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Psychologists' health, sleep, and behaviors in the COVID-19 turmoil

João Peixoto[1], Maria Augusta Machado[2], Teresa Paiva[3,4,5], Rute Sousa[5], Cátia Branquinho[4], Fábio Guedes[4], Gina Tomé[4,6], Tânia Gaspar[3,4,5,7], Margarida Gaspar Matos[4]

[1] Trofa Saúde Hospital Braga Centro, Braga, Portugal
[2] Trofa Saúde Hospital Central, Vila do Conde, Portugal
[3] Sleep Medicine Center - CENC, Lisbon, Portugal
[4] Instituto de Saúde Ambiental da Faculdade de Medicina da Universidade de Lisboa (ISAMB-FMUL), Portugal
[5] Comprehensive Health Research Center (CHRC), Nova Medical School, Lisbon, Portugal
[6] Faculdade de Motricidade Humana, Universidade de Lisboa, Portugal
[7] Centro Lusíada de Investigação em Serviço Social e Intervenção Social (CLISSIS), Universidade Lusíada, Lisboa, Portugal

Corresponding author: Gina Tomé| ginatome@sapo.pt

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Abstract

Background: The infection caused by SARS-CoV-2 (COVID-19) emerged in China in 2019. Studies carried out during the pandemic period demonstrated an association between this pandemic context and psychological suffering. Psychologists, as health professionals, came to play a leading role in this period.
Goals: This study aimed to evaluate the psychologist's health status, behaviors, attitudes, and habits during the pandemic.
Methods: This study included 1100 subjects, with two different samples: general population and psychologists. The sample was obtained through a non-probabilistic sampling process (online data collection). Survey Legend® online platform was used for this purpose. The data collection happened during the first wave of COVID-19, in Portugal. Two types of analytical design were used: an inter-subject design (Mann-Whitney *U* Test and Chi-Square Test [$\chi 2$] were performed), and an intra-subject design (Sign test and the Wilcoxon test were applied).
Results: Of the 1100 participants, 128 (11.6%) belong to the group of psychologists, aged between 24 and 82 years (mean age 45.4 ± 11.85). Subjects self-reported several changes occurring between the before-pandemic period and the first wave of the pandemic, revealing a significant increase in the use of television, social networks, cell phones, and games. It was also found a self-perceived overall deterioration in sleep quality, a reduction in smoking, and an increase in alcohol consumption.
Discussion: The findings of this study support the need for adoption of measures, and the development of specific health promotion intervention plans targeted to this professional group, in similar situations in the future.

Keywords: Portugal, Pandemic, Mental health, Survey.

Introduction

The COVID-19 pandemic emerged in China in 2019 (Wang et al., 2020a), and quickly spread throughout the world, and it was assumed to be a pandemic by the World Health Organization, in March 2020 (World Health Organization, 2020a). Since then, the world and the way we lived for about two years changed. The high degree of contagiousness of this unknown virus was associated with the overload of health systems, which resulted in an inability to respond to so many requests (Carr et al., 2021; World Health

Organization, 2020b). The fear of contagion, the unpredictability of the SARS-CoV-2 effects, the attempt to contain it (with the confinement of the population), social isolation, breaking of routines and the consequent sudden change in habits, excessive exposure to the media (with the pandemic as a recurring theme) and digital equipment, unemployment, financial insecurity and uncertainty about the future, all these factors had a significant effect on people's mental and physical health, as a result of the shaking of family, social and economic spheres (Gaspar et al., 2021; Paiva et al., 2021a; Wang et al., 2020b; Wright et al., 2020). Some studies carried out during the pandemic period have shown an association between the deterioration of mental health and the experience of this unique period, mainly in terms of anxiety, panic, sleep disorders, depression, post-traumatic stress, and increased risk of suicide (Gunnell et al., 2020; Kwong et al., 2020; O'Connor et al., 2020; Paiva et al., 2021b; Wright et al., 2020). As the pandemic progressed, the mental health of the population was increasingly threatened, especially among the most vulnerable (including people affected by COVID-19, health professionals, and people who already suffered from psychopathologies) (Fu et al., 2020; Kang et al., 2020; Stuijfzand et al., 2020; Wang et al., 2020c).

Psychologists, as health professionals, though not at the forefront, came to play a leading role in this period. Their intervention has become essential, being increasingly requested to emergency psychological interventions, often in need of adapting to less conventional modes of consultation and therapy (online consultation or teleconsultation), with scarce resources. This reality was associated with an important work-overload and a lack of rest. It should also be added that, as individuals, they share, with the rest of the population, the fear of infection, social isolation, and limitations in their daily lives (Gaspar et al., 2021).

For these reasons, and because we have not found any work that specifically evaluates the impact of the pandemic on psychologists, we embraced the opportune to carry out this study, having as main aim to assess psychologists' health status, behaviors, attitudes, and habits during the pandemic, and making a comparative analysis with the general population, and to analyze self-perceived differences between the situation experienced in the pandemic comparing it with the pre-pandemic period.

Methods

The study followed a cross-sectional survey design, with data collected through self-administered structured online questionnaires.

