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Psychological impact of covid-19 pandemic in ICU medical professionals

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Résumé

Background: The declaration of COVID-19 as a pandemic had led to announce the state of emergency by the Moroccan government, with an important mobilization of health care workers that were daily exposed to considerable pressure. Aim: The aim of this study is to investigate the prevalence of anxiety and stress symptoms among these workers, at a distance of the pandemic. Material and methods: a cross-sectional study was conducted in intensive care units of Ibn Rochd University Hospital during a period of six months, among doctors, nurses, and interns that have worked in Intensive care unit (ICU), two years after the pandemic. Results: the sample included 60 health workers, mean age was 27 years old [22, 36], sex ratio=1, 5; 23% suffered from certain anxiety and 15% of certain depression according to the HADS. As for stress symptoms, 28% had an acute stress state, while 15% had PTSD. The GSAQ found that 86% had at least one sleep disorder. The highest scores of psychiatric symptoms were associated with low income, lack of social support, female gender and within nurses. Conclusion: ICU professionals suffer considerable distress during stressful conditions such as pandemics. Effective prevention and support strategies are important to provide the necessary care.

Mots-clés : Covid-19; pandemic; health care workers; intensive care unit; stress symptoms; anxiety.

Introduction :

COVID-19 was declared a pandemic by the World Health Organization in March 2020. This pandemic infected more than 250 million people and caused over 5 million deaths worldwide. Intensive care unit (ICU) workers across the globe stepped up to care for patients despite fatigue, risks to themselves and their families, shortages of personal protective equipment (PPE), and rapidly changing policies (1). However, the first case of contamination by the virus in Morocco had already occurred earlier that same month, placing the country on high alert. As a result, the rapid spread exceeded the capacity of many ICUs and generated ethical dilemmas related to triage and end-of-life care (2). Consequently, the Moroccan government declared a state of emergency.

In the months that followed, the management of the public health system took a drastic turn, requiring significant mobilization of health care workers who were exposed daily to considerable pressure while carrying out their duties. They experienced a wide range of emotions, including fears for their own safety and that of their families. Moreover, the COVID-19 pandemic added new stressors to pre-existing occupational stress, along with substantial physical and moral challenges, particularly for ICU staff.

Accordingly, a high prevalence of anxiety, depression, and post-traumatic stress among intensive care professionals has been reported in various studies around the world, with functional and personal impacts on health care workers who are among the most vulnerable.

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In fact, ICUs are among the hospital departments where moral distress has been most extensively studied. Situations that contribute to this emotional state include ethical dilemmas involving critically ill patients, the use of advanced technology and life-support systems, and cases requiring withdrawal or withholding of treatment (3).

In this regard, numerous studies worldwide have highlighted a significant prevalence of anxiety, depression, and post-traumatic stress among healthcare workers in intensive care units, underscoring both functional and personal impacts on those most vulnerable. However most of the studies addressed these symptoms during the pandemic; we intend to evaluate them in distanced period of time after the end of the pandemic (4–6). Nonetheless, there remains a shortage of studies assessing and determining the psychological impact of COVID-19 on this specific population of healthcare workers in intensive care units in Morocco.

The main aim of this study is to investigate the prevalence of depressive symptoms, anxiety, sleep disorders and stress, among healthcare workers in the intensive care unit (ICU) of the Ibn Rochd University Hospital of Casablanca during the   pandemic.
We also sought to describe the demographic characteristics of this population, as well as the personal and professional risk factors that could precipitate and predict these psychiatric disorders.

Material and methods

For this, we conducted a cross-sectional study in intensive care units of Ibn Rochd University Hospital, during a period of six months in 2023, a year after the end of the pandemic.

Quantitative variables were described by means and standard deviation well as qualitative variables were described by percentages.

