ORIGINAL

Impact of lockdown on the addictive behavior of university students in La Rioja

Impacto del confinamiento en la conducta adictiva de los universitarios riojanos

Alicia Pérez-Albéniz*,**; Cristina Nuez***; Beatriz Lucas-Molina**,****; Margarita Ezquerra*; Eduardo Fonseca-Pedrero*,**.

* Universidad de La Rioja.
** Programa Riojano de Investigación en Salud Mental (PRISMA), España.
*** Gobierno de La Rioja.
**** Universitat de València.

Abstract

One of the consequences of the COVID-19 health crisis was the general lockdown. Research shows that lockdown situations may cause changes in addictive behaviors. The objective of the present study was to analyze the impact of lockdown on the addiction pattern of university students in order to design interventions adjusted to the students' needs. The study was conducted through a non-probabilistic sample of 540 students, with a mean age of 22.3 years and a proportion of women of 69.3%. The results indicated a significant decrease in the consumption of tobacco, alcohol, and psychotropic drugs during the participants' lockdown, both in the number of users and in the amounts consumed. Regarding behaviors related to behavioral addictions, participants showed a significant increase in problematic Internet use and use of video games and eSports, although the level of gambling decreased. Despite the fact that consumption patterns were reduced due to changes in the leisure and free time patterns of this population subgroup, it was possible to identify some indicators that deserve attention due to their increase, such as relapses in smoking, an increase in the number of participants who drank alcohol on a daily basis and an increase in the level of discomfort related to the use of technology. The implications of the results are analyzed and possible actions demanded by the students are examined.

Keywords: COVID-19, substance use, behavioral addictions, university students, lockdown

Resumen

Una de las implicaciones de la crisis sanitaria de la COVID-19 ha sido el confinamiento de la población. La investigación previa muestra que las situaciones de confinamiento provocan cambios en las conductas adictivas. El objetivo del presente estudio fue conocer el impacto del confinamiento en el patrón de las adicciones de los y las estudiantes universitarios con la intención de diseñar intervenciones ajustadas a las necesidades de esta población. La muestra no probabilística estuvo compuesta por 540 estudiantes de la Universidad de La Rioja, con una media de edad de 22,3 años y una proporción de mujeres del 69,3%. Los resultados indicaron un descenso significativo en el consumo de tabaco, alcohol y psicofármacos durante el confinamiento de los y las participantes tanto en el número de consumidores como en las cantidades consumidas. Respecto a las conductas relacionadas con las adicciones comportamentales, los y las participantes indicaron un aumento significativo del uso problemático de Internet y de videojuegos y eSports, aunque descendió el nivel de juego de apuestas. A pesar de que los patrones de consumo se vieron reducidos por el impacto que el confinamiento tuvo en los patrones de ocio y tiempo libre de este subgrupo poblacional, se identificaron algunos indicadores merecedores de atención por su aumento, como recaídas en el consumo de tabaco, aumento del número de participantes que consumen alcohol a diario y aumento en el nivel de malestar relacionado con el uso de Internet. Se analizan las implicaciones de los resultados y se examinan posibles acciones demandadas por el estudiantado.

Palabras clave: COVID-19, consumo de sustancias, adicciones comportamentales, estudiantes universitarios, confinamiento

On March 11, 2020, the World Health Organization (WHO) declared the outbreak of the COVID-19 coronavirus to be a pandemic. As a consequence, and given the rapid spread of the virus, a state of emergency was declared in Spain on March 14 (RD 463/2020). With the different lockdown measures adopted by the government, decreed by Order SND/380/2020 and RD 537/2020, the Spanish population spent 10 weeks in lockdown or with one hour a day outside. Although these demanding measures of social isolation served at the time to reduce the spread of the virus, they may have had important consequences from psychological, socio-health and financial points of view. In this sense, social distancing, emotional isolation, the adoption of a sedentary lifestyle (teleworking, limitation in carrying out sports and leisure activities, etc.) and the financial difficulties resulting from the interruption of work activity were able to have some negative effects on the well-being and mental health of the population (Pfefferbaum & North, 2020).

Previous research has shown that the lockdown during the coronavirus pandemic may have caused some difficulties such as depression, anxiety, emotional problems or sleep disorders (Brooks et al., 2020; Lima et al., 2020; Wang et al., 2020). For example, in China the study by Qiu et al. (2020) showed that 35% of participants presented moderate to severe levels of psychological distress after the quarantine situation. In Spain, a study carried out during lockdown with a large sample of the general population (García-Álvarez et al., 2020) found that the most frequent emotional responses were associated with depressive symptomatology (46.7%) and avoidant coping styles (44.3%). Other studies show that lockdown can generate feelings of frustration, boredom, fear and confusion, aggressive behaviour, post-traumatic stress symptoms (Mazza, Marano, Lai, Janiri & Sani, 2020; Rossi et al., 2020) and an increase in the risk of suicidal behaviour (Reger, Stanley & Joiner, 2020). The psychological effects of lockdown seem to increase in certain vulnerable groups of the population, such as those with a previous mental disorder (Brooks et al., 2020; Rossi et al., 2020). Likewise, those people with substance use problems could be groups at risk of other mental health related problems (Brooks et al., 2020; Pfefferbaum & North, 2020), including suicidal behaviour (Espandian et al., 2021). In addition, it is important to highlight the need to understand and prevent possible increases in tobacco smoking, given that this substance has been considered a risk factor for infection and complications associated with COVID-19 (Volkow, 2020).

