'Esport (EUSES) in cooperation with the Universidad de Girona (UdG), 2014.

### Conflict of interests

The authors declare no conflict of interests.

### Referencias

- Bandura, A. (1987). *Pensamiento y acción: Fundamentos sociales*. Barcelona: Martínez Roca (Original work published in 1986).
- Bandura, A. & Walters, R.H. (1979). *Aprendizaje social y desarrollo de la personalidad*. Madrid: Alianza Universidad (Original work published in 1959).
- Barrett, S. P., Darredeau, C., & Pihl, R. O. (2006). Patterns of simultaneous polysubstance use in drug using university students. *Human Psychopharmacology: Clinical and Experimental*, 21, 255-263. doi: 10.1002/hup.766.
- Becoña, E., Fernández, E., Calafat, A., & Fernández-Hermida, J. R. (2014). Apego y consumo de sustancias en la adolescencia: Una revisión de aspectos conceptuales y metodológicos. *Adicciones*, 26, 77-86.
- Becoña, E., Martínez, U., Calafat, A., Juan, M., Duch, M., & Fernández-Hermida, J. R. (2012). ¿Cómo influye la desorganización familiar en el consumo de drogas de los hijos? Una revisión. *Adicciones*, 24, 253-268.
- Burns, C. B., Ivers, R. G., Lindorff, K. J., & Clough, A. R. (2000). Cannabis: A Trojan horse for nicotine? Australian and New Zealand. *Journal of Public Health*, 24, 637-637. doi: 10.1111/j.1467-842X.2000.tb00533.x.
- Buu, A., Dipiazza, C., Wang, J., Puttler, L. I., Fitzgerald, H. E., & Zucker, R. A. (2009). Parent, family, and neighborhood effects on the development of child substance use and other psychopathology from preschool to the start of adulthood. *Journal of Studies on Alcohol and Drugs*, 70, 489-498.
- Calafat, A., Fernández, C., Becoña, E., Gil, E., Juan, M., & Torres, M. A., (2000). Consumo y consumidores de cannabis en la vida recreativa. *Adicciones*, 12, 197-230.
- Connell, C. M., Gilreath, T. D., Aclin, W. M., & Brex, R. A. (2010). Social-ecological influences on patterns of substance use among non-metropolitan high school students. *American Journal of Community Psychology*, 45, 36-48. doi: 10.1007/s10464-009-9289-x.
- Connor, J. P., Gullo, M. J., White, A., & Kelly, A. B. (2014). Polysubstance use: diagnostic challenges, patterns of use and health. *Current Opinion in Psychiatry*, 27, 269-275. doi: 10.1097/YCO.000000000000069.
- European Monitoring Centre for Drugs and Drug Addiction (2009a). *Polydrug use: Patterns and responses*. Luxembourg: Publications Office of the European Union. doi: 10.2810/26783.
- European Monitoring Centre for Drugs and Drug Addiction (2009b). *Understanding the 'Spice' phenomenon*. Luxembourg: Office for Official Publications of the European Communities. doi: 10.2810/27063.
- European Monitoring Centre for Drugs and Drug Addiction (2011). *Informe Anual 2011. El problema de la Drogodependencia en Europa*. Luxembourg: Office for Official Publications of the European Communities. doi:10.2810/4450.
- European Monitoring Centre for Drugs and Drug Addiction (2014). *Informe Europeo sobre Drogas: Tendencias y Novedades*. Luxembourg: Office for Official Publications of the European Communities. doi: 10.2810/32415.
- Ferrer, X. & Ayneto, X. (1991). *Nuevos métodos en la formación de padres para la prevención del abuso de drogas*. Communication presented at the XIX Jornadas Nacionales de Socidrogalcohol, Santa Cruz de Tenerife.
- Fernández-Calderón, F., Lozano-Rojas, O. M., & Rojas-Tejada, A. J. (2013). Raves y consumo de drogas desde una perspectiva epidemiológica y psicosocial: una revisión bibliográfica sistemática. *Adicciones*, 25, 269-279.
- Font-Mayolas, S., Gras, M. E., Cebrián, N., Salamó, A., Planes, M., & Sullman, M. J. (2013). Types of polydrug use among Spanish adolescents. *Addictive Behaviors*, 38, 1605-1609. doi: 10.1016/j.addbeh.2012.09.007.