Statistical analysis was conducted in SPSS with measures of associations when indicated

A Confidence interval of 95% was considered

Inclusion criteria:

◆ Doctors, nurses, and interns, that have worked in ICU

◆ At least 6 months during the pandemic peak

Exclusion criteria:

◆ The staff that refused to enroll in the study

We evaluated substance use, and possible risk factors such as low income, gender, lack of social support, and mental vulnerability.

We used self-administered validated screening scales *(refer to Annex)* through an online survey containing:

IES-R: impact of events scale revised for post-traumatic stress disorder that consists of 22 items

GSAQ: global sleep assessment scale for sleep disturbances

As well as the HADS: Hospital anxiety and depression scale that consists of 14 items of evaluation

Results

The final sample consisted of 60 health workers. 12 others had refused to answer the questionnaire. The mean age of the sample was 27 years old [22, 36], the sex ratio=1, 5.

In this study, seniority and monthly income were categorized as shown in *table 1*.

Table 1 socio demographic characteristics:

N=60		Mean	Number	%	
Age		27 ,4 YO SD (2,9)			
Gender	Males		36	60	
	Females		24	40	
Status	Single		46	76,7	
	In a relationship		14	23,4	
Residence	Awayfrom home		7	11,7	
	Roommate		8	13,3	
	Family/Couple		45	75	
Seniority	<1an		15	25	
	1-5 years		31	51,7	
	>5 years		14	23,3	
Monthlyincome	<3500		33	55	
	3500-7000		16	26,7	
	>7000		11	18,3	
Children	Yes / No		3	5	(1-2)

1. Medical background and substance use (table 2):

In this study, 72% had previously experienced SARS-Cov2 infection, and 20% had family history or suffered from mental health issues, mostly anxiety or bipolar disorder.

Substance use was also significant, second highest being alcohol in 30% of participants

Within the medical staff, 23% suffered from certain anxiety and 15% of certain depression according to the HADS. As for stress symptoms, 28% had an acute stress state, while as 15% had PTSD. The GSAQ found that 86% of the sample had at least one sleep disorder, the most frequent being trouble in sleeping. The highest scores of psychiatric symptoms were associated with low income, lack of social support, female gender and within nurses.

Table 2 medical background and substance use

Medical background		N	%
Vaccination status	Yes	60	100
COVID-19 Infection	Yes	43	71,7
	No	17	28,3
Clinicalseverity	Mildsymptoms	42	97,7
	Moderatesymptoms	1	2,3
Sequelea	Yes	10	23
	No	33	76,7
History of mental illness	Personnal	7	11,6
	Family	12	20
Type of mental illness	Personnal history of anxiety disorder	5	8
	Personnal history of depressive disorder	2	3
	Family history of bipolar disorder	6	10
	Family history of psychotic disorder	3	5
Substance use	Tobacco	20	33
	Cannabis	10	16,6
	Alcohol	18	30
	Psychotropics	5	8

2. Mental state evaluation (table 3):

Among the participants that scored in the HADS: 23% had certain anxiety symptoms while as 15% had certain depressive symptoms

52 participants were positive to the global sleep assessment scale, of which 38% had mild to moderate symptoms, while 27% had continuous disorders such as difficulty initiating or maintaining sleep; shift workers disease and activity limitation due to inadequate sleep, 43% were positive to the Impact of events of which 15% had PTSD symptoms.

1. <u>Gender:</u> (*figure 1*)