Furthermore, the negative impact of lockdown on the psychological well-being of the population could lead to the abuse of alcohol and/or other psychoactive substances, as well as a greater tendency to engage in pathological behaviours (e.g., gambling and Internet addiction) (Martinotti et al., 2020). It has therefore been proposed that the use of alcohol, tobacco and other substances, as well as the problematic use of the Internet and gambling, could increase not only as a consequence of the stress, anxiety or depressive symptoms experienced by the population, but also as a form of distraction or behavioural avoidance strategy in the face of this health emergency situation (García-Álvarez et al., 2020; Rojas-Jara, 2020). A study carried out along these lines with a large sample of participants over 18 years of age in the United States (Czeisler et al., 2020) revealed that 13.3% of the sample started or increased substance use in order to deal with the stress and emotions generated by the COVID-19 pandemic.

On the other hand, at European and national levels, studies have been carried out that indicate a general trend towards stabilization and decrease in substance use. For example, to analyze the use of psychoactive substances, the European Observatory on Drugs and Addictions (EMCDDA, 2020) conducted a substance use survey in the context of the COVID-19 pandemic (Mini-EWSD-COVID-19). The results derived from the sample of Spanish participants indicated that, during the period of lockdown, the majority of those surveyed who declared themselves users of illicit psychoactive substances claimed to have ceased or reduced the frequency or quantity consumed (71.9%). In 16.3% of the cases there were no changes. However, consistent with what happened in the United States (Czeisler et al., 2020), the study showed a not insignificant group of people (11.9%) who increased the frequency or amount of illicit psychoactive drug use during the COVID-19 lockdown.

The general pattern of reduced consumption is also seen for alcohol (Kilian et al., 2020; Villanueva et al., 2021), tobacco and exposure to environmental tobacco smoke (Ministerio de Sanidad, 2020). However, for cannabis, the results are contradictory. While Villanueva et al. (2021) observed a decrease in use, the Mini-EWSD-COVID-19 study of the European Observatory on Drugs and Addictions (2020) showed that there was a greater percentage of people who did not change their use or even increased it. This fact may be linked to the greater availability of this substance.

The outlook is more negative in terms of behaviours at risk of addiction. For example, a Chinese study with a sample of 6,416 adults on the risk of Internet addiction conducted by Sun et al. (2020) revealed a 23% increase in the prevalence of participants with a severe level of Internet addiction as a result of lockdown. In Spain, the data offered by the Spanish Observatory of Drugs and Addictions (2020) showed a significant increase in the use of video games and the Internet for recreational purposes. Gambling behaviour, however, decreased during lockdown (Observatorio Español de las Drogas y las Adicciones, 2020; Villanueva et al., 2021). Nevertheless, the results presented to date contrast with those from studies in the

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university population, which, although few in number, indicate a negative impact of COVID-19 on smoking, alcohol and cannabis use during lockdown (Lechner et al., 2020; Yehudai et al., 2020). In Spain, a recent study with 310 university students showed that during quarantine, 9% presented obsessive behaviour regarding social networks, 27.7% showed a lack of personal control in the use of social networks and 47.1% an excessive use of social networks (Gómez-Galán, Martínez-López, Lázaro-Pérez & Sarasola, 2020). Therefore, it is possible that situations of stress due to isolation or lockdown can generate a series of psychological consequences that increase the risk of substance use and Internet addiction as coping strategies (Brooks et al., 2020; Czeisler et al., 2020; Rojas-Jara, 2020; Sun et al., 2020). This risk may be even greater among young people, who are more vulnerable to developing behavioural addictions (e.g., tobacco, alcohol, psychoactive substances, Internet) (Kar et al., 2020).

The scarcity of studies carried out in a university context makes a needs analysis of this population necessary to understand the impact of the crisis on their substance use and behaviours at risk of addiction that guide the university's strategy in the field of addiction prevention. Specifically, the University of La Rioja has been a member of the Spanish Network of Healthy Universities since 2008 with a commitment to develop a work project that incorporates the concept of health promotion in university culture, in its institutional policies, structure, processes and study plans and to include the identification of the needs of the university community, areas of work and intervention strategies. This study responds to the need to measure the impact of the health crisis on students and to make available to them the necessary resources to mitigate the potential damage it may cause.

Within this research context, the aim of our study was to analyze the prevalence of substance use and behaviours at risk of addiction. The following specific objectives were derived from this general aim: a) to analyze the prevalence of smoking, cannabis, alcohol and tranquilizer use and to find out how consumption changed during lockdown; b) to study the prevalence of behaviours at risk of addiction such as gambling, problematic Internet use (PIU) and gaming (video games and eSports) and the impact of lockdown on these prevalences; and c) to analyze other changes in participant consumption, lifestyles and well-being. Based on the literature review, a general decrease in use was expected. However, the existence of some indicators of changes in use and distress associated with the increased use of technologies (i.e., the Internet) was also expected. Finding out about this reality based on a needs analysis will allow training, information, awareness and prevention activities to be proposed, as well as the subsequent move towards relevant and contextualized interventions in the university environment on which they are based.