Participants

The sample of the present work was obtained through a non-probabilistic statistical method. Data were collected with the collaboration of several centers/laboratories such as the University Hospital Center (North Lisbon), Institute for Sleep and Dental Medicine (Funchal), Lusíadas Hospital (Lisbon), Lusíadas Clinic (Nation's Park - Lisbon/Almada), Baixo Vouga Hospital Center (Aveiro), Sleep Medicine Center (Coimbra Hospital and University Center), Neurology and Neurophysiology Service (CUF Hospital - Coimbra), Sleep Medicine Unit (Coimbra Surgical Center), Alfena Hospital and Braga Centro Hospital (Trofa Saúde), Sleep Medicine Unit (Divino Espírito Santo Hospital - Ponta Delgada), Sleep Studies Laboratory (Santo Espírito Hospital - Terceira Island), Sleep Studies Laboratory (Neurology Service – Western Lisbon Hospital Center), Neurology Service (Garcia de Orta Hospital), Póvoa de Varzim / Vila do Conde Hospital Center, Sleep Laboratory (Pneumology Service - Leiria Hospital), Luz Hospital (Lisbon), and Linde Saúde. All these entities collaborated in recruitment of participants, through the dissemination of the online questionnaire through their contacts and social media platforms.

Exclusion criteria were being under 18 years of age, reporting incomplete questionnaires, or providing detectable erroneous information.

Instruments

Survey Legend® (Hamngatan, Malmö, Sweden) online platform was used. The survey instrument had an

explanation of the purpose, authors' identification, referral of ethical approval by the CENC's Ethical Committee, names of the contact persons, supporting entities, and informed consent. It included 177 questions that addressed the following topics, demographics, work-related indicators, self-perceived health status, sleep quality, mood, attitudes, behaviors, lockdown/calamity scales (calamity refers to lockdown relief period), nutrition, physical activity, use of television, social networks, mobile phone and games, tobacco, alcohol, and drug habits, and corresponding subjective level of addiction. These parameters were evaluated using self-report measures and, though they focused on the pre-pandemic and during-the-pandemic phase (i.e., participants were asked to report taking into consideration these different moments), they were evaluated at a single moment (Paiva et al., 2021b) (Table 1).

Table 1. Parameters assessed in the survey

Topics	Subtopics	Parameters	Considered moments of assessment (for self-reporting)	Type of Answer
Demographics		Age, gender, civil status, height, education level, postal code		Open answer/Options
Work		Work area, type of work, shift work and its modality, moral/sexual harassment	BC	Options
		Reason for not working	DC	Options
		Stress, interruptions, multitasking, conflicts, responsibility, intellectual load, physical load, work rhythm	DC	VAS (1-low, 10-high)
Health status	Baseline	Being healthy or being ill (43 diseases)	BC	Yes/No
	Worsening	Same morbidities	DC	Yes/No
	Improvement	Same morbidities	DC	Yes/No
COVID-19	Infection	Self, family, friends	DC	Options
	Death	Close relatives, friends	DC	Yes/No
Calamity characteristics	Calamity	Reasons for going out (shopping, going out with children, playing sports, walking, visiting family, visiting friends, gardening, pharmacy, work, hairdresser, restaurant)	DC	Yes/No
Lockdown characteristics	Confinement	Voluntary confinement, home confinement, reasons for going out (same as above except for hairdresser and restaurant)	DL	Yes/No
		Days in lockdown	DL	Open answer
	Lockdown Housing	Housing (self or family home)	DL	Options
		Type of house	DL	Options
		House location	DL	Options
		Number of people living with	DL	Options
	Negative Attitudes	Fed up or tired, cannot stand it, loneliness, missing family/friends, felt in imprisonment/claustrophobia, had worries and fears, cannot stand companion, cannot stand children, cannot stand elderly, fed up with the children, online school	DL	Yes/No
	Trauma/Violence	Traumatic events, domestic violence, violence against children	DL	Yes/No
	Positive Attitudes	Felt well, less stress, important discoveries	DL	Yes/No

Table 1. Parameters assessed in the survey (continued)

Topics	Subtopics	Parameters	Considered moments of assessment (for self-reporting)	Type of Answer
Lockdown/ calamity	Negative behaviors	Developed new addictions, get bored, mourned all time, slept as much as possible, excessive multimedia use	DC, DL	Yes/No
	Positive behaviors	Tidying up, phone friends, write a book/articles/memories, learned new abilities, gardening/ agriculture, invented funny or spiritual things, worked, walking/gym/sports, reading/music/studying, domestic work, settled current affairs	DC, DL	Yes/No
	Scales	How were participants living in confinement	DL	VAS (1-bad, 10-good)
		How much were they depressed, how much were they anxious, how much were they irritable	DC, DL	VAS (1-not at all,10-very much)
		How big were their economic problems, how big were their worries	DC, DL	VAS (1-none, 10-very big)
		How frequent was their sexual activity	DC, DL	VAS (1-rare, 10-very frequent)
Sleep		Out of and in bedtime, sleep duration (hours), sleep latency (minutes), number of night awakenings	BDC, W, Wk	Open answer
		Sleep and awakening quality	BDC, W, Wk	VAS (1-bad, 10-good)
Nutrition		Meals (day)	BDC	Open answer
		Ingestion of foods: fruits/vegetables, milk/derivatives, chocolates, biscuits/cakes, carbohydrates (i.e., bread, rice, pasta), precooked food, processed food, charcuterie, eggs, honey/jams, dry fruits, chewing gums/candies, legumes, meat/fish, tea/coffee, soft drinks, sweet desserts	DC (Last month)	Options
		Nutrition differences	BDC	Open answer
Physical activity		Intensity, number of hours per week, the individuality of the practice, location, pattern used	BDC	Open answer/Options
Body weight				Open answer
Substance use	Smoke	Cigarette consumption	BC	Yes/No
		Age starting to smoke	BC	Open answer
		Type of smoke, number of cigarettes (day)	BDC	Options/ Open answer Answer
		Change in type of smoke	DC	Options
	Alcohol	Alcohol abstinence, number of glasses of beer, wine, aperitive wine, or brandy (per day)	BDC	Yes/No; Open answer
	Other Drugs	Use	BDC	Options
Entertainment	Television	Type of programs seen; time spent per day (h/day)	BDC	Yes/No; Open answer
	Social Networks	Time spent per day (h/day)	BDC	Open answer
	Mobile Phone	Time spent per day (h/day)	BDC	Open answer
	Gaming	Time spent per day (h/day)	BDC	Open answer
Addictions		Television, social networks, gaming, alcohol	DC	VAS (1-low; 10-high)
Free comments				Open answer

