

# Self-reported increase in alcohol and drugs intake as a coping strategy in hospital workers during COVID-19 outbreak: A cross-sectional study

## *Incremento de la ingesta de alcohol y drogas como estrategia de afrontamiento en trabajadores hospitalarios durante el brote de COVID-19: Estudio transversal*

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### Abstract

Situations of psychological stress, such as the current COVID-19 pandemic, could lead to an increase in the consumption of alcohol and other drugs of abuse as an inadequate coping strategy in health workers. This study aimed to investigate the intake of alcohol and drugs of abuse in hospital workers during the first wave of COVID-19. A further focus was to define the worker profile most vulnerable to this behavior through a logistic regression analysis. A cross-sectional study in a tertiary hospital in Madrid, Spain, during the first wave of COVID-19 was designed. Information was collected from a sample ( $n = 657$ ) of healthcare workers ( $n = 536$ ) and non-healthcare workers ( $n = 121$ ). An online survey (including questions about basic health habits, working environment conditions, sociodemographic data, and the 12-item version of the General Health Questionnaire as a measure of psychological well-being) was conducted. Increased consumption of alcohol and/or drugs of abuse during the analyzed period of the pandemic was reported by 17.1% of workers. The following variables were associated with a higher probability of increased consumption of alcohol and/or drugs of abuse: male gender ( $p = .044$ ), living alone or without dependents ( $p = .005$ ), staff physician or resident ( $p = .010$ ), having worked on the COVID frontline ( $p = .058$ ), poor nutritional habits ( $p = .004$ ) and self-prescription of psychotropic drugs to manage anxiety and insomnia ( $p = .003$ ). A significant percentage of hospital workers increased their consumption of alcohol and drugs of abuse during the first wave of the COVID-19 pandemic. A professional risk profile can be defined for this practice.

*Key words:* Coronavirus disease 2019 (COVID-19); health personnel; psychological stress; risk factors; protective factors; alcohol consumption; drug abuse.

### Resumen

Las situaciones de estrés psicológico, como la actual pandemia COVID-19, pueden implicar un aumento del consumo de alcohol y otras drogas de abuso como estrategia inadecuada de afrontamiento en profesionales sanitarios. Esta investigación tiene como objetivo estudiar el incremento de la ingesta de alcohol y drogas de abuso en los trabajadores hospitalarios. Persigue también, mediante un análisis de regresión logística, definir qué perfil de trabajador es el más vulnerable a este comportamiento. Para ello se realizó un estudio transversal en un hospital terciario en Madrid, España, durante la primera oleada de COVID-19. Participaron en el estudio un total de 657 trabajadores del hospital, 536 de ellos sanitarios y 121 no sanitarios. La recogida de datos se realizó a través de una encuesta en línea que incluía preguntas sobre hábitos básicos de salud, condiciones del entorno laboral, datos sociodemográficos, así como la versión de 12 ítems del Cuestionario de Salud General. El 17,1% declaró haber aumentado su consumo de alcohol y/o drogas de abuso durante el período analizado. Se asoció a una mayor probabilidad de dicho incremento: sexo masculino ( $p = .044$ ), vivir sin personas dependientes a cargo ( $p = .005$ ), ser médico adjunto o residente ( $p = .010$ ), haber trabajado en primera línea de COVID ( $p = .058$ ), presentar malos hábitos nutricionales ( $p = .004$ ) y realizar autoprescripción de fármacos psicotrópicos para controlar la ansiedad y el insomnio ( $p = .003$ ). Un porcentaje significativo de los trabajadores hospitalarios ha aumentado su consumo de alcohol y drogas de abuso durante la primera oleada de la pandemia COVID-19, existiendo un perfil de mayor riesgo para esta práctica.

*Palabras clave:* Infección por coronavirus 2019; personal de salud; estrés psicológico; factores de riesgo; factores protectores; abuso de alcohol; abuso de sustancias.

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It may be assumed that health professionals have a healthier lifestyle than the rest of the population, yet this is not necessarily true: an investigation involving 7,288 American doctors concluded that alcohol abuse/dependence is an important problem among these workers (12.9% and 21.4% of male/female doctors respectively meet the criteria for alcohol abuse or dependence) (Oreskovich et al., 2015). In Germany, a survey of medical students and physicians showed that 24.8% of male physicians and 36.5% of male medical students reported alcohol ingestions greater than the daily doses recommended by the German Society of Nutrition regarding maximum alcohol intake (> 20 g/d). Among participating women, 25.3% of the physicians and 30.4% of the medical students reported having ingested more alcohol than recommended (> 10 g/d) (Voigt et al., 2009). A Brazilian sample of 510 doctors and nurses showed a lower prevalence of abstainers among these professionals, similar rates of alcohol abuse, and a higher prevalence of binge drinking episodes compared to the general Brazilian population (Tobias et al., 2019). In Spain, a recent survey among primary care professionals showed a higher prevalence of alcohol use in this group with respect to the general population, with a percentage of risky drinking according to the AUDIT-C criteria of 32% (Romero-Rodríguez et al., 2019a). The profile of a risky drinker in this sample was that of a male doctor, aged over 56 years and with a longer average professional career in years (Romero-Rodríguez et al., 2019b).