Method

Participants

The non-probabilistic sample comprised 540 participants from the total population of 5,700 students enrolled at the University of La Rioja in the 2019-2020 academic year. To calculate the minimum number of participants needed, a formula combining population (5,700), confidence level (95%) and margin of error (5%) was applied, resulting in a minimum size of 360 responses, which was therefore widely exceeded by number of participating students.

The participants were students of 32 different university degrees (Bachelors, Masters and Doctorates) and had been at university for different lengths of time: 25.7%, 14.8%, 17.8% and 18.3% were in their first, second, third and fourth years, respectively. Those who had been enrolled for more than four years made up 18.05% of the sample, and 5.4% had been enrolled for over four years with discontinuity in enrolment.

A total of 32 participants were removed from the sample since they claimed to be over 36 years old and were considered outliers. Mean age was 22.29 years (*SD* = 3.30 years; range = 18 to 35 years), and 69.3% were women (*n* = 374).

Instruments

Smoking and other forms of tobacco consumption. Questions from the survey "Tobacco, Other Forms of Consumption and Lockdown" (Ministry of Health, 2020) were used. The original questionnaire had 18 items assessing the impact of lockdown on the use of tobacco and other related products. The items regarding age of onset (tobacco and cannabis), frequency of use before and during lockdown, type of use before and during lockdown, perception of change in use during lockdown, intention to quit, and exposure to environmental tobacco smoke were used.

Alcohol use. Items from both the EDADES and ESTUDES surveys of the Government Delegation for the National Plan on Drugs (2018, 2019) and the study on smoking (Ministry of Health, 2020) adapted to alcohol consumption were used. The items on age of onset of consumption, frequency of use, and type of use were applied, and an additional item on the use of energy drinks was introduced. These questions were adapted to examine consumption before and during lockdown. Additionally, two of the three items from the brief version of the *Alcohol Use Disorders Identification Test* (AUDIT-C) (Contel, Gual & Farran, 1999) were introduced to assess risky alcohol use: number of drinks consumed before and after lockdown and frequency of binge drinking (consumption of 6 or more drinks in a single day).

Use of psychotropic drugs with and without prescription. Items from both the EDADES and ESTUDES surveys of the Government Delegation for the National Plan on Drugs (2018, 2019) and the study on smoking (Ministry of

Health, 2020) adapted to the consumption of prescription and non-prescription psychoactive drugs were used. Items on age of onset were used, as were those referring to frequency and quantity of use adapted to examine such use before and during lockdown.

Gambling. Items from the ESTUDES survey of the Government Delegation for the National Plan on Drugs (2019) were used. The starting age for face-to-face and online gambling and the frequency of gambling before and during lockdown were assessed.

Compulsive Internet Use Scale (CIUS) (Meerkerk Van Den Eijnden, Vermulst & Garretsen, 2009). The CIUS is one of the most widely used scales to assess problematic Internet use (PIU). The scale was developed under the premise that this behaviour shared some of the diagnostic criteria included in substance dependence (seven criteria) and pathological gambling (ten criteria) of the DSM-IV (1994), behavioural addictions (Griffiths, 1999; Meerkerk et al., 2009) and obsessive-compulsive disorder (López-Fernández et al., 2019). López-Fernández et al. (2019) carried out a study analyzing the psychometric properties of different versions (CIUS-14, CIUS-9, CIUS-7, CIUS-5) developed in eight languages (German, French, English, Finnish, Spanish, Italian, Polish and Hungarian) and endorsed its use as valid and especially useful for its brevity. A recent study by Fonseca-Pedrero, Ortuño-Sierra, Pérez and Pérez-Albéniz (2020) showed that the 14-item scale in Spanish had adequate psychometric properties and a unidimensional structure. For the present study, the ESTUDES (2019) version was used, but the items were presented in a dichotomous response format (Yes/No) in which the participants had to answer whether or not they had experienced each of the indicators (e.g., difficulties to stop using the Internet, sleeping less due to being connected to the Internet, neglecting obligations) before and during lockdown. The scores of the Spanish version of this scale (Fonseca-Pedrero et al., 2020) have shown adequate levels of reliability (McDonald's Omega = 0.91).

Gaming participation. Items from the ESTUDES survey of the Government Delegation for the National Plan on Drugs (2019) were used. The frequency of playing video games, eSports and eSports spectatorship before and during lockdown was assessed.

Other substances used, behavioural changes and perceived needs. Finally, three qualitative questions were introduced with the aim of analyzing possible substance use not contemplated in the previous questions (*During these weeks of lockdown, have you used any other type of substance that we have not asked you about and that you have observed that you have used more frequently?*), changes in perceived behaviour (*Do you want to highlight any other changes in your behaviour that have taken place during these weeks of lockdown?*) and proposals for action by the participants for the prevention services in the university that they would like to apply for or consider

to be of interest (*What type of activities would you like to see carried out by the university to address the prevention of these uses and addictions?*).

Procedure

The research was approved by the Ethics Committee of the University of La Rioja (Resolution of 4/8/2020 of the University Board of Directors). The administration of the questionnaires was carried out online and the study was reported through email messages to the student body sent from the University's Occupational Risk Prevention Service.

Confidentiality of responses was ensured at all times, as well as the voluntary nature of participation, and no reward was given for collaboration in the study.

