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Original article

Anxiety and sleep quality in a sample of Lebanese healthcare workers during the COVID-19 outbreak



Anxiété et qualité du sommeil dans un échantillon de personnels de santé au Liban pendant l'épidémie du Coronavirus

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ABSTRACT

A cross-sectional, survey based study was conducted in order to assess mental health outcomes among healthcare workers in a private university hospital involved in the COVID-19 response in Lebanon. The main objective was to quantify symptoms of anxiety and sleep quality using self-rating scales (the State-Trait Anxiety Inventory (STAI) and Pittsburgh Sleep Quality Index (PSQI) respectively), while identifying factors that might affect those symptoms. A total of 628 healthcare workers completed the survey; 409 (66.2%) were younger than 40 years, and 441 (71.4%) were women. Of all participants, 503 (81.4%) were nurses, 52 (8.4%) were physicians and 63 (10.2%) were residents. Registered nurses, residents, women, and younger participants presented higher scores on both scales than other categories of participants. Among factors related with COVID-19, those associated with higher scores were having relatives affected by the virus (22.2%), being excessively exposed to media (12.9%), and increasing the consumption of substances/alcohol (31.2%) during this period. Factors associated with higher risk of anxiety symptoms after multivariable logistic regression analysis were: female sex, young age, poor sleep quality, and living with elderly. Our findings contribute to the understanding of the psychological wellbeing of health care workers involved in the acute COVID-19 outbreak in Lebanon.

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RÉSUMÉ

Une étude transversale, a été menée afin d'évaluer l'impact de la pandémie du coronavirus sur le niveau d'anxiété et la qualité du sommeil du personnel hospitalier d'un hôpital universitaire privé impliqué dans la réponse contre la pandémie au Liban, tout en identifiant les facteurs qui pourraient affecter ces symptômes. L'évaluation s'est effectuée à l'aide de questionnaires auto-administrés; un auto-questionnaire qui inclut les données sociodémographiques, la nature du travail exercé à l'hôpital, des questions sur les facteurs affectant le niveau de stress, et des questions sur la consommation de substances. Des échelles d'auto-évaluation ont été utilisées; l'Inventaire d'anxiété d'État-Trait (STAI) pour le dépistage des symptômes anxieux, et l'indice de qualité du sommeil de Pittsburgh (PSQI) pour mesurer la qualité du sommeil. Un total de 628 personnels de santé a répondu au questionnaire. Parmi tous les participants, 503 (81,4 %) étaient des infirmiers/infirmières, 52 (8,4 %) des médecins et 63 (10,2 %) des internes. En ce qui concerne les caractéristiques des participants: 409 (66,2 %) avaient moins de 40 ans, 441 (71,4 %) étaient des

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femmes, 309 (55 %) étaient mariés, 333 (53,9 %) avaient un seul enfant, 428 (69,3 %) avaient un niveau universitaire, et 591 (95,6 %) ne présentaient pas une histoire psychiatrique. Les moyennes obtenues aux deux échelles étaient de 44,5 au STAI, et de 6,0 au PSQI. Parmi le total des participants, 61,5 % auront un score au STAI supérieur à 40, indiquant des symptômes anxieux modérés à sévères, et 48,4 % auront un score au PSQI supérieur à 5, indiquant une mauvaise qualité de sommeil. Les infirmiers/infirmières diplômés, les internes, les femmes et les participants plus jeunes présentent des scores significativement plus élevés au niveau des deux échelles que les autres catégories de participants. Les participants sans enfants, ceux ayant un niveau académique universitaire, et ceux ayant des antécédents psychiatriques présentent des scores significativement plus élevés uniquement en ce qui concerne la PSQI. Une proportion de 31,2 % de nos participants aura augmenté leur consommation d'alcool ou de substances (tabac, caféine, tranquillisants, cannabis ou autres). Parmi les facteurs liés à la COVID-19, le fait d'avoir des proches touchés par le virus (22,2 %), d'être excessivement exposé aux médias (12,9 %) et d'avoir augmenté la consommation de substances/alcool pendant la période de la pandémie (31,2 %) a été associé à des scores significativement plus élevés au niveau des deux échelles d'évaluation. Parmi les sources de stress liées à la pandémie rapportées, nous trouvons la peur d'être infecté ou d'infecter les autres dans 61,7 %, la peur que quelqu'un de leurs proches soit infecté des 45,6 %, la peur d'avoir un accès limité aux équipements médicaux dans 17 %, et la perte financière dans 16,3 %. Une analyse de régression logistique multivariée a permis d'identifier les facteurs suivants comme étant associés à un risque plus élevé de symptômes anxieux: sexe féminin, jeune âge, mauvaise qualité de sommeil et le fait de vivre avec des personnes âgées. La prévalence de symptômes anxieux et de troubles du sommeil dans notre étude s'avère supérieure à celles retrouvées dans la littérature, d'où la possibilité que nos résultats soient influencés de même par d'autres facteurs comme la crise socioéconomique que le Liban traverse. Par ailleurs, l'étude actuelle a été faite pendant une période où la pandémie était toujours considérée comme « contenue », ce qui peut expliquer l'absence de différence entre les soignants exposés directement (travaillant avec des personnes atteintes du virus) et ceux exposés indirectement. Nos résultats contribuent à la meilleure compréhension de l'état psychologique des professionnels de santé impliqués dans la réponse aiguë à la pandémie du coronavirus au Liban. Des études prospectives sont nécessaires afin d'évaluer le possible impact psychologique à long terme dans cette population.