Little is known about the health behaviours and lifestyles that contribute to the abuse of alcohol and other drugs among health professionals. Different variables have been linked to an increased risk of alcohol and drug abuse among healthcare workers: personality traits such as alexithymia (Pedersen, Sørensen, Bruun, Christensen & Vedsted, 2016), coping styles (Grotmol et al., 2010), personal and professional factors, and being affected by burnout syndrome (Alexandrova-Karamanova et al., 2016). The abuse of drugs and alcohol has also been frequently considered a dysfunctional strategy of self-medication in the face of comorbidity with affective and anxiety disorders in the general population (Robinson, Sareen, Cox & Bolton, 2009; Turner, Mota, Bolton & Sareen, 2018). This could also be said for alcohol use as a means of controlling PTSD symptoms (Bensley et al., 2018).

The COVID-19 pandemic has established a series of environmental, social and intrapsychic conditions that may have promoted the inappropriate use of alcohol and other drugs as a resource for controlling psychological distress. An editorial in *The Lancet* noted the increase in direct and indirect markers of alcohol use in the general population during the pandemic, both in people with no prior risky drinking patterns and in individuals with alcohol use disorders (Clay & Parker, 2020). There is recent evidence

showing a significant association between the specific psychological stress of COVID-19 and drinking behaviour, a relationship mediated by sex and by the socioeconomic consequences of the pandemic in the general American population (Rodríguez, Litt & Stewart, 2020; Wardell et al., 2020). There is growing concern that the global burden of disease related to alcohol use disorders, including the increasing incidence of alcohol-related liver diseases, may worsen during the pandemic (Da, Im & Schiano, 2020). The relationship between substance abuse and the COVID-19 pandemic has also been studied in other countries and settings (Neill et al., 2020). There are earlier reports on the relationship between the exposure of health care workers to pandemic outbreaks and the risk of developing an alcohol use disorder which show a link between having been in quarantine and working in places where exposure to patients of SARS was common and later symptoms of alcohol abuse/dependence, even three years after the SARS outbreak (Wu et al., 2008).

The aim of this study was to estimate whether hospital workers increased the consumption of alcohol and drugs of abuse during the first wave of COVID-19. In addition, it was intended to define which worker profile was the most vulnerable to this behaviour.

From mid-March 2020 to the end of April 2020, Spain suffered the first wave of the COVID-19 outbreak, which affected the city of Madrid in particular. The hospital in which the study was carried out (Hospital Universitario Ramón y Cajal), a large tertiary care centre, was one of the hardest hit by the pandemic, having to deal with far-reaching logistical and healthcare restructuring to meet demands generated by the peak of hospitalizations for pneumonia caused by SARS-CoV-2.

## Method

For this cross-sectional study, a questionnaire was designed to be used in an online survey among all staff working at the Ramón y Cajal University Hospital during the first wave of COVID-19. The survey was distributed online by institutional email, and was also accessible on the hospital's intranet. Anonymous participation of all workers of different categories was encouraged for this voluntary study without financial incentives. The form was divided into four sections grouping different types of variables: sociodemographic data (sex, age, type of living arrangements) and health and professional status during the pandemic (professional category, experience, type of activity, personal mental health history, infection by SARS-CoV-2, COVID-19 symptoms); stress factors that workers linked to their work environment and activities during the pandemic; risk and protective behaviours outside the workplace during the pandemic; and the General Health Questionnaire scale (GHQ-12) (Goldberg & Hillier,

1979; Goldberg & Williams, 1988). This questionnaire is an instrument for detecting common mental disorders, as well as a general measure of psychological well-being which has been validated for use in the Spanish population (Sánchez-López & Dresch, 2008). Among the different risk behaviours, respondents were specifically questioned if they had increased their consumption of alcohol and/or drugs of abuse during the period of the first COVID-19 wave (mid-March to the end of April). The question “Has your use of alcohol or drugs of abuse increased during the pandemic?” asks whether these substances have been used as a possible way of coping with the stress generated by the pandemic situation.

