



# Depression, Suicidal Ideation, and Consumption of Psychotropic Drugs During Lockdown by COVID-19 According to Gender and Age

Víctor J. Villanueva-Blasco<sup>1</sup> · Verónica Villanueva-Silvestre<sup>1</sup> · Andrea Vázquez-Martínez<sup>1</sup> · Laura Pérez de Vicente<sup>2</sup> · Bartolomé Pérez-Gálvez<sup>3</sup>

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## Abstract

The objective was to analyze the relationship between depression and suicidal ideation and psychotropic drugs use during COVID-19 lockdown in adult population considering gender and age. The method used is a descriptive and non-probabilistic study, with a convenience sampling of 3780 participants (70.1% female), aged 18–64 years ( $M=37.8$ ). 18.3% participants presented depression and 5.1% exhibited suicidal ideation. The depression rate for female was double (21.4%) than male and 5 times higher (30.2%) for the youngest participants (18–24 years old) compared to oldest (55–64 years old), being this rate triple in suicidal ideation (9%). Depression correlated positively with tranquilizers and sleeping pills' consumption; and suicidal ideation did so with tranquilizers and sedatives. The rate of tranquilizer users was 8 times higher for severe depression compared to those who did not present depression, 5 times higher for sleeping pills, and 6 times higher for sedatives. The rate of tranquilizer users exhibiting suicidal ideation was more than triple than those who did not present suicidal ideation, between 3 and 4 times higher for sleeping pills, and almost 7 times higher for sedatives. The higher the level of depression and suicidal ideation during lockdown, the greater the consumption of psychotropic drugs. The consumption of psychotropic drugs should be monitored in people with depression and suicidal ideation during periods of crisis.

**Keywords** Depression · Suicidal ideation · Psychotropic drugs · Gender · Age · Lockdown · COVID-19

Different studies have reported on the depressive symptomatology in the adult population during the COVID-19 pandemic period, which ranged from 20.1 to 67.3% (Ahmed et al., 2020; Galindo-Vázquez et al., 2020; Huang and Zhao, 2020; Mazza et al., 2020). With regard to the level of depression, the prevalence for mild depression was found to be at 10.20% (Ahmed et al., 2020), moderate depression at around 17.5% (Ahmed et al., 2020; Mazza et al., 2020), and severe depression between 13.30 and 15.4% (Galindo-Vázquez

✉ Víctor J. Villanueva-Blasco  
vjvillanueva@universidadvui.com

Extended author information available on the last page of the article

et al., 2020; Mazza et al., 2020). In line with the pre-pandemic literature, the prevalence of depressive symptomatology was observed to be higher in female (Apaza et al., 2020; Gavurova et al., 2020; Goularte et al., 2021; Mautong et al., 2021; Mazza et al., 2020; Paz et al., 2020) and in people under 35 years of age (Huang and Zhao, 2020; Ozamiz-Etxebarria et al., 2020).

In terms of the rate of suicidal ideation in Spain at the beginning of the pandemic, it increased in relation to the previous months. Ayuso-Mateos et al. (2021) recorded a prevalence of 1.56% for the adult population between June 17, 2019, and March 14, 2020, which rose to 2.78% in the period from May 21 to June 30, 2020 (post-COVID). However, these differences were not statistically significant.

When administered properly, psychotropic drugs allow users to mitigate different physical and/or psychological symptoms in order to manage negative emotionality (Rougemont-Bücking et al., 2018). The European Monitoring Center for Drugs and Drug Addiction has highlighted that during the pandemic, there has been a tendency to change consumption towards legal substances, such as benzodiazepines (EMCDDA, 2020). Coping with the anxiety and depression generated by the pandemic and self-medication due to withdrawal symptoms have been highlighted as reasons that would justify this change. However, the addictive potential of these drugs must not be ignored, nor the fact that their administration does not always follow prescription indications, and is even consumed without a prescription. The latest data available in Spain indicate that 12% of the population between 15 and 64 years of age have used sedative-hypnotics in the last year, including 1.3% who did so without a medical prescription (Spanish Observatory of Drugs and Drug Addiction, 2021).

The impact of the COVID-19 pandemic on the consumption of psychotropic drugs offers consistent results with regard to anxiolytics and sedative-hypnotics, but contradictory results in terms of antidepressants. Recent studies have confirmed an increase in the use of anxiolytics and sedative-hypnotics in Spain, compared to the period immediately prior to the pandemic. However, antidepressant prescriptions have been observed to both increase and decrease (González-López et al., 2022; Lear-Claveras et al., 2022).

The increase in the consumption of psychotropic drugs in Spain has been more pronounced among female, older adults, and in rural areas (González-López et al., 2022). These results coincide with those observed in Canada (Leong et al., 2022) or Portugal (Estrela et al., 2022). In France, a greater increase in the use of psychotropic drugs was recorded among the younger age groups (Levaillant et al., 2021).