Data analysis

First, descriptive statistics for the items were calculated. Second, the possible existence of statistically significant differences in the two time points (before and during lockdown) of the different consumption indicators was analysed through tests of repeated measures. For continuous variables, the t-test for related samples was used. For categorical data, in the case of dichotomous data, the McNemar test was used and for those variables with different categories, the marginal homogeneity test was used. The latter is an extension of McNemar's test from binary to multinomial response. It tests response changes using the chi-square distribution and is useful for detecting response changes in before-after designs. To analyze the individual changes, i.e., the number of participants who modified their use in the referenced quantities of some substances, a recoding of the variables was carried out. Data analysis was performed using SPSS 26.0.

Results

Substance use

Use of tobacco, cigarettes, cigars, cannabis and other forms of consumption. The mean age at which the participants reported starting smoking tobacco and cannabis was 15.59 years ($SD = 2.60$) and 16.59 years ($SD = 2.33$), respectively. Regarding the use of tobacco and other substances before and during lockdown, the results indicate a change in consumption habits. As can be seen in Table 1 and based on the results of the marginal homogeneity test to contrast the proportions between the categories, use decreases in a statistically significant way (*standard MH* = 5.39; *p* < .001). although the number of former smokers who return to smoking is also significant.

The results regarding the type of use (the type of tobacco and other substances consumed) can be seen in Table 2.

Regarding the participants' perception of change in the level of consumption, the results revealed that 2.4% of the students reported starting to smoke or relapsing, 8% stated

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that they smoked more and 14.8% claimed to have smoked less during lockdown than before. Regarding the proposals to quit smoking during the weeks of lockdown, although 59 participants (57.3%) stated that they had not considered it, 44 (42.7%) had done so. Of these, 20 (45.45%) succeeded, 13 (29.5%) were trying at the time of data collection, and 11 (25%) failed.

Regarding passive smoking or exposure to environmental tobacco smoke (ETS), Table 1 shows the results of the McNemar test for dichotomous variables revealing that exposure had decreased in a statistically significant way (x^2 = 64, 03, p < .05). The participant analysis showed that 17.4% who had been exposed before lockdown stopped being exposed during it.

Alcohol consumption. The mean age at which the participants claim to have started drinking alcohol was 14.99 (SD = 2.19).

Regarding drinking before and during lockdown, results indicated a decrease. As can be seen in Table 1, the marginal homogeneity test showed that drinking decreased significantly (*standard MH* =10.90; p < .001). It is observed that sporadic and weekend drinking was much lower, as expected given the decrease in social leisure opportunities during lockdown, although the test also indicated that the number of participants drinking daily increased significantly.

Regarding the type of alcohol and energy drinks (mixed with alcohol or consumed alone) that were consumed

Table 1
Frequency of use of different substances before and during lockdown

	Before lockdown *n* (%)	During lockdown *n* (%)
Smoking		
Daily	69 (12.8)	66 (12.2)
Smoker, but not daily	60 (11.1)	41 (7.6)
Ex-smoker	73 (13.5)	47 (8.7)
Never	330 (61.1)	383 (70.9)
Exposure to environmental tobacco smoke (ETS)		
Yes	229 (42.4)	147 (27.2)
No	308 (57.0)	393 (72.8)
Alcohol		
Daily drinking	18 (3.3)	30 (5.6)
Every weekend	89 (16.5)	43 (8.0)
Sporadic drinking	379 (70.2)	247 (45.7)
Never	53 (9.8)	220 (40.7)
***Binge drinking* (6 or more drinks on the same occasion)**		
Daily or almost daily	3 (0.6)	6 (1.4)
Weekly	49 (9.9)	21 (5.0)
Monthly	72 (14.5)	17 (4.0)
Less than once a month	160 (32.3)	28 (6.7)
Never	211 (42.6)	349 (82.9)
Prescription psychoactive drugs		
Daily	30 (5.6)	26 (4.8)
At least once a week	5 (0.9)	6 (1.1)
Sporadic use	28 (5.2)	10 (1.9)
Never	477 (88.3)	498 (92.2)
Non-prescription psychoactive drugs		
Daily	4 (0.7)	6 (1.1)
At least once a week	2 (0.4)	9 (1.7)
Sporadic use	40 (7.4)	24 (4.4)
Never	494 (91.5)	501 (92.8)

Table 2
Type of substances used before and during lockdown

	Before lockdown *n* (%)	During lockdown *n* (%)
Tobacco and other substances		
Cigarettes	139 (25.7)	72 (13.3)
Hand-rolling tobacco	115 (21.3)	58 (10.7)
Cannabis	97 (17.9)	45(8.3)
Waterpipe	52 (9.6)	5 (.9)
Cigars or cigarillos	19 (3.5)	10 (1.8)
Electronic cigarettes	16 (2.9)	14 (2.6)
Herbs for smoking	7 (1.3)	4 (.7)
Heated tobacco products	3 (.5)	3 (.5)
Other	13 (2.4)	6 (1.1)
Alcohol and energy drinks		
Beer	383 (70.9)	286 (52.9)
Wine	332 (61.5)	191 (35.4)
Mixed drinks (spirit-based)	384 (71.1)	91 (16.8)
Fruit liqueurs, unmixed	141 (26.1)	30 (5.5)
Strong liquors, unmixed	125 (23.1)	32 (5.9)
Other	61 (11.3)	19 (3.5)
Energy drinks	175 (32.4)	87 (16.1)
Energy drinks and alcohol	124 (22.9)	26 (4.8)

Note. For each substance, the sum of the percentages exceeds 100% (because of the simultaneous use of substances).