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1. Introduction

An outbreak of a new coronavirus disease, COVID-19, was detected in mainland China in December 2019 [1]. On January 30, 2020, the World Health Organization (WHO) declared the global COVID-19 outbreak a public health emergency of international concern and announced on March 11 that it can be characterized as a pandemic [2].

In the midst of this global pandemic, international and local public health authorities are addressing the urgent need for immediate actions to care for patients and contain the Covid-19 outbreak. Nonetheless, the current crisis has a major impact on global mental health, with reported high rates of negative psychological consequences in the general population including fear, anger, anxiety, depression, insomnia and a reduction in life satisfaction [3–6].

These observations are consistent with the findings of previous research that reveal significant mental health burden during outbreaks of infection, such as the SARS [7–10], H1N1 [10,11] and Equine Influenza outbreaks [12]. Further, a recent review on the psychological impact of quarantine, suggests that post-traumatic stress symptoms, confusion, and anger can be considerable and long lasting [13].

Dealing with this crisis situation, frontline health care professionals are facing numerous challenges. Studies from previous infectious epidemics such as SARS, H1N1 and Ebola outbreaks show that such extraordinary public health crises have a substantive mental burden on health care workers [14–24].

These studies report a broad spectrum of psychological difficulties among healthcare workers (HCWs), including high rates of anxiety, depressive, and posttraumatic symptoms, as well as fatigue, high stress levels and sleep difficulties. Moreover, Wu and colleagues observed that exposure to a severe infectious outbreak can lead to alcohol abuse/dependence particularly among HCWs

that were quarantined or worked in high-risk wards [25]. Studies also show that psychological symptoms experienced by HCWs may develop or even worsen years after the outbreak [14,23,26].

Early studies suggest that not all HCWs are impacted equally during outbreaks. Nurses are reportedly the most affected in this group [20,21]. Other identified common risk factors that may contribute to the development of psychological distress in this population include: younger age [17], living with children [20], working in high risk environments (such as the ICU, emergency departments or isolations wards) and fear of spreading the virus [15,17,21–23], being socially rejected or stigmatized for working in a hospital [18,20,22], having been quarantined [14,18,25], or having a history of mood disorders [17].

Comparable to the SARS and MERS outbreaks, COVID-19 shares similar infectious and epidemiological characteristics as well as comparable psychological impact HCWs. This has been confirmed by the few studies that were done mainly in China after the COVID-19 outbreak. These studies show that HCWs, predominantly those with close contact with infected patients, are vulnerable to high risk of fear, insomnia, anxiety and depression [27–30].

Xiao and associates describe high levels of anxiety and stress in this population, that are directly related to sleep quality and social support [31].

In Lebanon, the government declared a state of general mobilization and health emergency on March 15th 2020, in an effort to contain the spread of the COVID-19 outbreak [32]. This health crisis is occurring in a country already struggling with economic, social and political instability.