After conducting a literature review, no studies have been found that analyze the use of psychotropic drugs in people with depression (and without depression) during the COVID-19 lockdown period. For this reason, the present study had several objectives: (a) to determine the prevalence of depression and suicidal ideation according to gender and age, in the adult population during the COVID-19 lockdown; (b) to establish the prevalence of depression and suicidal ideation based on the consumption of psychotropic drugs, and conversely the consumption of psychotropic drugs based on the level of depression and suicidal ideation; and (c) to analyze the changes in the consumption of psychotropic drugs before and during the lockdown period, according to gender, age, level of depression, and level of suicidal ideation. The results derived from this study will have important implications in the context of healthcare for depressive and anxiety disorders, as well as in terms of preventing the inappropriate use of psychotropic drugs.

## Method

### Design

This study is descriptive and non-probabilistic, and it uses convenience sampling. A battery of online surveys was used to collect and evaluate the variables under study. Age ranges were established based on those that showed adequate Internet access, as stated in the Equipment and Use of Information and Communication Technologies at Home Survey (INE, 2019).

### Participants

The initial sample included 4213 participants. Of them, 433 (10.3%) were removed because of missing values, incoherent response patterns, or being outside the established age range (18–64 years old). The final sample contains data from 3780 participants 70.1% ( $n=2650$ ) female and 29.9% ( $n=1130$ ) male; with an average age of 37.8 years ( $SD=12$ ). By age range, 15.5% ( $n=587$ ) are from 18 to 24 years old, 19.1% ( $n=723$ ) from 25 to 29 years old, 13.7% ( $n=518$ ) from 30 to 34 years old, 23% ( $n=868$ ) from 35 to 44 years old, 18.6% ( $n=702$ ) from 45 to 54 years old, and 10.1% ( $n=382$ ) from 55 to 64 years old.

### Instruments

The sociodemographic variables considered were (a) gender (male, female) and (b) age, according to the age ranges established in the EDADES survey (18–24 years, 25–29 years, 30–34 years, 35–44 years, 45–54 years, and 55–64 years).

In order to evaluate the level of depressive symptomatology during confinement, the PHQ-9 (Patient Health Questionnaire) (Johnson et al., 2002; Spitzer et al., 1999) was administered, in the Spanish adaptation by Diez-Quevedo et al. (2001). It consists of nine items with Likert-type response values between 0 and 3 (0=“never”; 1=“some days”; 2=“more than half of the days”; 3=“almost every day”), referring to the past two weeks. Item nine refers to suicidal ideation (“Thoughts that I would be better off dead or of harming myself in some way”). The scores are added together, and a total score between 0 and 27 is obtained. The cut-off points (Karyotaki et al., 2021) are 0–9, no depression; 10–14, moderate depression; 15–19, moderately severe depression; and 20–27, severe depression. The type of administration is self-applied. The time of administration is less than 5 min. In this study,  $\alpha$  PHQ-9=0.87.

Regarding the consumption of psychotropic drugs, participants were asked if they had consumed tranquilizers, sedatives, or sleeping pills before and/or during the COVID-19 lockdown using a dichotomous response scale (yes or no), reporting the average amount of consumption per day separately for tranquilizers, sedatives, and sleeping pills before and during the COVID-19 lockdown. Specifically, for the last 7 days (during lockdown), they were asked about the weekly frequency of consumption (days) for these same psychotropic drugs, differentiating between consumption with or without prescription.

### Procedure

Data collection started on April 14, 2020, after the first 30 days of confinement measures, and it ended on May 29, when the de-escalation measures started. The data collection strategy was based on a survey hosted on a web, posts on social media, and advertisements

via e-mail and smartphone messaging applications. Participants were informed that participation was voluntary, in accordance with the Spanish Organic Law 3/2018, of December 5, of Personal Data Protection and Digital Rights Guarantee (2018). They were asked to give their consent to participate. Selection criteria were (a) age between 18 and 64, (b) explicit agreement to participate, and (c) properly filling out the survey.

## Statistical analysis

Data analysis was performed with the SPSS 25 (IBM Corp. Released 2017; IBM SPSS Statistics for Windows, Version 25.0; Armonk, NY, USA). First, a frequency analysis and the Chi-Square test were carried out for the intragroup differences for the prevalence of depression and suicidal ideation in the total sample and according to gender and age, and for the prevalence of the consumption of psychotropic drugs (tranquilizers, sedatives, and/or sleeping pills) during lockdown based on the level of depression and suicidal ideation and vice versa, for the prevalence of depression and suicidal ideation based on the use of psychotropic drugs during lockdown. In addition, Pearson correlations were calculated between the level of depression and suicidal ideation and the consumption of psychotropic drugs during lockdown.

Subsequently, mean comparisons were conducted to verify the existence of significant differences in the frequency of weekly consumption of psychotropic drugs with and without prescription during lockdown and to compare the average amount of daily consumption of psychotropic drugs before and during lockdown according to gender and age. Specifically, the Student's *t*-test for related samples was used to compare the average days of weekly consumption of psychotropic drugs with and without prescription and the average daily consumption of psychotropic drugs before and during lockdown, the Student's *t*-test for independent samples was used to analyze differences between genders, Cohen's *d* was used for the effect size, and the analysis of variance (ANOVA) was conducted to verify the existence of differences between the age groups and evaluate the effect of the interaction between the variables, using Bonferroni for the post hoc tests.