Table 3
Amount of alcohol drunk before and during lockdown

	Before lockdown *n* (%)	During lockdown *n* (%)
1 or 2 units	90 (26.4)	123 (69.9)
3 or 4 units	144 (42.2)	24 (13.6)
5 or 6 units	58 (17.0)	15 (8.5)
From 7 to 9 units	28 (8.2)	11 (6.3)
10 or more units	21 (6.2)	3 (1.7)

before and during lockdown (see Table 2), results showed that the most frequently consumed drinks were beer, wine and spirit-based mixed drinks, in that order and at both moments in time. Consumption of all types of beverages decreased.

With reference to the amount of alcohol consumed (see Table 3) in each drink, participants stated that they drank significantly less alcohol (*standard MH* = 13.58; *p* < .001).

To analyze the individual changes, that is, the number of participants who had modified their use of the referenced quantities, a recoding of the variables was carried out. The frequencies indicated that 318 participants (58.9%) claimed to have drunk less during lockdown, 196 (36.35%) maintained their drinking pattern, but 26 participants

(4.8%) increased the number of alcoholic drinks when they drank.

In terms of binge drinking (6 or more drinks on the same occasion) (see Table 3), the results indicated a general reduction in frequency. As with the amount of alcohol drunk, the variables were also recoded to reveal individual changes in this type of consumption. The frequencies indicated that 175 participants (42.0%) claimed to have participated in binge drinking fewer times during lockdown, 228 (54.7%) did so with a similar frequency, and 14 (3.4%) increased the number of binge drinking episodes.

Consumption of psychotropic drugs with and without a prescription. The mean age at which the participants stated that they started using psychoactive drugs with and without

a prescription was 19.41 years (*SD* = 5.88) and 18.66 years (*SD* = 4.33), respectively.

Regarding the frequency of psychotropic drug use with and without a prescription, before and during lockdown (Table 1), the results indicated a fall in consumption. However, the decrease was only significant for prescription psychoactive drugs (*standard MH* = 2.36, *p* = .018). The fall in the use of non-prescription psychotropic drugs did not reach statistical significance (*standard MH* = -.442; *p* > .05) in the marginal homogeneity test.

Regarding the number of types of psychoactive drugs, the participants stated means of .34 (*SD* = .69) and .21 (*SD* = .69) before and during, respectively, for prescription psychoactive drugs, and .19 (*SD* = .47) and .15 (*SD* = .42) before and during, respectively, for non-prescription psychoactive drugs. The decrease in the variability of psychotropic drugs used in both types (with and without prescription) was statistically significant [(*t* (539) = 6.13, *p* < .001) and [(*t* (539) = 3.20, *p* < .01), respectively].

Prescribed psychotropic drugs were therefore used less during lockdown, and the students who used them consumed fewer types. However, for psychotropic drugs used without a prescription, there was no decrease in quantity but rather in variety.

In reference to the type of psychotropic drug (see Table 4), the results indicated a differential pattern with and without a prescription. For prescription drugs, the results showed a fall in all drugs studied (antidepressants, sleeping pills and tranquilizers). However, for over-the-counter psychoactive drugs, a significant drop (*p* < .05) was only observed in sleeping pills.

Behaviours at risk of behavioural or non-substance addictions

Gambling. The mean age at which participants reported starting face-to-face and online gambling was 18.64 (*SD* = 3.47) and 18.93 (*SD* = 3.99), respectively.

Since face-to-face gambling was not possible during lockdown, data on gambling frequency was collected without distinguishing between types. As can be seen in Table 5, the frequency of gambling behaviour decreased significantly during lockdown (*standard MH* = 7.82; *p* < .001).

Problematic Internet use. The results showed statistically significant differences (*t* (539) = -6.32, *p* < .001) when comparing the total CIUS scale scores at the two time points: before (*M* = 2.52, *SD* = 2 .28) and during (*M* = 3.03, *SD* = 2.51) lockdown, indicating greater distress associated with Internet use.

Use of video games, eSports and spectator in eSports or electronic sports. As shown in Table 5, the frequency of use of video games, eSports and spectator in eSports or electronic sports was highly prevalent during lockdown. In fact, the data shows a significant increase for the three categories (*standard MH* = -7.839; *p* < .001) for video games, (*standard MH* = -3.101; *p* < .01) for eSports, and (*standard MH* = -3.113; *p* < .01) for spectator in eSports or electronic sports.