BDC, Before and During COVID-19; BC, Before COVID-19; DC, During COVID-19; DL, During Lockdown; VAS, Visual Analogue Scale; W, Week; Wk, Weekend

Data collection procedures and coding

The data were collected between April and August 2020, corresponding to the first wave of COVID-19 in mainland Portugal and islands.

Two types of analytical design were used: on the one hand, an inter-subject design (comparing the general population sample with the psychologists' sample; and, on the other hand, an intra-subject design (comparing the self-perceived changes associated to the pandemic, by psychologists).

Data Analysis

A careful analysis of free comments was also done to verify if there was relevant information that could be included in the quantitative variables.

Units were corrected (e.g., centimeters were transformed into meters, and hours and minutes were converted into decimal numbers, in the case of sleep habits (midnight was considered zero, with numbers classified as negative before midnight and positive after midnight).

For descriptive statistics, the mean (*M*), standard deviation (*SD*), percentages (%), the median (*Mdn*), and the interquartile range (*IQR*) were used (although the data was not normally distributed, the mean and standard deviation were also reported to facilitate interpretations). For the analyzes of the distribution normality, the Kolmogorov-Smirnov and the Shapiro-Wilk tests were used, depending on the absolute number of respondents for each variable. In the intra-subject analysis, in addition to the distribution, homoscedasticity (skewness/standard error of skewness) was also investigated.

From the demographic data, the following variables were recoded: age categories (young adults [≤29 years old], adults [30 to 64 years old], seniors [≥65 years old]), weight difference (before/during the pandemic difference) was calculated on bases of BMI, and BMI categories (<18.5, Underweight; 18.5–24.9, Normal weight; 25.0–29.9, Pre-obesity; 30.0–34.9, Obesity class I; 35.0–39.9, Obesity class II; >40, Obesity class III) (World Health Organization, 2019).

Cases reporting 30 or more hours of physical activity per week (4.29h/day) were recoded as user missing values (for this variable), unless reporting to be athletes. Values equal or higher than 20 hours per day for exposure to television, social networks, mobile phones, and gaming were also disregarded. Based on the data related to food intake, a score based on recommended/non-recommended frequencies was calculated according to Gregório and collaborators (2012).

Daily alcohol consumption (g/day) was also calculated (number of bier glasses *12 + number of wine glasses * 12.5 + number of aperitive glasses * 11 + number of brandy glasses * 15) and then categorized into four distinct categories, Cat1 (0-19.99 for females, and 0-39.99 for males), Cat 2 (20-39.99 for females, and 40-59.99 for males), and Cat 3 (≥40 for females, and ≥60 for males).

From the data related to sleep, it was calculated the Time in Bed (TIB; In bedtime/Out of bedtime difference), the Sleep Efficiency (Sleep duration/TIB*100), Mid Sleep Points (MSP) ([In bed time + Sleep latency + Sleep duration]/2), for both week and weekend days, before and during the pandemic period; and the Social Jet Lag (MSP weekend-MSP week), also before and during the pandemic.

For attitudes and behaviors, the mean, and the absolute number (and corresponding percentage) were calculated for each subject.

The Morbidities Index (MI), the Morbidities Worsening Index (MWI), and the Morbidities Improvement Index (MII) were calculated (sum of all the morbidities on each subtopic). Based on the variables that make up the Lockdown/Calamity Scales, the Calamity Experience Check List (CECL) was calculated (mean of depression, anxiety, irritability, and worry indicators).

Differences between the pre-pandemic and pandemic period (difference after/before) were calculated for the following variables: sleep quality, tobacco and alcohol consumption, physical activity, use of television, social networks, mobile phones, and gaming.

In the inter-subject analysis, the Mann-Whitney *U* Test (given the non-normal distribution of data) and the Chi-Square Test ($\chi 2$) (due to the nature of the dependent variables) were used. On the other hand, in the intra-subject analysis, the Sign test and the Wilcoxon test were applied. All *p* values equal or lower than .05 were considered statistically significant.

All statistical analyzes were conducted with IBM SPSS® (Statistics for Windows, Version 25.0. Armonk, NY, USA).

Ethical issues

The data collection instrument, in addition to an explanation of the research objective, also contained the identification of the researchers responsible for the study, the names of privileged contact persons, support entities, and the respective informed consent.
The study was approved by the Center for Electroencephalography and Clinical Neurophysiology Ethics Committee (CENC).