Finally, the changes (decreased, maintained, and increased) in the consumption of psychotropic drugs during lockdown were analyzed by means of a frequency analysis and the Chi-Square test for intragroup differences (disaggregated according to gender, age, level of depression and level of suicidal ideation).

## Results

Of the total number of participants ( $n=3780$ ), 18.3% ( $n=691$ ) presented some degree of moderate to severe depression, and 5.1% ( $n=194$ ) exhibited suicidal ideation. According to gender (Table 1), the percentage of female with depression was higher than in male for all levels of depression ( $X^2_{(3)}=57.82$ ;  $p<0.001$ ). No statistically significant differences were found between female and male for suicidal ideation ( $X^2_{(1)}=1.66$ ;  $p=0.198$ ). Regarding the different age groups (Table 2), statistically significant differences were observed in the level of depression ( $X^2_{(15)}=150.40$ ;  $p<0.001$ ) and suicidal ideation ( $X^2_{(5)}=26.70$ ;  $p<0.001$ ). The youngest group (18–24 years) presented the highest rates of depression (30.2%) and suicidal ideation (9%), while the oldest (54–64 years) had the lowest (6.5% and 2.9%, respectively).

**Table 1** Prevalence of depression and suicidal ideation in the global sample and according to gender

PHQ-9	Global % (n)	Gender % (n)		X <sup>2</sup>
		Female	Male	
No depression	81.70 (3,089)	78.60 (2,083)	89.00 (1,006)	57.82***
Moderate depression	13.10 (494)	15.20 (403)	8.10 (91)	
Moderately severe depression	3.90 (146)	4.60 (122)	2.10 (24)	
Severe depression	1.30 (51)	1.60 (42)	0.80 (9)	
Suicidal ideation	5.10 (194)	5.40 (144)	4.40 (50)	1.66

\*\*\*  $p < .001$ **Table 2** Prevalence of depression and suicidal ideation according to age

PHQ-9	Age % (n)						X <sup>2</sup>
	18–24	25–29	30–34	35–44	45–54	54–64	
No depression	69.8 (410)	74.7 (540)	81.7 (423)	85.6 (743)	87.7 (616)	93.5 (357)	150.4***
Moderate depression	19.9 (117)	19.2 (139)	12.5 (65)	10.1 (88)	9.3 (65)	5.2 (20)	
Moderately severe depression	7.3 (43)	4.6 (33)	3.9 (20)	3.3 (29)	2.3 (16)	1.3 (5)	
Severe depression	2.9 (17)	1.5 (11)	1.9 (10)	0.9 (8)	0.7 (5)	0.00 (0)	
Suicidal ideation	9 (53)	5.3 (38)	5 (26)	3.6 (31)	5 (35)	2.9 (11)	26.7***

\*\*\*  $p < .001$ **Table 3** Prevalence of psychotropic drug use during lockdown according to the level of depression and suicidal ideation

PHQ-9	Tranquilizers % (n)	Sedatives % (n)	Sleeping pills % (n)
No depression	4 (125)	0.7 (21)	2.7 (84)
Moderate depression	8.9 (44)	1.4 (7)	5.9 (29)
Moderately severe depression	15.1 (22)	1.4 (2)	11 (16)
Severe depression	27.5 (14)	3.9 (2)	13.7 (7)
Suicidal ideation	12.9 (25)	4.6 (9)	10.3 (20)

Regarding the consumption of psychotropic drugs (Table 3), 5.4% ( $n = 205$ ) of the participants consumed tranquilizers, 0.8% ( $n = 32$ ) sedatives, and 3.6% ( $n = 136$ ) sleeping pills. The consumption of tranquilizers was predominant, regardless of presence or absence of and level of depression, and among those who exhibited suicidal ideation. However, using non-depressive consumers as a reference, the rate of users is more than double for moderate depression, almost 4 times higher for moderately severe depression, almost 8 times higher for severe depression, and more than triple for suicidal ideation. For sleeping pills, a similar trend is observed, with a rate 2 times higher for moderate depression compared to those who do not present depression, almost 4 times higher for moderately severe depression, between 4 and 5 times higher for severe depression,

and between 3 and 4 times higher for suicidal ideation. For sedatives, the rate for moderate and moderately severe depression is found to be double compared to those who do not present depression, between 5 and 6 times higher for severe depression, and almost 7 times higher for suicidal ideation.