A university medical hospital, was the first non-governmental hospital in Lebanon that quickly responded to the imposed emergency and got set to treat COVID-19 cases. An isolation ward as well as intensive care unit (ICU) beds were reserved for this purpose. In addition, a “Flu-clinic” was opened, as a separate part of the emergency department, for outpatient screening.

In this study, we assessed mental health outcomes among the above mentioned hospital staff during the COVID-19 outbreak in Lebanon. We aimed at quantifying symptoms of anxiety and sleep disturbance, while identifying factors that might affect those symptoms.

2. Methods

2.1. Study design

This study is a cross-sectional, hospital-based survey conducted at our hospital between April 1 and 22, 2020. The ethics committee of the hospital approved the study protocol.

2.2. Participants

This study included medical staff from different departments working at the hospital. Physicians, post-graduate residents, registered and practical nurses were invited to participate.

We distributed anonymous surveys along with explanatory letters to all registered and practical nurses present at the hospital during the period of the study. They were asked to return the completed form in a sealed envelope, for guaranteed confidentiality, to the supervisor of their unit. The researcher then collected the sealed envelopes.

Concerning physicians and residents, the same assessment tools were used, and they were sent to them as online anonymous forms.

2.3. Instruments

We used a self-administered survey that consisted of 3 main sections:

- a self-administered questionnaire that included questions about the following;
 - sociodemographic characteristics; sex, age, education level, marital status, number of children;
 - occupation and work history;
 - past psychiatric history;
 - potential stressful factors during the pandemic; working in COVID-19 units, being quarantined, having relatives infected or quarantined, living with children or elderly people, and media exposure related to the pandemic (via television/radio/newspapers/social networks);
 - impact of the pandemic on consumption patterns of the following substances: tobacco, alcohol, caffeine, anxiolytics, cannabis or other substances;
 - the participants' sources of stress regarding the pandemic and usual strategies used to reduce stress. Respondents could put multiple options to these questions.

2.3.1. The State-Trait Anxiety Inventory (STAI)

The STAI was developed by Spielberger to assess via a self-report scale the presence and severity of anxiety symptoms. It consists of two 20-item subscales; the State Anxiety Scale (S-Anxiety) and the Trait Anxiety Scale (T-Anxiety) [33,34].

In our study, we used the S-Anxiety subscale, which evaluates the current state of anxiety, asking subjects to report how they feel "right now, at this moment". Range of scores for each subtest is 20–80, the higher score indicating greater anxiety. Following the example of numerous authors [34], we used a threshold score of greater than 40 on the STAI (S-Anxiety) to identify the presence of moderate to severe anxiety symptoms.

2.3.2. The Pittsburgh Sleep Quality Index (PSQI)

The PSQI is a self-rated questionnaire which assesses, according to Buysse, sleep quality and sleep disturbances over a 1-month time interval [35]. Higher scores indicate worse sleep quality. A cut-off score of > 5 is used to distinguish poor sleepers from good sleepers [35].

These scales were chosen for being self-administered, widely used measures of anxiety and sleep quality. Also, for being validated in French [36,37], the main language used by the hospital employees.

The questionnaire was pilot-tested among a sample of HCWs to evaluate its face validity.

2.4. Statistical analysis

Data analysis was performed using SPSS statistical software version 21.0 (IBM Corp). The significance level was set at $\alpha = .05$, and all tests were 2-tailed.

Two-sample t test was used for continuous variables.

One-way ANOVA with post hoc Tukey examination between different groups was used to investigate differences.

Pearson's linear correlations of anxiety and sleep symptoms were made.

Qualitative variables were described by frequency distribution, while quantitative variables were described by the mean and standard deviation.

Multivariable logistic regression analysis was performed to identify factors associated with anxiety and altered sleep quality. The model was assessed using Nagelkerke R Square, and its adequacy assessed with the Hosmer-Lemeshow statistic. Adjusted odds ratio (OR) and a 95% confidence interval (CI) are reported.

3. Results

3.1. Participants' characteristics

In total, 618 HCWs completed the survey, including 52 physicians, 63 residents and 503 nurses (6.1% head nurses, 41.3% registered nurses and 34% practical nurses). The response rate for physicians, residents and nurses were 19.4%, 63% and 84.2% respectively.

The participants tended to be females, aged less than 30 years, in a relationship or married, with no children, and have a university educational level, as shown in Table 1. The majority of participants stated having no psychiatric history (Table 1).