The survey was conducted between June 15 and July 25, 2020 after being approved by the hospital’s clinical research ethics committee. Informed consent of all individuals was required before participating.

After an initial, raw analysis of the results, some variables were recoded and grouped according to criteria that were considered clinically relevant in order to increase the strength of the analysis. Continuous variables were described using means and standard deviations (SD), categorical variables through absolute and relative frequency. For inferential statistics, Student’s t-test was used on quantitative variables. The association between categorical variables was made using the chi-square test or Fisher’s exact test. To study the link between the use of alcohol and/or drugs of abuse and the risk variables, the backward stepwise logistic regression model (Wald) was used, adjusting for the variables which, based on the literature, our raw results and biological plausibility were interpreted as potentially influencing the abuse of drugs and alcohol. This association is presented as an odds ratio (OR). The possibility of interacting and confounding factors was explored. All analyses were carried out with the Statistical Package for the Social Sciences (SPSS), version 19.

## Results

The survey comprised 657 respondents (out of a total 6,119 health and non-health professionals of the

stable workforce plus reinforcements hired to attend the first COVID wave). Of these, 79.1% were women, with an estimated mean age of 41.06 years (SD = 11.63). Respondents living with dependents made up 33.5%, while 51.4% lived alone or with a partner. Of those surveyed, 81.6% were healthcare workers, with 28.9% of them nurses and 17.0% nursing assistants, 13.5% resident doctors and 19.8% staff doctors. The distribution by professional category in the sample is similar to that of the total population of hospital workers during the pandemic. Average length of professional experience was 15.3 years (SD = 10.9). So-called “front line” workers, those working directly in the care of patients with COVID-19, made up 54.3%. Of those surveyed, 17.1% declared that they had increased the consumption of alcohol and/or drugs of abuse during the period of the pandemic covered by the study.

Significant differences were found in certain variables between those who increased their alcohol consumption or used drugs of abuse, and those who did not. It should be noted that those with increased alcohol/drug use during the COVID outbreak were significantly younger ( $p = .005$ ) and had a higher total GHQ-12 score ( $p = .031$ ), which is interpreted as a higher level of psychological stress or emotional impact (Table 1). The differences in the type of living arrangements were also significant (higher percentage of living without dependents among those with increased consumption,  $p = .001$ ). Increased consumption of alcohol or drugs of abuse was more frequent among healthcare professionals ( $p = .022$ ), those working on the COVID-19 front line ( $p = .009$ ), and staff physicians and residents ( $p = .001$ ) (Table 2). Significant differences were also observed between variables considered protective or risk factors: those who increased alcohol and/or drugs use had worse nutritional habits ( $p = .001$ ) and also used self-prescribed psychotropic drugs more frequently ( $p = .000$ ). There were no statistically significant differences regarding the presence of a personal history of mental illness ( $p = .575$ ) (Tables 2 and 3).

In the logistic regression model (Table 4), the following significant findings stand out: being male was linked

Table 1. *Increased consumption of alcohol/drugs of abuse and sociodemographic variables.*

	Increased consumption of alcohol/drugs of abuse	n	Mean	SD	Sig.
<b>Estimated mean age</b>	No	542	41.65	11.83	<b>.005</b>
	Yes	112	38.25	10.85	
<b>Mean years of professional experience</b>	No	454	15.67	11.00	.071
	Yes	107	13.57	10.07	
<b>GHQ-12 score</b>	No	534	16.62	5.40	<b>.031</b>
	Yes	110	17.85	5.79	

SD: standard deviation.

GHQ-12: Goldberg General Health Questionnaire, 12-item version.

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Tabla 2. Comparative analysis of independent variables vs increase in alcohol/drug abuse.

		Increased consumption of alcohol/drugs of abuse				Chi squared	Sig.
		No		Yes			
		n	%	n	%		
<b>Sex</b>	Men	106	19.6%	30	27.0%	3.118	.095
	Women	436	80.4%	81	73.0%		
<b>Type of living arrangements</b>	No dependents	261	48.2%	74	66.1%	11.804	<b>.001</b>
	With dependents	280	51.8%	38	33.9%		
<b>Health professional</b>	Yes	433	79.9%	100	89.3%	5.435	<b>.022</b>
	No	109	20.1%	12	10.7%		
<b>Close contact with COVID-19</b>	Front line	273	50.4%	72	64.3%	7.213	<b>.009</b>
	Second line	269	49.6%	40	35.7%		
<b>Staff physician and residents</b>	Yes	166	30.6%	53	47.3%	11.614	<b>.001</b>
	No	376	69.4%	59	52.7%		
<b>GHQ-12 positive screening</b>	Yes	449	84.1%	93	84.5%	0.015	1.000
	No	85	15.9%	17	15.5%		

GHQ-12: Goldberg General Health Questionnaire, 12-item version.