Table 4 shows the prevalence of depression and suicidal ideation based on the use of psychotropic drugs during lockdown. Regarding tranquilizer consumers, 39% ( $n=80$ ) present some level of depression ( $X^2_{(3)}=97.83$ ;  $p<0.001$ ) and 12.2% ( $n=25$ ) suicidal ideation ( $X^2_{(1)}=22.21$ ,  $p<0.001$ ). In terms of sedative users, 34.5% ( $n=11$ ) present some level of depression ( $X^2_{(3)}=9.156$ ;  $p<0.05$ ) and 28.1% ( $n=9$ ) suicidal ideation ( $X^2_{(1)}=35.04$ ;  $p<0.001$ ). With regard to sleeping pill consumers, 38.20% ( $n=52$ ) present some level of depression ( $X^2_{(3)}=52.12$ ;  $p<0.001$ ) and 14.7% ( $n=20$ ) suicidal ideation ( $X^2_{(1)}=26.56$ ,  $p<0.001$ ). In addition, a positive and statistically significant correlation is observed between depression and the use of tranquilizers ( $r=0.16$ ;  $p<0.001$ ) and sleeping pills ( $r=0.11$ ;  $p<0.05$ ) during lockdown. This correlation is also found between suicidal ideation and tranquilizer use ( $r=0.11$ ;  $p<0.05$ ) and sedatives ( $r=0.12$ ;  $p<0.05$ ) during lockdown.

Of the total sample of participants ( $n=3780$ ), 8.5% ( $n=323$ ) reported having used tranquilizers, sedatives, or sleeping pills before and/or during the COVID-19 lockdown. Of this group, 78% ( $n=252$ ) were female and 22% ( $n=71$ ) male. They had a mean age of 39.4 years ( $SD=12.1$ ); 23.8% ( $n=77$ ) were between 45 and 54 years old, 23.2% ( $n=75$ ) between 35 and 44 years, 17% ( $n=55$ ) between 25 and 29 years, 13.3% ( $n=43$ ) between 54 and 64 years, 11.5% ( $n=37$ ) between 18 and 24 years, and 11.1% ( $n=36$ ) between 30 and 34 years.

Table 5 shows the weekly frequency (days of consumption) of psychotropic drugs with and without prescription during lockdown. In general, a higher frequency of consumption during lockdown of psychotropic drugs with prescription ( $M=3.2$ ;  $SD=3.1$ ) than without prescription ( $M=0.7$ ;  $SD=1.9$ ) ( $t_{(322)}=10.96$ ;  $p<0.001$ ) is observed.

Differentiating by gender (Table 5), both female ( $t_{(251)}=10.01$ ;  $p<0.001$ ) and male ( $t_{(70)}=4.50$ ;  $p<0.001$ ) consumed psychotropic drugs with prescription (female  $M=3.3$ ;  $SD=3.1$ ; male  $M=2.8$ ;  $SD=3$ ) more days a week during lockdown than without prescription (female  $M=0.9$ ;  $SD=1.9$ ; male  $M=0.8$ ;  $SD=1.8$ ). No differences were observed according to gender for the frequency of weekly consumption of prescription psychotropic drugs ( $t_{(321)}=1.20$ ;  $p=0.230$ ), nor for those without prescription ( $t_{(321)}=0.28$ ;  $p=0.782$ ). There is also no interaction effect between the frequency of weekly consumption during lockdown of psychotropic drugs with and without prescription and gender ( $F_{(1,321)}=0.68$ ,  $p=0.411$ ).

According to age (Table 5), differences are observed in the frequency of weekly consumption during lockdown of psychotropic drugs with prescription ( $F_{(5,317)}=6.64$ ,  $p<0.001$ ) but not without prescription ( $F_{(5,317)}=1.96$ ,  $p=0.085$ ). The post hoc tests reveal that the age groups of 45–54 and 55–64 years used prescription psychotropic drugs more days a week compared to the group of 18–24 years ( $p<0.001$ ) and the group of 30–34 years ( $p<0.01$ ). When comparing the frequency of weekly consumption of prescription and non-prescription psychotropic drugs according to age, a higher frequency of prescription consumption is observed, except for the 18–24 age group ( $t_{(36)}=0.71$ ;  $p=0.480$ ) and the 30–34 age group ( $t_{(35)}=1.61$ ;  $p=0.116$ ), in which no differences were observed depending on the presence or absence of a prescription. In addition, an interaction effect between the frequency of weekly consumption of prescription and non-prescription psychotropic drugs during lockdown and age is observed ( $F_{(5,317)}=7.07$ ,  $p<0.001$ ). The post hoc tests reveal that the 45–54 age group consumed

**Table 4** Prevalence of depression and suicidal ideation according to the consumption of psychotropic drugs during lockdown

	Total % (n)	PHQ-9 % (n)				Severe depression	X <sup>2</sup>	Suicidal idea- tion % (n)	X <sup>2</sup>
		No depression	Moderate depression	Moderately severe depression	Severe depression				
Tranquilizers	5.4 (205)	61 (125)	21.5 (44)	10.7 (22)	6.8 (14)	97.83 <sup>***</sup>	12.2 (25)	22.21 <sup>***</sup>	
Sedatives	0.8 (32)	65.5 (21)	21.9 (7)	6.3 (2)	6.3 (2)	9.16 <sup>*</sup>	28.1 (9)	35.04 <sup>***</sup>	
Sleeping pills	3.6 (136)	61.8 (84)	21.3 (29)	11.8 (16)	5.1 (7)	52.12 <sup>***</sup>	14.7 (20)	26.56 <sup>***</sup>	