Results

Overall, 1100 individuals participated in this study, aged between 20 and 82 years, of which 128 participants (11.6%) belong to the group of psychologists (Table 2).

Psychologists were aged between 24 and 82 years (mean age of 45.4 ± 11.85), 16 were men (12.5%) and 112 were women (87.5%). Most subjects reported being married (46.1%), and 86.7% were active workers during the pandemic (Table 2).

Most psychologists (99.2%) reported not having been infected with SARS-CoV-2, as well as their family and friends (88.8%). The same occurred with the general population sample (97.5% and 86.1%, respectively). Only three psychologists (2.4%) and seven individuals from the general population sample (0.8%) revealed that someone close died due to COVID-19.

In this study, several variables were assessed regarding participants' self-perceived health status (Table 3). The general population sample revealed a higher average Morbidity Index (MI) (M = 1.81, SD = 2.18) than psychologists (M = 1.23, SD = 1.34) and the same was verified regarding the Morbidities Worsening Index (MWI) average (M = 1.12, SD = 1.49; M = .76, SD = 1.02, respectively). The average of the Morbidities Improvement Index (MII) was similar between the two groups (M = .29, SD = .65; M = .23, SD = .55, for the general population sample and psychologists, respectively). When these groups were compared, there were statistically significant differences in two of the parameters (U = 53745, p = .044; U = 44620, p = .050, for MI and MWI, respectively) (Table 6).

The self-perceived health status worsening was also assessed. No significant association was found between groups for the self-reporting of worsening of insomnia, depression, anxiety, burn-out and fatigue (Table 3).

In the sample of psychologists, most reported negative attitude was being fed up, and most reported positive attitude was feeling good about the lockdown. Regarding negative and positive behaviors, the most commonly reported were excessive use of multimedia (negative behavior) and tidying up the house, and calling family/friends (positive behaviors) (Table 4).

When comparing the two groups regarding the difference in the number of negative attitudes throughout the pandemic period, no statistically significant differences were found (Table 6).

Table 2. Sociodemographic characterization of the sample

	Total (N=1100)	**General population** (n=972)	**Psychologists** (n=128)
Age (valid n=1089), M(SD)	48.72±13.34	49.16±13.47	45.4±11.85
Gender, n(%)			
Male	239 (21.7)	223 (22.9)	16 (12.5)
Female	861 (78.3)	749 (77.1)	112 (87.5)
Civil Status (valid n=1098), n(%)			
Married	507 (46.2)	448 (46.2)	59 (46.1)
Single	260 (23.7)	224 (23.1)	36 (28.1)
Widow	33 (3,0)	30 (3.1)	3 (2.3)
Divorced	140 (12.8)	123 (12.7)	17 (13.3)
Union	158 (14.4)	145 (14.9)	13 (10.2)
Education (valid n=1073), n(%)			
Primary	16 (1.5)	16 (1.7)	0 (0,0%)
Secondary	120 (11.2)	120 (12.6)	0 (0,0%)
Professional	39 (3.6)	39 (4.1)	0 (0,0%)
Bachelor	64 (3,0)	64 (6.7)	0 (0,0%)
Graduate	471 (43.9)	431 (45.3)	40 (32.8)
Master	289 (26.3)	222 (23.3)	67 (54.9)
PhD	74 (6.7)	59 (6.2)	15 (12.3)

Table 3. Health Indicators

	Initial		**Worse**		**Better**	
	General population	**Psychologists**	**General population**	**Psychologists**	**General population**	**Psychologists**
Healthy, n(%)	333 (35.2)	51 (40.2)				
Insomnia, n(%)	196 (20.7)	22 (17.3)	205 (23.4)	28 (24.6)	42 (4.8)	2 (1.8)
Depression, n(%)	113 (11.9)	6 (4.7)	64 (7.3)	6 (5.3)	23 (2.6)	3 (2.6)
Anxiety, n(%)	145 (15.3)	12 (9.4)	181 (20.7)	16 (14)	27 (3.1)	3 (2.6)
Burn-out/Stress, n(%)	80 (8.4)	8 (6.3)	67 (7.7)	8 (7)	32 (3.7)	4 (3.5)
Hypertension, n(%)	127 (13.4)	12 (9.4)	25 (2.9)	0 (0,0)	13 (1.5)	0 (0,0)
Allergies, n(%)	148 (15.6)	27 (21.3)	36 (4.1)	4 (3.5)	17 (2,0)	4 (3.5)
Fatigue, n(%)	120 (12.7)	11 (8.7)	115 (13.1)	12 (10.5)	37 (4.3)	5 (4.4)
	Total		**General population**		**Psychologists**	
BMI (n = 1084), M (SD)	25.46 (4.48)		25.5±4.5		25.1±4.36	
Underweight, n(%)	25 (2.4)		23 (2.5)		2 (1.6)	
Normal Weight, n(%)	508 (47.9)		437 (46.6)		71 (57.7)	
Pre-Obesity, n(%)	374 (35.2)		339 (36.1)		35 (28.5)	
Obesity class 1, n(%)	118 (11.1)		108 (11.5)		10 (8.1)	
Obesity class 2, n(%)	28 (2.6)		24 (2.6)		4 (3.3)	
Obesity class 3, n(%)	8 (0.8)		7 (0.7)		1 (0.8)	