Table 3. Comparative analysis of risk and protective factors vs increase in alcohol/drug abuse consumption.

		Increased consumption of alcohol/drugs of abuse				Chi squared	Sig.
		No		Yes			
		n	%	n	%		
<b>Presence of COVID-19 symptomatology</b>	No	326	60.3%	60	53.6%	1.717	.206
	Yes	215	39.7%	52	46.4%		
<b>Clinical diagnosis of COVID-19 infection</b>	No	344	63.9%	76	69.1%	1.062	.326
	Yes	194	36.1%	34	30.9%		
<b>Loss of a relative</b>	No	420	78.1%	93	83.8%	1.816	.201
	Yes	118	21.9%	18	16.2%		
<b>Regular physical activity</b>	No	328	60.7%	75	67.0%	1.522	.240
	Yes	212	39.3%	37	33.0%		
<b>Practice of relaxation techniques/meditation/mindfulness</b>	No	341	63.0%	69	61.6%	0.081	.830
	Yes	200	37.0%	43	38.4%		
<b>Good sleep habits</b>	Unsatisfactory	277	51.1%	62	55.4%	0.672	.467
	Satisfactory	265	48.9%	50	44.6%		
<b>Nutritional habits</b>	Unsatisfactory	206	38.1%	62	55.9%	12.025	<b>.001</b>
	Satisfactory	335	61.9%	49	44.1%		
<b>Leisure activities</b>	Unsatisfactory	368	68.3%	82	73.2%	1.060	.369
	Satisfactory	171	31.7%	30	26.8%		
<b>Social interaction</b>	Unsatisfactory	232	42.9%	47	42.0%	0.032	.917
	Satisfactory	309	57.1%	65	58.0%		
<b>Exposure to information in media and social networks</b>	Unsatisfactory	198	37.0%	51	45.5%	2.844	.109
	Satisfactory	337	63.0%	61	54.5%		
<b>Personal history of mental illness</b>	No	453	84.2%	92	82.1%	0.290	.575
	Yes	85	15.8%	20	17.9%		
<b>Self-prescription of psychotropics</b>	No	409	75.6%	64	57.1%	15.833	<b>.000</b>
	Yes	132	24.4%	48	42.9%		

Tabla 4. Regression model.

	B	E.T.	Wald	df	Sig	Exp (B)	95% CI EXP(B)	
							Lower	Higher
<b>Sex</b>	.544	.270	4.043	1	.044	1.723	1.014	2.927
<b>Living arrangements</b>	.659	.235	7.848	1	.005	1.934	1.219	3.067
<b>Self-prescription of psychotropics</b>	.733	.243	9.122	1	.003	2.081	1.293	3.348
<b>Nutritional habits</b>	.702	.242	8.433	1	.004	2.018	1.256	3.241
<b>Staff physician and residents</b>	.614	.240	6.567	1	.010	1.847	1.155	2.954
<b>Close contact with COVID-19</b>	.4.50	.237	3.608	1	.058	1.568	.986	2.493
<b>Constant</b>	-9.107	1.364	44.604	1	.000	.000		

Variables introduced in the model: sex, estimated mean age, years of experience, health professional, presence of COVID-19 symptoms, loss of a relative, personal history of mental illness, type of living arrangements, close contact with COVID-19, self-prescription of psychotropic, nutritional habits, good sleep habits, leisure activities, social interaction, regular physical activity, staff physician and residents, GHQ-12 score.

to a 1.723 times (95% CI: 1.014 to 2.927) higher risk of increased alcohol/illicit drug intake, other variables remaining constant. Also, living alone or with a partner (not having dependents) heightened the risk of increased alcohol/illicit drug use by 1.934 (95% CI: 1.014 to 2.927) compared to the risk of those living with people depending on them. With all values of other model variables remaining constant and self-prescribed psychotropic use present, the risk of increasing alcohol/drug abuse rose by 2.081 times (95% CI: 1.293 to 3.348) compared to the risk if the use of psychotropics was not self-prescribed. Being a staff doctor or a resident intern was also a factor to consider, increasing the risk of greater alcohol/drug use compared to the other professional categories by 1.847 (95% CI: 1.155 to 2.954). Similarly, COVID-19 frontline work increased the risk of using more alcohol/illicit drugs by 1.658 (95% CI: 0.986 to 2.493). Finally, those with bad nutritional habits had a 2.018 (95% CI: 1.256 to 3.241) higher risk of increasing alcohol/illicit drug use than those with good habits.