3.2. Anxiety and sleep quality outcomes

The mean (SD) scores on the STAI for anxiety, and the PSQI for sleep quality for all respondents were 44.5 (12.2), and 6.0 (3.7), respectively.

Of all participants, 61.5% had STAI scores higher than 40, which indicates a moderate to severe anxiety symptoms, and 48.4% were "poor sleepers" as they got PSQI scores higher than 5.

3.3. Correlations to sociodemographic characteristics

Sex, age and occupational status were the three variables where a significant difference was observed in both the anxiety and sleep quality scores.

In fact, women had significantly higher scores compared with men in both scales ($P < 0.001$ for STAI and PSQI). Post hoc test showed that participants who were aged more than 50 had lower anxiety and sleep quality scores than those aged between 41 and 50 and significantly lower scores than those younger than

Table 1
Sociodemographic characteristics and psychiatric history.

Characteristic	Number (n = 618)	Percentage (%)
Sex		
Male	177	28.6
Female	441	71.4
Age (years)		
< 30	262	42.4
31–40	147	23.8
41–50	128	20.7
> 50	81	13.1
Marital status		
Single	278	45.0
In a relationship/married	309	55.0
Divorced	25	4.0
Widowed	6	1.0
Number of children		
0	333	53.9
1	56	9.1
2	144	23.3
3 or more	85	13.8
Education level		
Elementary school	16	2.6
Middle school	78	12.6
High school	96	15.5
University studies	428	69.3
Occupational status		
Physician	52	8.4
Resident	63	10.2
Head nurse	38	6.1
Registered nurse	255	41.3
Practical nurse	210	34.0
Years of experience (years)		
< 5	190	30.7
5–10	133	21.5
10–20	154	24.9
> 20	141	22.8
Psychiatric history		
Yes	27	4.4
No	591	95.6

40 ($P < 0.001$ (STAI) and $P = 0.005$ (PSQI)). Concerning the occupational status, post hoc test showed that residents and registered nurses had greater scores on both scales; residents had significantly higher anxiety scores than physicians ($P = 0.001$) and higher sleep disturbances scores than practical nurses ($P = 0.016$). Registered nurses compared to physicians and practical nurses had significantly higher anxiety ($P < 0.001$ and $P = 0.034$, respectively) and sleep quality scores ($P = 0.003$ and $P < 0.001$, respectively) (Table 2).

3.4. Substance use patterns

During the pandemic, 31.2% of participants reported an increase in the consumption patterns of one or more of the substances listed in Table 3.

3.5. Correlations to COVID-19 related variables characteristics

In Table 4, we represent variables related to the pandemic and their influence on STAI and PSQI scores.

Participants who reported having relatives or friends who got infected or quarantined had higher anxiety and sleep disturbances scores than those who had not ($P = 0.013$ for STAI and $P = 0.019$ for PSQI). Post hoc test showed that participants who were exposed to COVID-19 related media for more than 2 hours per day, were significantly more anxious ($P = 0.003$) and had poorer sleep quality ($P = 0.011$) than those who were exposed to media less than 2 hours per day and to those who were not exposed at all. The increase in consumption patterns of alcohol and each of the substances listed in Table 3 except “other psychoactive drugs” was significantly correlated with higher scores in both scales ($P < 0.001$).

Scores of participants working in COVID-19 units were not significantly higher than those who were working in ordinary units. Likewise, participants who were quarantined or living with children/elderly did not show significantly higher scores than those who were not (Table 4).

A Pearson correlation was done to determine the relationship between STAI and PSQI scores. A statistically significant positive correlation was found between the two scores ($r = .459$, $P < 0.001$).

3.6. Sources of stress and coping strategies

Participants' answers to two multiple choice questions on sources of fear/stress related to the pandemic and strategies normally used to deal with stress are summarized in Tables 5 and 6. Greater number of stress sources was positively correlated to higher scores on anxiety and sleep disturbances ($r = 0.316$, $P < 0.001$; $r = 0.129$, $P = 0.001$, respectively). Further, participants were asked whether they were still able to practice the strategies they normally use to deal with stress. Those who were still able to do it (60.4%) had lower anxiety and significantly lower sleep disturbances scores than those who were not ($P = 0.096$ for STAI and $P = 0.011$ for PSQI).