Table 4. Attitudes and behaviors during lockdown

Negative attitudes			Positive attitudes		
	General population	Psychologists		General population	Psychologists
Being fed up, %	38.4	42.9	Feel ok with lockdown, %	33.5	37.3
Missing friends and family, %	30.4	28.6	New discoveries, %	21.1	31
Loneliness, %	13.8	11.1	Less stress, %	18.6	12.7
Cannot stand it, %	5.5	4			
Fear and worries, %	4.7	2.4			
Cannot stand teleschool, %	3.5	8.7			
Cannot stand partner, %	2.9	3.2			
Cannot stand children, %	0.9	2.4			
Cannot stand elderly, %	0.9	1.6			
Claustrophobia, %	0.4	0.8			
Negative behaviors			**Positive behaviors**		
Excessive multimedia, %	34.3	29.4	Tidying up, %	60.4	56.3
Get bored, %	15	14.3	Phone calls to family/friends, %	47.9	53.2
Slept (at least 10h) , %	9.2	6.3	Settled current affairs, %	23.3	31.7
New addictions, %	2.2	2.4	Gardening/agriculture, %	19.2	19
Mourned, %	1.9	1.6	Invented funny things, %	13.3	15.9
			Learned new abilities, %	12	17.5
			Worked, %	9	18.3
			Wrote something, %	6.9	10.3
			Domestic work, %	3.5	1.6
			Reading/music/studying, %	3.3	4
			Walking and exercise, %	1.8	2.4

Situations related to trauma or violence were experienced by only 1.6% of the sample of psychologists.

The percentage of psychologists who reported having gone out more frequently, during the lockdown, with children (9.5%), and walking more (37.3%), was higher than the corresponding percentage of individuals from the general population (4% and 27.1% respectively). In the post-confinement period, both groups reported having increased activity levels. Psychologists self-reported having made more purchases (84.9%), strolled more with children (15.1%), practiced more sports (12.7%), and walked more (44.4%) than individuals in the other group (74.3%, 6.3%, 8.6%, and 33.2%, respectively).

Psychologists self-reported to watch an average of 3.37 hours of television/day (*M* = 3.37, *SD* = 2.14), to

use social networks for 2.99 hours/day (*M* = 2.99, *SD* = 2.27), to use the mobile phone for 3.42 hours/day (*M* = 3.42, *SD* = 2.44) and to play video games 1.69 hours/day (*M* = 1.69, *SD* = .98), during the pandemic period. Compared with the general population sample, there were no statistically significant differences in the median number of hours spent using television, using social networks, or playing video games. However, this was not verified in terms of the number of hours spent using the mobile phone (*U* = 17910.5, *p* = .001), with psychologists spending more hours doing it than subjects from the general population sample (*M* = 2.43, *SD* = 2.05, for the general population group). There was also a statistically significant difference within the sample of psychologists regarding the use of television, social networks, mobile phones, and video games (*Z* = -6,358, *p* = .001; *Z* = -6,593, *p* = .001; *Z* = -6,518, *p* = .001; *Z* = -2,848, *p* = .004, respectively), when comparing the period prior to COVID-19, which revealed an increase in the use of the aforementioned elements.

Regarding the Calamity Experience Check List (CECL), both groups reported that they were dealing with the pandemic period in a relatively balanced way (*M* = 4.61, *SD* = 2.06; M = 4.27, *SD* = 1.69 in the general population and the psychologists' sample, respectively); no statistically significant differences were found between these samples.

Sleep, nutritional behavior, and physical activity were also assessed (Table 5).

Both groups showed a similar change in sleep quality for pre- and pandemic periods (*M* = 6.24, *SD* = 2.17 and *M* = 5.69, *SD* = 2.28 for pre and pandemic periods in the general population sample; *M* = 6.66, *SD* = 1.96; *M* = 5.97 , *SD* = 2.03 for the periods before and during pandemic in psychologists) and with a self-perceived perception of worsening between the studied periods (*M* = -0.69, *SD* = 1.75; *M* = -0.57, *SD* = 1.87, for psychologists and general population samples, respectively), with no statistically significant differences. There was a statistically significant decrease in self-reported sleep quality among psychologists (*Z* = -4.039, *p* = .001). There were no major variations in sleep duration, both intra and intergroup levels, when compared with the pre-pandemic period.

At the nutritional level, there was a maintenance of the number of daily meals in both groups (before and during the pandemic period). Lack of compliance with nutritional recommendations was observed for some parameters (Table 5).

The average number of hours per week of physical activity was 2.83 hours/week (*M* = 2.83, *SD* = 3.08) and 2.88 hours/week (*M* = 2.88, *SD* = 3.06) for the general population sample and for psychologists, respectively. These values were similar to the ones found regarding the pre-pandemic period. No statistically significant differences in the median number of hours per week nor in the number of hours of physical activity practiced psychologists, considering the pre-COVID-19 period and the period referring to the course of the pandemic.

There was a higher prevalence of smokers among psychologists (20.4%), compared to the general population sample (16.1%). Contrary to what was seen in the general population sample, in which there was a self-perceived increase in smoking (*M* = 10.79, *SD* = 7.02 and *M* = 12.73, *SD* = 8.89 for the pre-pandemic and pandemic period, respectively), there was a decrease among psychologists (*M* = 9.5, *SD* = 7.77 and *M* = 7.61, *SD* = 6.84 for the pre and pandemic periods, respectively). The median number of smoked cigarettes was higher in the general population sample than among psychologists (*U* = 639.5, *p* = .018). Considering the two periods evaluated, there were no statistically significant intragroup differences, among psychologists, for median number of smoked cigarettes (*Z* = -.267, *p* = .789) (Table 6).