Other types of consumption, changes in behaviour and need for intervention

In the first place, in reference to the possibility that they made some other type of consumption, the students indicated (see Table 6) changes in the pattern of use of

Table 4
Consumption of prescription and non-prescription psychoactive drugs, before and during lockdown, according to type (antidepressants, sleeping pills and tranquilizers)

	Prescription			
	Before *n* (%)	During *n* (%)	MH	P
Antidepressants	41 (7.6)	23 (4.2)	-3.67	<.001
Sleeping pills	48 (8.8)	29 (5.4)	-3.96	<.001
Tranquilizers/sedatives	49 (9.1)	17 (42.5)	-5.48	<.001
Other	48 (8.9)	46 (8.5)	-.63	.527
	Non-prescription			
	Before *n* (%)	During *n* (%)		
Antidepressants	5 (0.9)	3 (0.5)	-1.41	.157
Sleeping pills	45 (8.3)	31 (5.7)	-2.64	.008
Tranquilizers/sedatives	21 (3.9)	16 (2.9)	-1.29	.197
Other	35 (6.5)	34 (6.3)	-1.00	.317

Table 5
Frequency of gambling, video games, eSports and spectator in eSports or electronic sports before and during lockdown

	Before lockdown *n* (%)	During lockdown *n* (%)
Gambling		
6 or more days a week	4 (0.7)	2 (0.4)
4-5 days a week	3 (0.6)	1 (0.2)
2-3 days a week	2 (0.4)	2 (0.4)
2-4 days a month	10 (1.9)	3 (0.6)
One day a month or less	99 (18.3)	20 (3.7)
Never	422 (78.1)	512 (94.8)
Video games		
Daily	40 (7.4)	80 (14.8)
Several days a week	40 (7.4)	64 (11.9)
Some day a week	36 (6.7)	49 (9.1)
Sporadically	168 (31.1)	97 (18.0)
Never	256 (47.4)	250 (46.3)
eSports		
Daily	23 (4.3)	36 (6.7)
Several days a week	17 (3.1)	18 (3.3)
Some day a week	23 (4.3)	23 (4.3)
Sporadically	46 (8.5)	37 (6.9)
Never	431(79.8)	426 (78.9)
Spectator		
Daily	17 (3.1)	26 (4.8)
Several days a week	14 (2.6)	16 (3.0)
Some day a week	19 (3.5)	22 (4.1)
Sporadically	46 (8.5)	40 (7.4)
Never	444 (82.2)	436 (80.7)

Table 6
Other types of consumption during lockdown that the participants wanted to point out

Type of consumption	*n*	%
Food	23	4.3
Sweets, sugar, chocolate	15	2.8
Coffee	10	1.9
ICT, TV, series	15	2.8
Pornography	4	0.7
Other psychoactive substances: cocaine, amphetamines, etc.	2	0.4
Others (example: melatonin, sports, internet shopping)	7	1.3

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Table 7
Changes in behaviour during lockdown reported by student

	N (%)	Description reported by the student body (examples)
Negative aspects		
Higher levels of anxiety, stress	52 (9.6)	Feelings of anxiety, stress or being overwhelmed.
Negative emotions	51 (9.4)	Sadness, depression, lack of motivation, tiredness, irritability and even suicidal thoughts.
Negative changes in physical activity performed	7 (1.3)	Increased sedentary lifestyle and lack of activity.
Negative changes in diet	2 (0.4)	Increased food intake.
Changes in sleep and rest	24 (4.4)	Presence of episodes of insomnia, difficulty falling asleep, lower number of hours of rest.
Concerns related to the academic sphere	33 (6.1)	Increased level of stress due to the demands of tasks, jobs and type of work. Difficulty concentrating and performing work with the same level of quality and effort.
Social difficulties	10 (1.9)	Problems living with the family, difficulties restarting social life after lockdown, loss of interest or isolation.
Claustrophobia	5 (0.9)	Difficulties related to the feeling of lockdown and lack of space.
ICT	6 (1.1)	Perception of the negative impact due to the increase in technology consumption.
Physical symptoms	5 (0.9)	Increased intensity and frequency of migraines, dizziness and pain of various kinds.
Others	4 (0.7)	For example, increased consumption of pornography, coffee.
Positive aspects		
Positive changes in physical activity performed	16 (3.0)	Starting new activities or increasing regular physical activity.
Positive changes in diet	6 (1.1)	Greater variety and quality in food.
Others	16 (3.0)	Changes in healthy habits, perception of better time management and development of new skills, etc.

some foods and fundamentally the use of information and communication technologies.

Secondly, regarding the changes in behaviour during the weeks of lockdown indicated by participants (see Table 7), it is worth noting the presence of symptoms related to anxiety, the presence of negative emotions and changes in their lifestyle (physical activity, food and rest). Concerns related to academic tasks and social difficulties were also prevalent. Similarly, it should be highlighted that some participants also indicated positive aspects derived from the lockdown situation (also shown in Table 7) related to lifestyle improvements. Some even pointed to a positive impact of lockdown on their ability to manage time, in the carrying out activities or in the development of critical thinking and problem-solving skills.

Finally, the responses of the participants to the question about the activities that they would like university services to offer in order to address addiction prevention resulted in the following categorization (in order of frequency): a) workshops, in general or for the prevention of alcohol, drugs, gambling and mental illness, as well as awareness-raising activities or talks, b) financially affordable sports and extracurricular activities for the development of

healthy leisure, c) activities and days of health education and promotion of health and healthy lifestyles.

Discussion

The overall aim of the study was to analyze the prevalence of behaviours at risk of addiction in a non-probabilistic sample of students from the University of La Rioja during COVID-19. Three specific objectives were derived from this general aim, comprising the analysis of substance use prevalence in the university population and finding out the changes in said consumption during lockdown, the study of the prevalence of behaviours at risk of behavioural addiction during lockdown and, finally, the analysis of other changes in the consumption, lifestyles and well-being of the participants.