<sup>\*\*\*</sup>*p* < .001; <sup>\*</sup>*p* < .05

**Table 5** Frequency of weekly consumption of psychotropic drugs during lockdown with and without prescription according to gender and age

		With prescription M (SD)	Without prescription M (SD)	<i>t</i>	<i>p</i>	<i>d</i>	
Psychotropic drugs <sup>1</sup>	Global	3.2 (3.1)	0.9 (1.9)	10.96	.001	-.50	
	Gender	Female	3.3 (3.1)	0.8 (1.9)	10.01	.001	-.52
		Male	2.8 (3.0)	0.8 (1.8)	4.50	.001	-.43
	Age	18–24	1.7 (2.7)	1.2 (1.9)	0.71	.480	
		25–29	2.7 (3)	1.2 (2.3)	3.16	.003	-.38
		30–34	2.2 (2.7)	1.1 (2.2)	1.61	.116	
		35–44	3.2 (3.0)	0.8 (1.8)	5.41	.001	-.51
		45–54	4.2 (3.1)	0.8 (2)	7.88	.001	-.75
		55–64	4.4 (3.1)	0.2 (0.5)	8.45	.001	-.81

<sup>1</sup>Psychotropic drugs = tranquilizers, sedatives, and/or sleeping pills

psychotropic drugs with prescription more days than those without prescription compared to the 18–24 age group ( $p < 0.001$ ).

When analyzing the average daily consumption of psychotropic drugs before and during lockdown (Table 6), a higher consumption is observed during lockdown ( $M = 1.1$ ;  $SD = 2.8$ ) than before the pandemic ( $M = 0.7$ ;  $SD = 1.2$ ) ( $t_{(322)} = -2.53$ ;  $p < 0.05$ ).

Regarding the consumption of tranquilizers (Table 6) according to gender, both female ( $t_{(251)} = -2.09$ ;  $p < 0.05$ ) and male ( $t_{(70)} = -2.06$ ;  $p < 0.05$ ) increase their consumption during lockdown (female  $M = 1.1$ ;  $SD = 3.0$ ; male  $M = 0.9$ ;  $SD = 1.5$ ) compared to the previous period (female  $M = 0.8$ ;  $SD = 1.3$ ; male  $M = 0.6$ ;  $SD = 0.8$ ). No differences for consumption according to gender are observed before lockdown ( $t_{(321)} = 0.95$ ;  $p = 0.343$ ) nor during the lockdown period ( $t_{(321)} = 0.54$ ;  $p = 0.592$ ). There is also no interaction effect between the consumption of tranquilizers before and during lockdown and gender ( $F_{(1,321)} = 0.02$ ,  $p = 0.904$ ). According to age, only the 35–44 age group significantly increased their consumption during lockdown ( $M = 0.9$ ;  $SD = 0.8$ ) compared to the period before this ( $M = 0.6$ ;  $SD = 0.7$ ) ( $t_{(74)} = -3.20$ ;  $p < 0.01$ ). There is also no interaction effect between consumption before and during lockdown and age ( $F_{(5,317)} = 0.57$ ,  $p = 0.722$ ).

In terms of sedatives (Table 6), a higher consumption is observed during lockdown ( $M = 0.1$ ;  $SD = 0.5$ ) than before this ( $M = 0.1$ ;  $SD = 0.4$ ) ( $t_{(322)} = -3.04$ ;  $p < 0.01$ ); but it is only significant in male ( $t_{(70)} = -2.54$ ;  $p < 0.05$ ), not in female ( $t_{(251)} = -1.91$ ;  $p = 0.058$ ). No differences are observed for its consumption according to gender neither before lockdown ( $t_{(75)} = -1.20$ ;  $p = 0.232$ ) nor during it ( $t_{(77)} = -1.78$ ;  $p = 0.079$ ). However, an interaction effect between the consumption of sedatives before and during lockdown and gender is observed ( $F_{(1,321)} = 4.27$ ;  $p < 0.05$ ), with male being the ones who most increase their consumption during lockdown. According to age, only the 35–44 age group significantly increased their consumption during lockdown ( $M = 0.1$ ;  $SD = 0.3$ ) compared to the period before this ( $M = 0.1$ ;  $SD = 0.3$ ) ( $t_{(74)} = -2.30$ ;  $p < 0.05$ ). No effect of the interaction between consumption before and during lockdown and age is observed ( $F_{(5,317)} = 0.73$ ;  $p = 0.602$ ).