For the pre-pandemic period, 41.7% of the subjects in the general population group, and 56.2% of psychologists reported to consume alcoholic beverages. Subjects in both groups self-perceived a markedly increase in beer consumption, from .487 to 1.36 beers per day (*M* = .487, *SD* = .92; *M* = 1.36, *SD* = 1.68, pre and during pandemic, respectively) for the general population sample, and .306 to 1.46 beers/day

(*M* = .306, *SD* = .78; *M* = 1.46, *SD* = 1 pre and during pandemic, respectively, for psychologists). The same did not happen for the remaining alcoholic beverages. The self-perceived average consumption of alcohol (g/day) increased from 2.91 to 6.76 (*M* = 2.91, *SD* = 10.54; *M* = 6.76, *SD* = 17.03) in the general population sample, the same occurring in the group of psychologists, from 3.48 to 9.23 (*M* = 3.48, *SD* = 9.05; *M* = 9.23, *SD* = 14.53). Psychologists had a median alcohol consumption higher than the general population (*U* = 20588, *p* = .026); also, the self-reported consumption increase among psychologists, when comparing between the two periods (*Z* = -2.652, *p* = .008).

Table 5. Sleep, food intake, and exercise during the COVID-19 pandemic

		General population	Psychologists
Sleep	Duration weekdays (h), M (SD)	6.86 (1.76)	7.07 (1.50)
	Duration weekends (h), M (SD)	7.66 (2.24)	7.81 (1.79)
	Latency weekdays (min), M (SD)	35.19 (38.52)	32.3 (28.04)
	Latency weekends (min), M (SD)	35.4 (40.03)	28.76 (23.07)
	Quality, M (SD)	5.69 (2.28)	5.97 (2.03)
	Less than 5 hours/day, %	13.7	7,0
Food intake (having the recommender amounts, per food item)	Meals per day, M (SD)	3.86 (0.88)	3.98 (0.85)
	Fruits, %	32.6	29.9
	Milk and derivates, %	8.3	3.2
	Chocolates, %	13.7	9.5
	Biscuits and cakes, %	7.6	9.5
	Bread/Cereals/Pasta/Rice, %	11.5	7.4
	Precooked Foods, %	52.8	53.7
	Processed Foods, %	35	17.9
	Charcuterie, %	19.6	20
	Eggs, %	53.8	56.8
	Honey/Jams, %	40.2	43.6
	Dry Fruits, %	16.5	17
	Candies, %	70.5	60.6
	Vegetables, %	16.4	14.9
	Meat/Fish, %	54.3	59.6
	Tea/Coffee, %	54.6	63.4
	Sweet Desserts, %	15.4	19.4
	Soft Drinks, %	61.7	54.8
Physical Activity (hours per week), M (SD)		2.83±3.08	2.88±3.06

Table 6. Between-group comparisons

	General population		Psychologists		*U*	*p*
	Mean (SD)	Mdn (IQR)	Mean (SD)	Mdn (IQR)		
Age	49.16 (13.47)	49 (20)	45.4 (11.85)	43 (15)	51021	.002
Weight Difference	0.48 (2.88)	0 (2)	0.35 (3.93)	0 (3)	55636.5	.418
Morbidities Index	1.81 (2.18)	1 (3)	1.23 (1.34)	1 (2)	53745	.044
Morbidities worsening index	1.12 (1.49)	1 (2)	0.76 (1.02)	0 (1)	44620	.050

Table 6. Between-group comparisons (continued)

Morbidities improvement index	0.29 (65)	0 (0)	0.23 (.55)	0 (0)	47792.5	.977
Living lockdown	6.93 (1.88)	7 (3)	7.10 (1.6)	7 (2)	46090.5	.492
Depression during lock-down	3.64 (2.39)	3 (3)	3.17 (2.05)	3 (3)	46478.5	.082
Anxiety during lockdown	4.62 (2.57)	4 (5)	4.18 (2.17)	4 (9)	47605	.146
Irritability during lock-down	4.41 (2.55)	4 (4)	4.37 (2.2)	4 (3)	51994.5	.811
Worries during lockdown	5.9 (2.46)	6 (4)	5.53 (2.31)	6 (5)	47324.5	.114
Calamity experience checklist	4.61 (2.06)	4.5 (3.25)	4.27 (1.69)	4.25 (2.5)	48899.5	.173
Negative attitudes	1.09 (1.06)	1 (2)	1.17 (1.14)	1 (2)	54948.5	.532
Positive attitudes	0.73 (.85)	1 (1)	0.82 (.88)	1 (1)	53787	.293
Negative behaviors	0.63 (.85)	0 (1)	0.54 (.78)	0 (1)	54061.5	.334
Positive behaviors	2.24 (1.55)	2 (2)	2.50 (1.74)	2 (3)	52022.5	.123
Sleep quality during lock-down	5.69 (2.28)	6 (4)	5.97 (2.03)	6 (3)	36332.5	.356
Physical activity during COVID-19	2.83 (3.08)	2 (3)	2.88 (3.06)	2 (3)	22014.5	.966
Alcohol during COVID-19	6.76 (17.03)	0 (12)	9.23 (14.53)	0 (12)	20588	.026
Tobacco during COVID-19	12.73 (8.89)	12 (15)	7.61 (6.84)	5.5 (11)	639.5	.018
Television during COVID-19	3.32 (2.24)	3 (2)	3.37 (2.14)	3 (3)	28030.5	.695
Social networks during COVID-19	2.64 (1.97)	2 (2)	2.99 (2.27)	2 (3)	24288.5	.271
Mobile during COVID-19	2.43 (2.05)	2 (2)	3.42 (2.44)	2 (3.5)	17910.5	.001*
Games during COVID-19	1.72 (1.20)	1 (1)	1.69 (.98)	2 (1)	1669	.710
TV dependence	3.37 (2.16)	3 (3)	3.19 (1.90)	3 (3)	29217.5	.699
Virtual Social Networks dependence	4.04 (2.39)	4 (4)	4.32 (2.30)	4 (4)	27873.5	.238
Games dependence	1.62 (1.34)	1 (0)	1.67 (1.65)	1 (0)	28769	.400
Alcohol dependence	1.38 (1.12)	1 (0)	1.52 (1.09)	1 (1)	27355.5	.057