Regarding gender: women scored higher in post-traumatic stress symptoms, whereas the difference in scores of anxiety and depression was not statistically significant
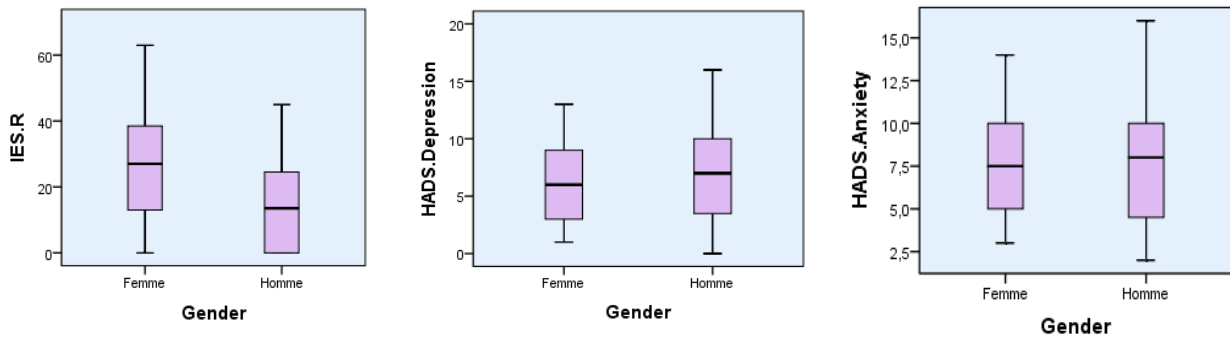

Figure1 Score of IES-R and HADS by gender

2. <u>Age categories:</u> (*figure 2*)

The age category of 25 to 30 years old scored highest in anxiety symptoms with a mean of 8 (SD=3, 9)

Whereas the category of 30 years old scored higher on the depressive symptoms: mean of 7 (SD=3, 7)

The professionals aged under 25 had the highest scores of PTS with a mean score of 27 (SD=7, 5)
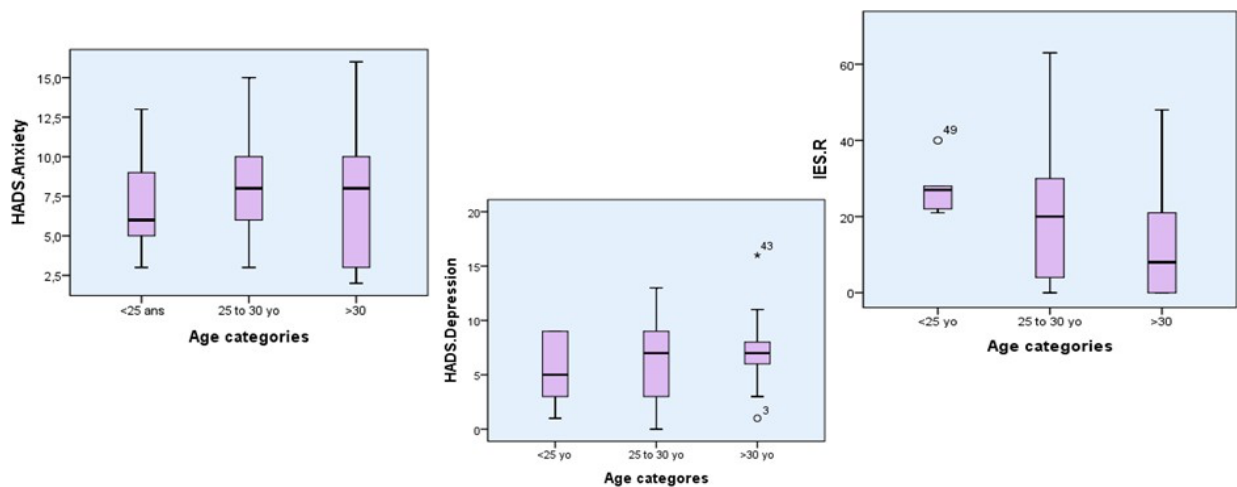

Figure 2 Distribution of HADS-Anxiety, HADS-Depression, and IES-R Scores According to Age Categories

3. <u>Seniority and monthly income:</u> (*figure 3*)

Professionals who had less than 1 year of work experience had the highest scores of post-traumatic stress, whereas workers of 5 years and more of experience had higher anxiety scores.