## Discussion

A large percentage of the sample reported increasing their intake of alcohol and/or drugs of abuse during the first wave of COVID-19. Compared to those who did not, those increasing their use were younger, were more frequently members of the group of health professionals, with a greater representation of staff doctors and residents, worked more frequently on the front line of COVID-19 care, and more often lived alone or without dependents. They also had worse nutritional habits and reported higher stress as measured on the GHQ-12 scale. Psychotropic drugs were also more frequently self-prescribed to manage anxiety and insomnia. Those who increased substance use during the pandemic did not more frequently have a personal history in terms of monitored mental health.

There have been few studies to date of alcohol and drug abuse by healthcare workers during the COVID-19 outbreak (Conroy et al., 2021; Gomes et al., 2020; Silczuk, 2020). Previous research has highlighted a significant increase in alcohol use among physicians who were in lockdown (Silczuk, 2020) as well as among health workers, irrespective of working on site or from home (Conroy et al., 2021). This last study showed that 8% of the sample were cannabis users before lockdown and that there was a rise in the amount of this substance used during the COVID-19 pandemic (Conroy et al., 2021). The increase in alcohol use in other studies has been seen as a tangible manifestation of the global worsening of health habits among physicians, being related to weight gain and decreased physical and sexual activity (Gomes et al., 2020).

In our sample, younger professionals living without dependents were more susceptible to increasing their consumption of alcohol or drugs of abuse. Doctors and

men were represented more strongly in this group, and their total scores on the GHQ-12 tended to be higher compared to the sample average.

Some previous reports have found that male medical students/resident doctors drink alcohol more regularly compared to other healthcare professionals (Lamberti et al., 2017). In our study, a higher GHQ-12 total score ( $p = .041$ ) was found in those who increased alcohol and/or drugs of abuse consumption. Working on the front lines during the COVID-19 pandemic was also significantly associated with increased use of alcohol and illicit drugs. It can therefore be concluded that the use of alcohol or drugs of abuse may represent a dysfunctional coping strategy to manage anxiety/insomnia symptoms in a group of health workers with less experience and potentially greater vulnerability to stress who also lack the necessary coping tools. In the general population, self-medication for anxiety through the use of alcohol and drugs has also been reported more often in younger people and those who are divorced or never married (Robinson et al., 2009). Those who do not self-medicate are more frequently women (Robinson et al., 2009). In the context of the COVID-19 pandemic, general population-based research has found that parents with at least one child under the age of 18 were at increased risk of increased alcohol use (Wardell et al., 2020), which is contrary to our findings on the link between living without dependents and the increased risk of alcohol/drug abuse.

Our study has some limitations that should be noted. First, it is difficult to estimate the extent to which those who respond to the survey constitute a representative sample of hospital workers, although the ratios of professional categories in the sample are similar to those of the study population. Secondly, the variable measuring the increase in substance use presupposes that this is a strategy for coping with the stress generated by the pandemic situation. Given that the study is based exclusively on the generic self-report of the individuals, the lack of documentation regarding previous patterns of alcohol and/or drug use in the study subjects, and the absence of the use of standardized tools to estimate and quantify this use are also limitations. This could in turn condition the lack of correlation between use and previous history of mental illness. Similarly, asking respondents to recall events and data that occurred a few months earlier, and also in a situation of stress and great emotional impact, is likely to be subject to an information bias. There is also a greater probability that those who suffered most from the psychological impact of the first wave responded to the questionnaire (selection bias). Finally, the type of study carried out does not permit causal associations to be established, highlighting relationships between variables instead.

The relevance of these findings on drug and alcohol use patterns in hospital workers during the Covid-19 outbreak

highlights the need to monitor subjects who increased their alcohol use or took illicit drugs to cope with anxiety, and to adopt specific detection and therapeutic interventions to reduce the impact of substance abuse on hospital workers.

## Conclusions

A significant percentage of hospital workers fighting COVID-19 during the first wave at the Ramón y Cajal University Hospital in Madrid increased their consumption of alcohol and/or drugs of abuse. Given the profile presented by this group of professionals (greater exposure to stress and absence of other coping strategies), the use of alcohol and drugs of abuse may be seen as a failed strategy for coping with the stress and anxiety produced by the pandemic in individuals who have less experience and may be more vulnerable to them. It is important to implement both screening tests and therapeutic interventions to promote a suitable approach to this important health problem in hospital workers.

## Conflict of interests

The authors declare no conflict of interest in this study.

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