	General population (n=875)	**Psychologists** (n=114)	χ^2	*p*
Insomnia WDC, %	30,6	32,6	.072	.789
Depression WDC, %	7,9	5,6	.645	.422
Anxiety WDC, %	26,1	16,3	2.797	.094
Burn-Out WDC, %	8,3	7,5	.059	.808
Fatigue WDC, %	15,1	11,8	.617	.432

Notes. Mdn, Median; IQR, Interquartile Range; Worse During COVID-19

* $p < .001$

No psychologist reported being a user of other drugs during the period evaluated.

In the general population sample, subjects evaluated their self-perceived degree of dependence on television (*M* = 3.37, *SD* = 2.16), social networks (*M* = 4.04, *SD* = 2.39), video games (*M* = 1.62, *SD* = 1.34) and alcoholic beverages (*M* = 1.38, *SD* = 1.12) at medium and low levels. The same happened with the group of psychologists, who assessed their self-perceived degree of dependence on television (*M* = 3.19, *SD* = 1.9), social networks (*M* = 4.32, *SD* = 2.3), video games (*M* = 1.67, *SD* = 1.65) and alcoholic beverages (*M* = 1.52, *SD* = 1.09). There were no statistically significant differences between the two groups regarding television, social networks, and video games dependence. A statistically significant marginal difference was found for alcohol dependence (*U* = 27355.5, *p* = .057) (Table 7).

Table 7. Within-group comparisons (psychologists)

	Pre-COVID19		During-COVID19		*Z*	*p*
	Mean (SD)	Mdn (IQR)	M (SD)	Mdn (IQR)		
Sleep Quality	6.66±1.96	7 (3)	5.97±2.03	6 (3)	-4.039	.001*
Physical Activity	2.72±2.17	2 (3)	2.88±3.06	2 (3)	-.31	.755
Alcohol	3.48±9.05	0 (0)	9.23±14.53	0 (12)	-2.652	.008
Tobacco	9.5±7.77	5.5 (10)	7.61±6.84	5.5 (11)	-.267	.789
Television	2.16±1.22	2 (2)	3.37±2.14	3 (3)	-6.358	.001*
Social Networks	1.87±1.36	1 (1)	2.99±2.27	2 (3)	-6.593	.001*
Mobile	1.91±1.65	1 (1)	3.42±2.44	2 (3.5)	-6.518	.001*
Games	1.17±.68	1 (0.3)	1.69±.98	2 (1.3)	-2.848	.004

Mdn, Median; IQR, Interquartile Range

* $p < .001$

Discussion

This study evaluated how a sample of Portuguese psychologists experienced the first wave of the COVID-19 pandemic, giving special emphasis to its impact on the state of physical and mental health, habits, attitudes, and behaviors.

Most of the participant psychologists revealed that they have not been infected with SARS-CoV-2, as well as their close contacts. This can be justified by the legal lockdown starting earlier (the first case of SARS-CoV-2 infection was registered on the 2nd of March and the lockdown started on the 19th of March), with a consequent infection reduction (Direção-Geral da Saúde, 2020). Only a small number of these psychologists reported meeting someone close to them who died of the infection. This is in line with the results that report high numbers of deaths though not caused by COVID-19 (excessive mortality from 2,400 to 4,000 deaths between March 1st and April 22nd) (Nogueira et al., 2020). Although SARS-CoV-2 can impact the central nervous system (directly reaching neurons), as well as processes involved neurological diseases, often resulting in neuropsychological sequelae, the same was not found in this study, possibly due to the low level of participants who reported having been severely infected (Rabinovitz et al., 2020; Vanderlind et al., 2021).

Nevertheless, a high prevalence of morbidities was observed in the psychologist sample, with only a minority considering themselves healthy; anyway, when compared to the general population sample, psychologists reported a lower number of underlying pathologies and a lower worsening index during the pandemic.

Most individuals, in both groups, revealed that they did not experience worsening insomnia, depression, anxiety, burn-out, and fatigue. Considering attitudes, psychologists reported more negative than positive

attitudes and, conversely, several positive behaviors well above the number of negative behaviors. The same was true for the general population. The increase in positive behaviors may be due to proactive coping strategies. Tidying up the house, calling family and friends (sharing anxieties and concerns), resolving pending issues, gardening, and learning new skills, among other activities appear to be protective factors, and have also been verified in other studies (Fu et al., 2020). Understanding the type of attitudes and behaviors during the pandemic period may be decisive for the implementation of specific measures to prevent and control the contagion of COVID-19 and to increase pandemic compliance.