- Font-Mayolas, S., Gras, M. E., & Planes, M. (2006). Análisis del patrón de consumo de cannabis en estudiantes universitarios. *Adicciones, 18*, 337-344.
- Font-Mayolas, S. & Planes, M. (2000). Efectos del modelado por parte de la familia, pareja y amigos en la conducta de fumar de jóvenes universitarios. *Adicciones, 12*, 467-477.
- Gómez, A., Herde, J., Laffee, A., Lobo, S., & Martín, E. (2007). Consumo de drogas lícitas e ilícitas por estudiantes universitarios. Facultad de Ingeniería. Universidad de Carabobo, 2006. *Salus, 11*, 41-45.
- Halley, T. J., Forster, M., Wood, D., Baezconde-Garbanati, L., & Beth J. (2014). Problematic substance use among hispanic adolescents and young adults: implications for prevention efforts. *Substance Use and Misuse, 49*, 1025-1038. doi:10.3109/10826084.2013.852585.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance-abuse prevention. *Psychological Bulletin, 112*, 64-105. doi: 10.1037//0033-2909.112.1.64.
- Herrera, A., Simich, L., Strike, C., Brands, B., Giesbrecht, N., & Khenti, A. (2012). Policonsumo simultáneo de drogas en estudiantes de pregrado del área de la salud en una universidad, León-Nicaragua. *Texto y Contexto Enfermagem, 21*, 79-86. doi: 10.1590/S0104-07072012000500011.
- Hughes, K., Bellis, M. A., Whelan, G., Calafat, A., Juan, M., & Blay, N. (2009). Alcohol, drogas, sexo y violencia: riesgos y consecuencias para la salud entre los jóvenes turistas británicos en las Islas Baleares. *Adicciones, 21*, 265-278.
- Lores, A. P., Murcia, J. A. M., Gutiérrez, M., & Sicilia, A. (2003). La práctica físico-deportiva en la Universidad. *Revista de Psicología del Deporte, 12*, 39-54.
- Mariño, N., Castro, J., & Torrado, J. (2012). Funcionamiento ejecutivo en policonsumidores de sustancias psicoactivas. *Revista de Psicología Universidad de Antioquia, 4*, 49-63.
- Martín-Montañez, E., Barón-López, F. J., Rubio, L. O., Pavía, J., Miranda, J., & Santos, I. M. (2011). Consumo de alcohol, tabaco, cannabis y otras sustancias psicoactivas en estudiantes de la Universidad de Málaga. *Trastornos Adictivos, 13*, 160-166. doi: 10.1016/S1575-0973(11)70032-0.
- Martínez, I., Fuentes, M., García, F., & Madrid, I. (2013). El estilo de socialización familiar como factor de prevención o riesgo para el consumo de sustancias y otros problemas de conducta en los adolescentes españoles. *Adicciones, 25*, 235-242.
- Mason, W. A., Kosterman, R., Haggerty, K. P., Hawkins, J. D., Redmond, C., Spoth, R. L., & Shin, C. (2009). Gender moderation and social developmental mediation of the effect of a family-focused substance use preventive intervention on young adult alcohol abuse. *Addictive Behaviors, 34*, 599-605. doi: 10.1016/j.addbeh.2009.03.032.
- McCabe, S. E., Cranford, J. A., Morales, M., & Young, A. (2006). Simultaneous and concurrent poly-drug use of alcohol and prescription drugs: prevalence, correlates, and consequences. *Journal of Studies on Alcohol, 67*, 529-537.
- Mustata, C., Torrens, M., Pardo, R., Pérez, C., The Psychonaut Web Mapping Group, & Farré, M. (2009). Spice drugs: los cannabinoides como nuevas drogas de diseño. *Adicciones, 21*, 181-186.
- Observatorio Español de la Droga y las Toxicomanías (2011). *Informe 2011. Situación y tendencias de los problemas de drogas en España*. Madrid: Ministerio de Sanidad, Política Social e Igualdad. Retrieved at: <http://www.pnsd.msc.es/Categoria2/observa/pdf/oed2011.pdf>.
- Oliveira, E. B. & Furegato, A. R. F. (2008). El trabajo del estudiante de enfermería como un factor de riesgo para el consumo de alcohol y otras drogas. *Revista Latinoamericana Enfermagem, 16*, 565-571.
- O'Reilly, B. & Jessen, J. (2005). Cannabis and other drug use by tertiary students in Darwin, Northern Territory, Australia. South Pacific. *Journal of Psychology, 16*, 18-29.
- Patiño-Masó, J., Gras-Pérez, E., Font-Mayolas, S., & Baltasar-Bagué, A. (2013). Consumo de cocaína y policonsumo de sustancias psicoactivas en jóvenes universitarios. *Enfermería Clínica, 23*, 62-67. doi: 10.1016/j.enfcli.2013.02.003.
- Prieto, R., Simich, L., Strike, C., Brands, B., Giesbrecht, N., & Khenti, A. (2012). Diversity and complexity in the phenomenon of drugs: simultaneous polydrug use in university students in one university, Cundinamarca-Colombia. *Texto y Contexto-Enfermagem, 21*, 49-55. doi: 10.1590/S0104-07072012000500006.
- Ramo, D. E., Liu, H., & Prochaska, J. J. (2012). Tobacco and marijuana use among adolescents and young adults: A systematic review of their co-use. *Clinical Psychology Review, 32*, 105-121. doi: 10.1016/j.cpr.2011.12.002.
- Riquelme, G., Simich, L., Strike, C., Brands, B., Giesbrecht, N., & Khenti, A. (2012). Características del policonsumo simultáneo de drogas en estudiantes de pregrado de carreras de ciencias de la salud de una universidad, Santiago-Chile. *Texto y Contexto Enfermagem, 21*, 34-40. doi: 10.1590/S0104-07072012000500004.
- Stogner, J. M. & Miller, B. L. (2014). A spicy kind of high: a profile of synthetic cannabinoid users. *Journal of Substance Use, 19*, 199-205. doi:10.3109/14659891.2013.770571.
- Stone, A. L., Becker, L. G., Huber, A. M., & Catalano, R. F. (2012). Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors, 37*, 747-775. doi: 10.1016/j.addbeh.2012.02.014.
- Substance Abuse and Mental Health Services Administration. (2009). *Results from the 2008 National Survey on Drug Use and Health: National findings*. Rockville, MD: Office of Applied Studies, NSDUH.