Firstly, for all substances and gambling, the age at which consumption began was explored as a possible indicator of the level of risk in this population. The data showed that the age of onset for the use of tobacco, cannabis, alcohol, prescription and non-prescription psychoactive drugs, and face-to-face and online gambling was 15.59 years, 16.59 years, 14.99 years, 19.41 years, 18.66 years, 18.64 years

and 18.93 years, respectively. The comparison of these data with other studies of a similar nature, in this case the national surveys ESTUDES (National Plan on Drugs, 2019) and EDADES (National Plan on Drugs, 2018) and, specifically, with the most recent ESTUDES due to the proximity of the profile (ESTUDES 2018-19), indicated that consumption for all categories analyzed started late. In fact, for tobacco, cannabis and alcohol use, the difference in onset age was greater than one year. The differences are even greater for the use of psychotropic drugs, with or without prescription, and with face-to-face and online gambling. These data could indicate that early initiation of use is not a risk factor in this population.

In terms of the change in smoking pattern, the data reveal a decrease during lockdown. This result is consistent with that found in the study by the Ministry of Health (2020), which also indicated that the highest rates of decrease are found in students (when occupation is taken into account) and those under 24 years of age (when age is analyzed). Conversely, Yehudai et al. (2020) found an increase in smoking by university students, and a study by the Ministry of Health (2020), through the Smoking Unit of the General Directorate of Public Health, found that 73.5% of smokers maintained the same frequency of use in the both periods, and that 15.7% of the participants reduced the frequency with which they smoked. However, the results showed that 10.8% of the sample increased their smoking (5.5% changed from occasional to daily use), 0.9% of smokers started smoking and 4.5% had relapsed into smoking during lockdown. Regarding the quantities used, a significant increase in smoking was detected during lockdown in general and for all types of products analyzed. Regarding the possibility of quitting this habit, the study showed potential target groups of people who tried without success and who did not even consider it (more than 50%). In line with the above and in relation to the present study, besides the effects of the pandemic, there are relevant issues to take into account in the face of possible intervention. It is important to highlight that the use of tobacco in its various types is very frequent, as is cannabis use.

The results also showed people starting to smoke and relapsing (2.4% of the sample) during lockdown. This data is in line with that provided by the study by the Ministry of Health (2020), which reaches 7.8%. These data are certainly worthy of attention.

The decrease observed in this study in cannabis use is consistent with that found by Villanueva et al. (2021), but contrasts with the data found by Yehudai et al. (2020) in university students and by the MINI-EWSD-COVID-19 survey of the European Observatory on Drugs and Addictions (2020), which showed that cannabis was the illicit drug of which a lower percentage of people changed their use. The study attributes this result to the greater availability of this substance compared to other illicit substances.

Regarding ETS, the data show fewer passive smokers. This result is consistent with the study carried out by the Ministry of Health (2020), in which 60.7% (compared to 17.4% in our study) of those who reported being exposed to tobacco smoke and/or cigarette emissions before lockdown had ceased to be so during lockdown, and among non-smokers there was a significant drop from 25.6% to 11.7%. On the other hand, this result was to be expected both because home lockdown reduces exposure contexts and because of the lower consumption observed.

It is also important to highlight the existence of a significant group of smokers who are at the stage of thinking about quitting (more than 40% of the participating smokers in this study, and more than 50% in the Ministry study, stated that they had considered trying to quit).

The results in relation to alcohol use also showed a significant decrease, especially in sporadic drinking and at weekends. This data was expected, as was the reduction in binge drinking, given the lockdown situation and the link between alcohol use and leisure time with young people. Likewise, the personal situation of university students could affect drinking patterns since it is possible that many live with their families, which means a greater level of control in lockdown situation. However, an increase in daily use was also observed in terms of frequency, although not of the amount drunk daily. A European study focusing on changes in alcohol use during the health crisis (Kilian et al., 2020) also showed a trend towards a decrease or stabilization. Similar results were found in the MINI-EWSD-COVID-19 survey and in the study by Villanueva et al. (2021), who point out that drinking decreased during lockdown compared to pre-pandemic levels, and specify that it occurred especially among the youngest (18-29 years). However, these data contrast with those provided by Lechner et al. (2020) and Yehudai et al. (2020), who observed an increase in drinking as time passed during lockdown. However, the study by Lechner et al. (2020) also found a relationship between drinking and symptoms of depression and anxiety. As a hypothesis, the results of this study in relation to the increase in people drinking daily could be interpreted in this sense.

In relation to psychotropic drugs, the results of the present study show that participants used fewer prescribed psychotropic drugs in general. When the analysis was carried out by substance, consumption was significantly lower for all those studied. In addition, fewer types of substances were used. Regarding non-prescription psychoactive drugs, participants used the same amount in general but fewer sleeping pills. Also, fewer types of substances were used. To our knowledge, the only study carried out in similar context to ours and in a university population is that of Corujo, Díaz, García and Saavedra (2020) at the University of La Laguna. Among its results, a decrease in alcohol use stands out, consistent with our study, but an increase in sedative-hypnotics was also found.

Outside the university environment, it seems that there is a change in consumption patterns regarding psychotropic drugs, although there are currently not many studies. For example, a global study (Winstock et al., 2020) with a non-probabilistic sample of more than 40,000 people reported increased use of cannabis and benzodiazepine products due to the general feeling of stress caused by the pandemic and the associated restrictions, while a decrease in the demand for stimulants was observed due to the inaccessibility of the usual recreational environments.