3.7. Logistic regression analyses

Multiple logistic regression analyses showed that, after controlling for covariates, female sex (OR 3.33, 95% CI: 2.00–5.53), young age (OR 1.55, 95% CI: 1.05–2.29), poor sleep (OR 3.23, 95% CI: 2.10–4.95) quality, as well as living with elderly (OR 1.65, 95% CI: 1.02–2.65), were associated with higher risk of presenting moderate to severe anxiety symptoms during the COVID-19 outbreak (Table 7).

4. Discussion

This cross-sectional survey examined mental health outcomes during the COVID-19 outbreak among a sample of HCWs from a private university hospital in Lebanon.

Findings from this study revealed that the anxiety level of HCWs during this period was high with a mean STAI score of 44.5. Besides their sleep quality was low with a mean PSQI score of 6.0. Overall, 61.5%, and 48.4% of all responders reported moderate to severe symptoms of anxiety and sleep disturbances, respectively.

To our knowledge, this is the first study to examine HCWs' mental health in Lebanon during the current pandemic. The prevalence of anxiety and sleep disturbances symptoms found in our sample was greater than that found in other samples of HCWs during infectious outbreaks [17,27,28]. High rates of anxiety and sleep difficulties were previously reported by studies done in different samples of the Lebanese general population [38,39]. In fact, the high scores of anxiety and sleep disturbances found in our study may also be explained by the economic, social and political instability that the country has been facing during the past 6 months. Therefore, with the COVID-19 outbreak, the country is undergoing a “two-in-one crisis” [40].

Moreover, the high rates found in your study can be explained by the high risk of burnout and emotional exhaustion in this population [41–43].

Anxiety and sleep difficulties are strongly correlated as shown in other studies [31]; anxiety can negatively impact the quality of sleep, while poor sleep negatively affects anxiety. Accordingly, it is essential to advise HCWs on the importance of maintaining a good sleep hygiene, and to provide them with the basic recommendations on this subject.

Similar to findings in the literature, women, participants with intermediate occupational status such as registered nurses and residents, younger responders (aged less than 40), and those who

Table 2
Scores of Anxiety and Sleep quality correlated to different sociodemographic characteristics.

Characteristic	No. (%)	STAI		PSQI	
		Scale mean (SD)	P-value	Scale mean (SD)	P-value
Overall	618 (100)	44.5 (12.2)		6.0 (3.7)	
Sex					
Male	177 (28.6)	40.1 (13.2)	<0.001	4.8 (3.6)	<0.001
Female	441 (71.4)	46.3 (11.4)		6.5 (3.7)	
Age (years)					
<30	262 (42.4)	45.8 (11.9)	<0.001	6.6 (3.7)	0.005
31–40	147 (23.8)	46.0 (13.1)		6.0 (4.0)	
41–50	128 (20.7)	43.3 (11.9)		5.4 (3.5)	
>50	81 (13.1)	39.5 (10.7)		5.2 (3.7)	
Number of children					
0	333 (53.9)	44.9 (11.9)	0.513	6.4 (3.6)	0.007
1	56 (9.1)	44.3 (11.8)		6.1 (3.8)	
2	144 (23.3)	44.8 (13.4)		5.3 (3.6)	
3 or more	85 (13.8)	42.7 (11.9)		5.4 (4.2)	
Education level					
Elementary school	16 (2.6)	43.3 (15.4)	0.325	3.8 (2.1)	<0.001
Middle school	78 (12.6)	44.1 (14.8)		5.1 (4.0)	
High school	96 (15.5)	42.6 (14.6)		4.9 (3.9)	
University studies	428 (69.3)	45.0 (10.9)		6.5 (3.6)	
Occupational status					
Physician	52 (8.4)	38.4 (10.7)	<0.001	4.8 (3.8)	<0.001
Resident	63 (10.2)	47.3 (12.2)		6.7 (3.2)	
Head nurse	38 (6.1)	41.8 (10.7)		5.9 (3.5)	
Registered nurse	255 (41.3)	46.5 (9.9)		6.9 (3.6)	
Practical nurse	210 (34)	43.2 (14.5)		5.0 (3.9)	
Psychiatric history					
Yes	27 (4.4)	47.1 (13.3)	0.252	8.2 (4.3)	0.002
No	591 (95.6)	44.4 (12.2)		5.9 (3.7)	
No	425 (68.8)	41.7 (11.4)		5.2 (3.4)	

STAI: State-Trait Anxiety Inventory; PSQI: Pittsburgh Sleep Quality Index.