Regarding sleeping pills (Table 6), there are no significant differences in their average daily consumption for before and during lockdown ( $t_{(322)} = -1.39$ ;  $p = 0.165$ ). Neither between male and female for their previous consumption ( $t_{(321)} = -0.18$ ;  $p = 0.861$ ), nor



**Table 6** Average amount of daily consumption of psychotropic drugs before and during lockdown, according to gender and age

		Before lockdown M (SD)	During lockdown M (SD)	<i>t</i>	<i>p</i>	<i>d</i>	
Tranquilizers	Global	0.7 (1.2)	1.1 (2.8)	-2.53	.012	.26	
	Gender	Female	0.8 (1.3)	1.1 (3.0)	-2.09	.038	.25
		Male	0.6 (0.9)	0.9 (1.5)	-2.06	.043	.36
	Age	18–24	0.5 (0.51)	1.1 (2.5)	-1.76	.087	
		25–29	0.7 (1.0)	0.9 (1.2)	-1.75	.086	
		30–34	0.6 (0.7)	0.6 (0.6)	0	1	
		35–44	0.6 (0.7)	0.9 (0.8)	-3.20	.002	.40
		45–54	1.1 (2.1)	1.8 (5.1)	-1.24	.221	
		55–64	0.6 (0.8)	0.9 (1.2)	-1.61	.115	
Sedatives	General	0.1 (0.4)	0.1 (0.5)	-3.04	.003	.20	
	Gender	Female	0.1 (0.3)	0.1 (0.3)	-1.91	.058	
		Male	0.2 (0.7)	0.2 (0.8)	-2.54	.013	.30
	Age	18–24	0.1 (0.2)	0.1 (0.4)	-1.00	.324	
		25–29	0.1 (0.7)	0.1 (0.7)	-1.00	.322	
		30–34	0.0 (0)	0.1 (0.3)	-1.00	.324	
		35–44	0.1 (0.3)	0.1 (0.3)	-2.30	.024	.30
		45–54	0.2 (0.5)	0.2 (0.5)	-1.42	.159	
		55–64	0.1 (0.2)	0.1 (0.2)			
Sleeping pills	General	0.6 (2.5)	0.8 (2.3)	-1.39	.165		
	Gender	Female	0.6 (2.7)	0.7 (2.3)	-1.12	.628	
		Male	0.7 (1.9)	0.8 (2.5)	-1.16	.251	
	Age	18–24	0.4 (0.6)	0.6 (0.7)	-1.36	.181	
		25–29	1.1 (4.1)	1.3 (4.3)	-1.65	.104	
		30–34	0.2 (0.5)	0.5 (1.0)	-1.93	.062	
		35–44	0.6 (2.9)	0.5 (0.8)	0.64	.526	
		45–54	0.7 (2.4)	0.8 (2.9)	-1.58	.118	
		55–64	0.6 (0.6)	0.7 (0.6)	-2.35	.024	.39

during lockdown ( $t_{(321)} = -0.22$ ;  $p = 0.826$ ). There is no interaction effect between consumption before and during lockdown and gender ( $F_{(1,321)} = 0.01$ ,  $p = 0.959$ ). According to age, significant differences are only observed in the 55–64 age group, showing greater consumption during lockdown ( $M = 0.7$ ;  $SD = 0.6$ ) than before this period ( $M = 0.6$ ;  $SD = 0.6$ ) ( $t_{(42)} = -2.35$ ;  $p < 0.05$ ). There is no interaction effect between its consumption before and during lockdown and age ( $F_{(5,317)} = 0.98$ ,  $p = 0.428$ ).

Finally, changes were analyzed between the consumption of psychotropic drugs during lockdown compared to before, depending on the level of depression and suicidal ideation (Table 7). In general terms, it is observed that the higher the level of depression, the greater the consumption of the three types of psychotropic drugs, although for tranquilizers and sleeping pills the increase in moderately severe depression is greater than in severe depression. However, considering the different levels of depression, significant differences are only observed for the consumption of tranquilizers ( $X^2_{(6)} = 30.77$ ;  $p < 0.001$ ). Among those who present suicidal ideation, a maintenance of consumption is mostly observed, although

**Table 7** Changes in the consumption of psychotropic drugs during lockdown according to the level of depression and suicidal ideation

	Total % (n)	PHQ-9 % (n)				Severe depression	X <sup>2</sup>	Suicidal ideation % (n)	X <sup>2</sup>
		No depression	Moderate depression	Moderately severe depression	Severe depression				
Tranquilizers	Decreased	7.1 (23)	8.6 (18)	7.5 (5)	0.00 (0)	0.00 (0)	30.77***	2.5 (1)	10.48**
	Maintained	70 (226)	77.1 (162)	59.7 (40)	53.3 (16)	50 (8)		55 (22)	
	Increased	22.9 (74)	14.3 (30)	32.8 (22)	46.7 (14)	20 (8)		42.5 (17)	
Sedatives	Decreased	0.3 (1)	0.00 (0)	1.5 (1)	0.00 (0)	0.00 (0)	8.53	2.5 (1)	12.27**
	Maintained	96 (310)	97.1 (204)	95.5 (64)	93.3 (28)	87.5 (14)		87.5 (35)	
	Increased	3.7 (12)	2.9 (6)	3 (2)	6.7 (2)	12.5 (2)		10 (4)	
Sleeping pills	Decreased	4 (13)	5.2 (11)	1.5 (1)	3.3 (1)	0.00 (0)	5.81	0.00 (0)	2.92
	Maintained	81.7 (264)	82.9 (174)	82.1 (55)	73.3 (22)	81.3 (13)		80 (32)	
	Increased	14.2 (46)	11.9 (25)	16.4 (11)	23.3 (7)	18.8 (3)		20 (8)	

\*\*\*  $p < .001$ ; \*\*  $p < .01$

42.5% increased their consumption of tranquilizers, 10% their use of sedatives, and 20% their consumption of sleeping pills. In this regard, significant differences are observed between the rates of those who decrease, maintain, or increase the consumption of tranquilizers ( $X^2_{(2)} = 10.48; p < 0.01$ ) and sedatives ( $X^2_{(2)} = 12.27; p < 0.01$ ).