Regarding other behaviours at risk of addiction, the picture is more complex. On the one hand, in relation to gambling, the results of this study showed a significant decrease in gambling behaviour with money. These data are consistent with those provided by the study by Villanueva et al. (2021) and by the Spanish Observatory of Drugs and Addictions survey (2020) on the Internet, video games and gambling during the COVID-19 pandemic (IVJ-COVID-19), which revealed a decrease in the frequency of gambling. On the other hand, the results showed a significant increase in the frequency of use of video games, eSports and spectator in eSports or electronic sports, data which are consistent with those provided by the IVJ-COVID-19 survey, which revealed a significant rise in the use of video games (especially among students).

The present study, however, did not include an examination of the frequency of Internet use. Nevertheless, it did introduce an assessment of distress derived from its use and specifically from the problematic use of the Internet through the CIUS scale. The results revealed that this distress increased in a statistically significant way, indicating the need to take it into consideration as it is in line with other studies of the same nature. For example, research conducted in China by Sun et al. (2020) with a sample of 6,416 adults revealed a 23% rise in the prevalence of participants with a severe level of dependence on the Internet as a result of lockdown. In Spain, the report derived from the IVJ-COVID-19 survey also presented a general increase in the use of the Internet (specifically, a rise of 68.9% was established) and the problematic use of the Internet (with a rate of participants representing possibly problematic use of 11.2% according to the CIUS scale), especially prevalent among participants aged between 14 and 17 years. Villanueva et al. (2021) also noted in their research that two out of ten young adults showed indicators of problematic Internet use. The data unequivocally highlights the urgent need to address problematic Internet use.

Some groups within the student body also reported some other type of non-habitual consumption in lockdown, such as an increase or change in the pattern of eating unhealthy foods or technology use. Others reported changes in mood, in their lifestyles or concerns related to academic tasks and social relationships.

Taken together, these results lead us to believe that Spanish university students may have experienced a change in the pattern of substance use and behaviours at risk of addiction as a consequence of emotional responses or as an avoidance strategy during lockdown and the pandemic. Despite the significant decrease in substance use and gambling behaviour, it is also important to point out a series of risky behaviours by some groups derived from the analysis of the results, such as the increase in frequency of alcohol use (i.e., daily drinking), starting to use a substance or relapsing (i.e., smoking) or the increase in the use of others substances (i.e., cannabis) collected in other studies. Similarly, the increase in distress associated with the use of video games and the Internet needs to be addressed, even though this behaviour is in principle recreational. In summary, various indicators of initiation, relapse or increase in use are observed that may represent inadequate coping strategies. As pointed out by Czeisler et al. (2020), some groups of students started or increased substance use in order to deal with the stress and negative emotions generated by the COVID-19 pandemic. This involves the challenge of generating positive and alternative psychosocial conditions that allow the population in general and university students in particular to face forced contexts of isolation and stress through different sources of adaptation (routines, habits, exercises, contact, communication, etc.) that weaken the use of substances as the exclusive method of mitigation and facilitate the return to normative behavioural patterns (García-Álvarez et al., 2020; Rojas-Jara, 2020).

It is also interesting to note that part of the student body also reported positive changes in various aspects related to lifestyle, and that some even pointed out the positive impact of lockdown on relevant aspects of their lives. In addition, a significant number of participants made very sound specific proposals on possible actions that could be developed by the university for the prevention of substance use and behavioural addictions. These results may indicate that the student body perceives the training and actions that the university can offer in a very positive way. In fact, the university should be considered as a context of holistic education, as the Delors report (1996) argues, involving the development not only of knowledge per se and know-how skills, but also attitudes and behaviours for knowing how to be and how to live.

As previously mentioned, the University of La Rioja is a member of the Spanish Network of Healthy Universities. This network, which is committed to promoting health in the university culture, has among its aims the identification of intervention needs. This study provides an assessment of the impact of the health crisis situation on the student body and is a first step in designing the necessary resources to cushion its effects in coordinated work between the professionals responsible for La Rioja University's

Occupational Risk Prevention Service and the Drug and Other Addictions Service of the La Rioja Government. Together with the identification of global needs, it should be noted that the detection and identification and possible diagnoses must be accompanied by empirically supported psychological treatments (Fonseca-Pedrero et al., 2021).

The present study is not without limitations. In the first place, as it is an online survey with a self-selected sample, its results do not allow generalization to the population at large; nevertheless, they can provide a first approximation to the changes that the COVID-19 pandemic has brought about in the university population. In addition, the data belong to a single autonomous community, so caution is required when generalizing the results to other populations of interest. Second, it is a study based on self-reports and the usual limitations must be considered. Third, inclusion and exclusion criteria have not been explicitly considered, as well as important covariates (IQ, socio-economic level, etc.) that could affect the results found in this research. Fourth, the cross-sectional nature of the study does not allow causal relationships to be established, and the study would have benefited from assessments throughout the pandemic to determine the medium- and long-term effects on the student body.

Notwithstanding these limitations, the results offered, which are based on contextualized assessment and located in a moment of unprecedented pandemic, allow the design of actions that respond to the interests and needs of the student body.

Conflict of interests

The authors declare no conflict of interest.

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