- Tirado, R., Aguaded, J. I., & Marin, I. (2009). Factores de protección y de riesgo del consumo de alcohol en alumnos de la universidad de Huelva. *Salud y Drogas, 9*, 165-183.
- Trenz, R. C., Scherer, M., Harrell, P., Zur, J., Sinha, A., & Latimer, W. (2012). Early onset of drug and polysubstance use as predictors of injection drug use among adult drug users. *Addictive Behaviors, 37*, 367-372. doi: 10.1016/j.addbeh.2011.11.011.
- Urrego, D. Z. (2002). Consumo de sustancias psicoactivas en estudiantes de especialidades médicas, Bogotá 2001. *Revista de Salud Pública, 4*, 59-73.
- Varela, M., Salazar, I., Cáceres, D., & Tovar, J. (2007). Consumo de sustancias psicoactivas ilegales en jóvenes: factores psicosociales asociados. *Pensamiento Psicológico, 3*, 31-45.
- Vázquez, F. & Becoña, E. (2000). Factores de riesgo y escalada cannabinoide. *Adicciones, 12 (Supl. 2)*, 175-184.
- Veloza, M., Simich, L., Strike, C., Brands, B., Giesbrecht, N., & Khenti, A. (2012). Medio social y uso simultáneo de alcohol y tabaco en estudiantes universitarios de pregrado de carreras de ciencias de la salud de una universidad, Cundinamarca-Colombia. *Texto y Contexto Enfermagem, 21*, 41-48. doi:10.1590/S0104-07072012000500005.
- Viña, C. & Herrero, M. (2004). El consumo de sustancias psicoactivas en estudiantes de Psicología de la Universidad de la Laguna. *International Journal of Clinical and Health Psychology, 4*, 521-536.
- Whitehorne-Smith, P., Simich, L., Strike, C., Brands, B., Giesbrecht, N., & Khenti, A. (2012). Gender differences in simultaneous polydrug use among undergraduate students of one university, Kingston-Jamaica. *Texto y Contexto Enfermagem, 21*, 74-78. doi: 10.1590/S0104-07072012000500010.
- Wish, E. D., Fitzelle, D. B., O'Grady, K. E., Hsu, M. H., & Arria, A. M. (2006). Evidence for significant polydrug use among ecstasy-using college students. *Journal of American College Health, 55*, 99-104. doi:10.3200/JACH.55.2.99-104