Psychologists of our study reported a significant increase in the use of television, social networks, mobile phones, and gaming. This became evident as a general trend (considering the general population sample), except for the use of mobile phones, in which psychologists stood out. A study by Pérez-Escoda and colleagues (2020) found that in Spain the use of traditional media, social networks, and the internet was triggered by the health crisis in March of 2020. Fear of contagion and the imposition of restrictions on circulation led to a longer stay at home and more need for contact with others, which seemed to translate into an increase in the number of hours using digital media.

Sleep duration was identical in both groups and quite overlapping with the pre-pandemic period. However, there was an overall slight deterioration in sleep quality, which did not translate into significant differences between the two groups. For psychologists, the difference in the subjective assessment of sleep quality worsened significantly. Baglioni and collaborators (2016), advanced that the neural sleep pathways are intricately linked and partially overlapped with those that regulate affection, cognition, and other brain functions. Individuals with a tendency to worry too much and to focus on the most negative aspects of the pandemic may have been constantly in a state of tension and alertness, which could lead to the appearance of sleep difficulties (Baglioni et al., 2014). Furthermore, changes in sleep quality interact with mental health more negatively, than the reverse (Kalmbach et al., 2018; Gaspar et al., 2021). There are, however, as advanced in some studies, some risk factors for bad sleep quality, such as being female, greater use of digital media and television, sedentary lifestyle, and high-level of education. Although in the present study we did not look for any type of relationship between these factors and sleep quality, our sample presents these same risk factors, which may be the basis for the observed poor self-perceived sleep quality (Paiva et al., 2021a; Werneck, et al., 2020; Yang et al., 2020).

Participating psychologists reported to have maintained the number of meals throughout the pandemic-related periods under study but disregarded the recommendations for the consumption of certain foods. The attempt to maintain the same routine (as before the pandemic) may contribute to the maintenance of the number of meals. The disregard for the recommendations for the consumption of fruits, chocolates, cookies and cakes, carbohydrate-rich foods, processed foods, cold meats, nuts, and vegetables, among others, may have represent an attempt at emotional compensation (Lindeman & Stark, 2001). Although this study has not verified a self-perception of worsening of psychological indicators, this may not mean that compensatory behaviors cannot emerge. The number of hours of physical activity during the pandemic, among psychologists, was lower than recommended by the Direção-Geral da Saúde (2016). The pandemic did not affect physical activity, and the level was quite similar in the two periods, which reveals the tendency towards a sedentary lifestyle, which in turn is a risk factor for health in general and the quality of sleep in particular (Chennaoui et al., 2015; Paiva et al 2021a).

There was a higher prevalence of smokers in the group of psychologists compared to the general population sample. However, the number of self-reports of being smokers, reduced (with statistical significance) between the considered pandemic-related timeframes.

Most participant psychologists reported to be regular consumers of alcoholic beverages before the pandemic. There was an increase in the consumption of

alcoholic beverages in both groups during the pandemic, being more pronounced among psychologists.

The above-mentioned results for smoking and alcohol consumption were also verified in the study by Jackson and collaborators (2020), though contrary to the results found in the work of López-Bueno and colleagues (2020).

No participant psychologist mentioned the use of other drugs during the pandemic. Participants of our study assessed the subjective degree of dependencies at medium and low levels. There were no statistical differences between psychologists and the general population (although there was a marginal difference in dependence on alcoholic beverages). It is important to emphasize that the subjective evaluation of the consumption of alcoholic beverages may not coincide with its actual consumption.

A limitation of this study is the fact that data collection lasted until the lockdown relief phase (August 2020), which can induce data bias. Another limitation is the reduced sample of psychologists, which is not representative of Portuguese psychologists. The low male response rate is common in most surveys (Cull et al., 2005) but in this study and specifically in the psychologists' sample, it was much higher than usually referred to. Finally, the fact that there are no more similar studies on this specific population, which is also a strength of the study, does not allow comparisons of the obtained results.

Conclusions

The present work provides an insight into the effect of the pandemic on psychologists in Portugal involved in the present study. The information acquired about health status, behaviors, attitudes, mood, sleep quality, physical exercise, nutrition, alcohol and tobacco consumption, and dependencies support and can guide the adoption of measures or the development of specific health promotion and prevention intervention plans for this professional group such as, for example, reinforcement of psychoeducation regarding sleep hygiene and the harmful effects of excessive use of traditional media, digital media and consumption (and possible addiction) of alcoholic beverages.

In addition, the results support the idea that the creation of privileged and direct channels of support, promoted and provided by both public institutions and the institution that regulates the activity of these professionals, may be of great interest as a way of acting in terms of promoting (and protecting) the mental health of psychologists.

Public Significance Statement

The present work provides an insight into the association of the pandemic with Portuguese psychologists' health behaviors, health-related attitudes, and health status.

There was a significant increase in the use of television, social networks, mobile phones, and gaming, during lockdown, namely among psychologists.

Tidying up the house, calling family and friends (sharing anxieties and concerns), resolving pending issues, gardening, and learning new skills, among other activities, appear to be protective factors during the pandemic period.

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