## Discussion

The findings of this study allow us to increase the little knowledge available on the relationship between depression and suicidal ideation and the use of psychotropic drugs during the COVID-19 lockdown. The study determines the prevalence of depression and suicidal ideation in the adult population during this period according to gender and age, establishing the prevalence of psychotropic drug use according to the level of depression. Additionally, the possible changes in the consumption of psychotropic drugs from before and during lockdown were analyzed, taking into account gender, age, level of depression, and the presence of suicidal ideation.

First of all, 18.3% of the participants presented moderate to severe depression and 5.1% exhibited suicidal ideation. The percentage of female with depression (21.4%) was higher than male (11%). For the different levels of depression (moderate, moderately severe, and severe), this pattern of higher prevalence among female was repeated. However, no statistically significant differences were observed with regard to the presence of suicidal ideation between both genders.

Considering age, the youngest (18–24 years) had the highest rates of depression (30.2%) and suicidal ideation (9%), while the oldest (54–64 years) presented the lowest rates (6.5% and 2.9%, respectively). More specifically, the rate of depression in young people is 5 times higher than that reported by older people; and suicidal ideation rates are triple. In all other age ranges, a prevalence of depression between 10 and 25% is observed, being less prevalent as age advances. This prevalence is higher than those reported by another study carried out after the first COVID-19 lockdown in Spain. Faris et al. (2021) reported a prevalence of 11.6% for depression using the PHQ-9. The differences observed can be explained, in part, by different participation methods (web survey vs. telephone interview). However, both studies coincide in highlighting higher rates of depression among female, as well as among younger age groups.

In terms of suicidal ideation during lockdown, an average rate close to 5% is maintained, decreasing to 3.6% for the age range between 35 and 44 years. The fact that both depression and suicidal ideation are more prevalent in the youth population than in the adult population, and that they decrease with age, suggests the existence of risk factors specific to life situations related to age. Its inclusion should be considered in future studies that allow a critical analysis from a psychosocial perspective: What social dynamics generate that the youngest are the ones who show the most depression and suicidal ideation?

Of the total sample of participants, 8.5% reported consuming tranquilizers, sedatives, or sleeping pills before and/or during the COVID-19 lockdown, with more than three times the percentage of female (78%) than male (22%). More specifically, 5.4% of the participants consumed tranquilizers, 3.6% sleeping pills, and 0.8% sedatives during the lockdown period. An especially relevant finding is that in the youngest age group (18–24 years), no significant differences were recorded with regard to the frequency of weekly consumption (days) of psychotropic drugs with ( $M=1.7, SD=2.7$ ) or without ( $M=1.2, SD=1.9$ ) ( $t(36)=0.71; p=0.480$ ) a medical prescription. Similarly, it is worth noting that the age

groups with the highest prevalence of depression are, however, those that consume fewer prescription psychotropic drugs. We found different reasons that could justify this last finding. On the one hand, it seems consistent to hypothesize that the higher consumption of non-prescription psychotropic drugs among younger subjects could be influenced by the limitations in access to health services that occurred during the early phases of the pandemic due to the healthcare overload. Also, the low accessibility to treatment would have favored self-medication and consumption without a prescription. Similarly, a phenomenon of change in the type of substances consumed during the pandemic has been noted (EMCDD, 2020). Although this trend can be observed from illicit drugs to other legal ones, such as alcohol or psychotropic drugs themselves, the difficulty in receiving healthcare attention could generate a greater consumption of substances that are easily acquired in Spain, such as cannabis or alcohol, for self-medication purposes. In recent years, there has been an increase in the consumption of medication without prescription (Droguett et al., 2019; Gil-García et al., 2020; Rougemont-Bücking et al., 2018), with the adult population being the one presenting a higher prevalence for different types of psychotropic drug use (Bouvier et al., 2019; Hulme et al., 2018). According to Alcázar-Pichucho et al. (2018), self-medication in the adult population is a growing phenomenon. The foregoing can cause different types of conditions at a personal health level, taking into account that psychotropic drugs also have the potential to cause tolerance and addiction.

During lockdown, a positive and significant correlation of depression with the consumption of tranquilizers and sleeping pills is observed, and so is a correlation of suicidal ideation with the consumption of tranquilizers and sedatives. Approximately, 3 to 4 out of 10 users of tranquilizers (39%), sleeping pills (38.2%), and sedatives (34.5%) have depression, while 1 to 2 out of 10 users of tranquilizers (12.2%) and sleeping pills (14.7%) and almost 3 out of 10 users of sedatives (28.1%) have suicidal ideation. In other words, the consumption of these psychotropic drugs is associated with other problems not analyzed in this study. It is also important to note that only 18.67% of people with a psychiatric disorder are correctly diagnosed in Primary Care in Spain (Cabrera et al., 2018). Future studies need to explore these considerations.