Table 3
Change in consumption patterns during the COVID-19 pandemic.

Substance	Increased (%)	Unchanged (%)
Any substance	31.2	68.8
Tobacco	12.8	87.2
Caffeine	22.8	77.2
Alcohol	5.3	94.7
Tranquilizers/Hypnotics	3.2	96.8
Cannabis	1.0	99.0
Other psychoactive substances/drugs	0.3	99.7

had relatives or friends infected/quarantined reported more severe symptoms on both measurements [17,21,26,27]. A high level of anxiety among registered nurses and residents could be attributed to their closer and more frequent contact with patients, and their longer working schedules compared with other HCWs.

In particular, findings of our study emphasize the necessity to warrant the appropriate attention regarding women' mental health and well-being; women are known to be affected to a greater extent than men by depression, anxiety and psychological distress [44,45].

Consistent with previous findings, sources of fear/distress in our sample of HCWs included: fear of getting infected or spreading the virus, health of relatives and friends, limited access to medical equipment, and financial losses [21,24,27].

Interestingly, the most common strategy used to deal with distress was praying. This finding can be interpreted in the light of a cultural construction of health, especially in the highly religious and multifunctional context of Lebanon [46]. In addition, strategies described in other studies such as seeking social support and doing physical activity were also reported among our participants [47].

Remarkably, working directly with COVID-19 patients and being quarantined were not predictive of higher scores which contradicts findings from the literature [16,18,48]. This may be justified by three facts. First, high scores can be explained not only by the pandemic, but also by the economic and socio-political crisis. Second, to date, the outbreak in Lebanon is considered to be "contained" according to the reports of the ministry of public health [32]. Third, at the hospital where this study was conducted, nurses were given the choice to work or not in COVID-19 units.

There are few studies reporting the effect that can similar outbreaks have on alcohol and substance use behavior among HCWs. One study described a relationship between exposure to the SARS outbreak and alcohol abuse/dependence among hospital employees 3 years later [25]. In our study, 18% of participants considered that "having a drink/smoking/taking a tranquilizer" were strategies they use to adapt with stress. Also, 31.2% of hospital staff reported having increased their consumption of alcohol, tobacco, caffeine, tranquilizers, cannabis or other drugs, during the current situation. These participants had higher anxiety and lower sleep quality scores. However, these results were not found after multivariate logistic regression. Comorbidity of substance use disorders with anxiety and sleep disorders is known and well described in the literature [49,50]. Seeking alcohol/substances as a coping strategy is harmful and can worsen anxiety and sleep disturbances symptoms. Raising awareness on this issue among HCWs is much needed, particularly during stressful periods such as infectious outbreaks.

Another interesting finding in our study was the impact of COVID-19 related media exposure on anxiety and sleep quality. Participants who followed the news concerning the Coronavirus pandemic via television/radio/newspapers/social networks for more than 2 hours per day were found to be more anxious and have poorer sleep quality than those who did not. Mental health

Table 4
Scores of Anxiety and Sleep quality correlated to the COVID-19 related variables.

Variable	Number (%)	STAI		PSQI	
		Scale mean (SD)	P-value	Scale mean (SD)	P-value
Department					
COVID-19 unit	256 (41.4)	44.6 (12.5)	0.898	6.1 (4.1)	0.519
Ordinary unit	362 (58.6)	44.4 (12.1)		5.9 (3.5)	
Any quarantining					
Yes	84 (13.6)	45.8 (13.9)	0.311	6.4 (4.4)	0.265
No	534 (86.4)	44.3 (11.9)		5.9 (3.6)	
Relative or friend got quarantined or infected					
Yes	137 (22.2)	46.8 (12.2)	0.013	6.7 (4.2)	0.019
No	481 (77.8)	43.8 (12.2)		5.8 (3.6)	
Living with children					
Yes	285 (46.1)	44.4 (12.3)	0.874	5.7 (3.8)	0.100
No	333 (53.9)	44.6 (12.2)		6.28 (3.7)	
Living with elderly					
Yes	177 (28.6)	45.4 (12.6)	0.236	6.1 (4.0)	0.579
No	441 (71.4)	44.1 (12.1)		5.9 (3.7)	
Media exposure					
> 2 hours per day	179 (29)	46.9 (12.9)	0.003	6.5 (4.3)	0.011
< 2 hours per day	401 (64.9)	43.8 (11.5)		5.9 (3.4)	
None	38 (6.1)	40.6 (14.4)		4.5 (3.6)	
Increase in consumption patterns of any substances or alcohol ^a					
Yes	193 (31.2)	50.7 (11.8)	<0.001	7.8 (4.0)	<0.001
No	425 (68.8)	41.7 (11.4)		5.2 (3.4)	

STAI: State-Trait Anxiety Inventory; PSQI: Pittsburgh Sleep Quality Index.

^a Listed in Table 3.

Table 5
Reported sources of fear/distress related to the COVID-19 pandemic.

Source of fear/stress	Prevalence (%)
Fear of getting infected and infecting others	61.7
Fear that someone I know gets infected	45.6
Having limited access to medical equipment	17
Financial losses	16.3
Being quarantined	7.9
Being stigmatized	7.8
None	12.8
Other	3.2

experts have reported the negative impact of excessive media exposure on anxiety and obsessive symptoms during the covid-19 crisis [51–53]. In our study, it was not demonstrated to be associated with severe anxiety symptoms after multiple logistic regression analysis. However, it is essential to acknowledge the damaging impact that constant exposure to negative news may have on our mental health. Therefore, staying up to date on main local and national news is important but should not be excessive, as recommended by the CDC [54].

As for mental health care facilities and support that were made available to these HCW in Lebanon, in this particular hospital, psychological support was offered to HCWs by the psychiatry department, whether through support groups or individual care. It should be noted that along with the questionnaire distributed at the beginning, an explanatory leaflet was also distributed explaining

Table 6
Strategies normally used to deal with stress.

Strategies used to deal with stress	Prevalence (%)
Praying	57.4
Watching TV/going to the movies	46.9
Doing a physical activity	38.9
Going out with friends	33.5
Reading a book	19.1
Having a drink/smoking/taking a tranquilizer	18
Taking regular breaks at work	11.7
Meditation/Yoga	3.4
None	5.7
Other	0.6

Table 7
Multiple logistic regression analysis of moderate to severe anxiety scores.

Variables	OR	95% CI	P-value
Female sex	3.33	2.00–5.53	<0.001
Poor sleep	3.23	2.10–4.95	<0.001
Young age	1.55	1.05–2.29	0.026
Living with elderly	1.65	1.02–2.65	0.039

OR: multivariate adjusted odds ratio; 95% CI: 95% confidence interval. Model's Nagelkerke R square = 0.39. Hosmer-Lemeshow P-value = 0.96.

the purpose of the study and giving the contact details of the people/services to refer to if severe anxiety symptoms were present (these people would benefit from free psychiatric consultations if they desire so).

On a national level, few measures have been implemented. Due to economic crisis in the country, financial compensation or crisis premium were unlikely during this period. However, the National Mental Health Programme at the Ministry of Public Health has been responding efficiently and proactively through the launching of a number of awareness campaigns addressing how to cope during the sanitary crisis [55]. In addition, the order of nurses in Lebanon, along with a Non-Governmental Organization (Embrace) provided mental health sessions for nurses, sharing helpful resources with the ones in need [56].

5. Limitations

Our study had several limitations.

First, it is a cross-sectional study, and conclusive causal relationships may not be established.

Second, the use of subjective self-reported questionnaires might have lacked the validity of face-to-face interviews.

Other limitations were a moderate response rate, which indicates that selection/response bias may still exist particularly if non-responders were too stressed to participate or did not feel concerned by this study.

Finally, caution should be practiced in generalizing the results to all medical staff in Lebanon, since it was done in one general hospital.

6. Conclusion

In summary, our findings contribute to the understanding of the psychological well-being of HCWs involved in the acute COVID-19 outbreak in Lebanon. Detecting the psychological impact among this population in the acute phase is crucial in order to implement the required assistance measures and encourage adaptive coping strategies. Prospective studies are necessary to assess the potential long-term psychological responses in this population.

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Disclosure of interest

The authors declare that they have no competing interest.

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