Regarding the changes in the consumption of psychotropic drugs during lockdown compared to the previous period, a statistically significant higher daily consumption was found for tranquilizers and sedatives, but not for sleeping pills. This increase is observed in both genders for tranquilizers but only in male for sedatives. Regarding age, for both psychotropic drugs, only the 35–44 age group increased their consumption significantly. For sleeping pills, only the 55–64 age group showed a significantly higher consumption during lockdown.

Finally, an important finding of the present study is that significant differences are only observed in the percentage of people who show changes in the consumption of tranquilizers, depending on the level of depression, and of tranquilizers and sedatives among those who present suicidal ideation. In general terms, it is observed that the higher the level of depression, the greater the consumption of the three types of psychotropic drugs. For suicidal ideation, a maintenance of the consumption of sedatives and sleeping pills is mostly observed. However, 42.5% increased their consumption of tranquilizers. In this sense, it is important to note the positive relationship that has been evidenced between the consumption of psychotropic drugs such as benzodiazepines and the increase in the probability of suicide in older adults (Schepis et al., 2019), being these the type of substances most commonly present in cases of overdose (Tan et al., 2022). These findings are consistent as they reflect a greater tendency to increase the consumption of psychotropic drugs among subjects with a worse psychological condition. However, it is necessary to warn that the

limitations of access to an adequate follow-up and vigilance in the prescription—result of the healthcare overload—entail a series of added risks, such as a greater tendency to abuse these drugs, the worsening of the pathologies that motivated their use, or, as we pointed out earlier, a higher risk of suicide.

Furthermore, we must not forget that the increase in consumption could be motivated by a worsening of depressive symptoms due to the psychosocial stressors inherent to the pandemic situation. We must warn of the need to reassess the prescribed treatments, while providing a rapid and timely care response to those who may be resorting to self-medication as a means of coping with the appearance or worsening of symptoms.

Finally, it is advisable to analyze the healthcare accessibility of the youngest age groups. Both the stigmatization that characterizes depressive disorders and suicidal ideation add to the problems of care saturation that the post-pandemic scenario entails. In this sense, interventions for the early detection of depressive symptoms and suicidal ideation acquire special relevance in other contexts in which the lives of these population groups take place, such as the university (Villanueva-Silvestre et al., 2022). Likewise, at the treatment level, Beck's Cognitive-Behavioral Therapy, behavioral activation, interpersonal therapy, and mindfulness-based cognitive therapy are the ones that present the greatest empirical support for depressive disorders, or Cognitive-Behavioral Therapy for suicidal behavior (Fonseca-Pedrero et al., 2021).

Among the limitations of this study, it should be noted that there is a response bias given that it is a voluntary self-administered online survey. Furthermore, we must point out the randomness of the usual sample in this type of study. Although our sample was large, it is not representative of the Spanish population, so the results should be interpreted with caution. The instrument used to assess depression and suicidal ideation is a screening instrument, so it does not allow a clinical diagnosis to be established on these variables. The findings should be replicated with scales such as the Columbia-Suicide Severity Rating Scale, validated in Spanish (Sp-C-SSRS) (Al-Halabí et al., 2016), or the Suicidal Ideation Frequency Inventory, Spanish Version (FSII-S) (Sánchez-Álvarez et al., 2020), considering the study of both normalized populations and clinical populations. In this regard, the participants were also not asked about the diagnosis of previous mental disorders.

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**Data Availability** The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials. Derived data supporting the findings of this study are available from the corresponding author [initials] on request.

## Declarations

**Ethics Approval and Consent to Participate** The study has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki), and was approved by the Committee of

Evaluation and Follow-up of Research with Human Beings (CEISH) from Valencian International University (VIU) (protocol code CEID2020\_02).

**Informed Consent** Informed consent was obtained from all subjects involved in the study.

**Conflicts of Interest** The authors declare no competing interests.

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## Authors and Affiliations

**Víctor J. Villanueva-Blasco<sup>1</sup>**  · **Verónica Villanueva-Silvestre<sup>1</sup>** ·  
**Andrea Vázquez-Martínez<sup>1</sup>** · **Laura Pérez de Vicente<sup>2</sup>** · **Bartolomé Pérez-Gálvez<sup>3</sup>**

Verónica Villanueva-Silvestre  
vvillanueva@universidadviu.com

Andrea Vázquez-Martínez  
avazquezm@universidadviu.com

Laura Pérez de Vicente  
laura.perez@indyca.org

Bartolomé Pérez-Gálvez  
b.perez@umh.es

<sup>1</sup> Faculty of Health Sciences, Valencian International University, C/ Pintor Sorolla, 21, 46002 Valencia, Spain

<sup>2</sup> Foundation for the Analysis, Study and Prevention of Addictions (AEPA), Alicante, Spain

<sup>3</sup> Department of Clinical Medicine, Miguel Hernandez University, Elche, Spain