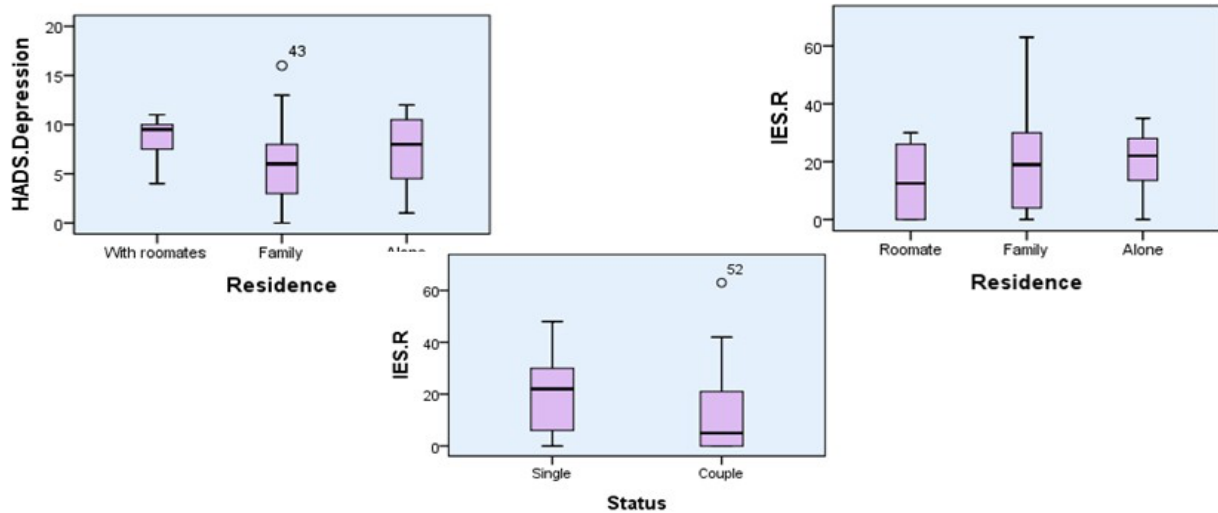Professionals with the lowest salaries scored the most in the IES-R

Figure 3 Distribution of HADS and IES-R Scores According to Seniority (left) and Monthly Income (right)

4. Residence and status: (*figure 4*)

Professionals living with their families had lower scores of depression

Those living alone as well as the professionals who were single scored the most in the post traumatic symptoms scale with a mean score of 22 (SD=12) and 20 (SD=14) respectively

Nurses had scored more in the IES-R scale with a mean of 26 (SD=12) Versus 17 (SD=15) in doctors
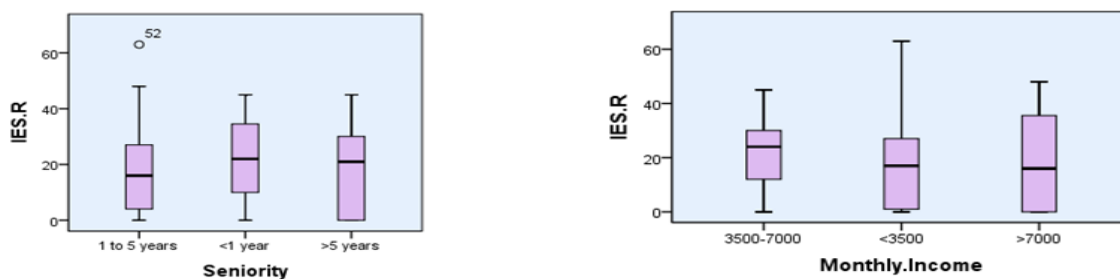

Figure 4 HADS and IES-R Scores According to Residence and Marital Status

5. Sleep disturbances and stress symptoms:

Sleep disturbances were associated to stress symptoms (*figure 5*)

Nurses had scored more in the IES-R scale with a mean of 26 (SD=12) Versus 17 (SD=15) in doctors

Participants who had a history of anxiety disorders scored higher in the impact of events scale.
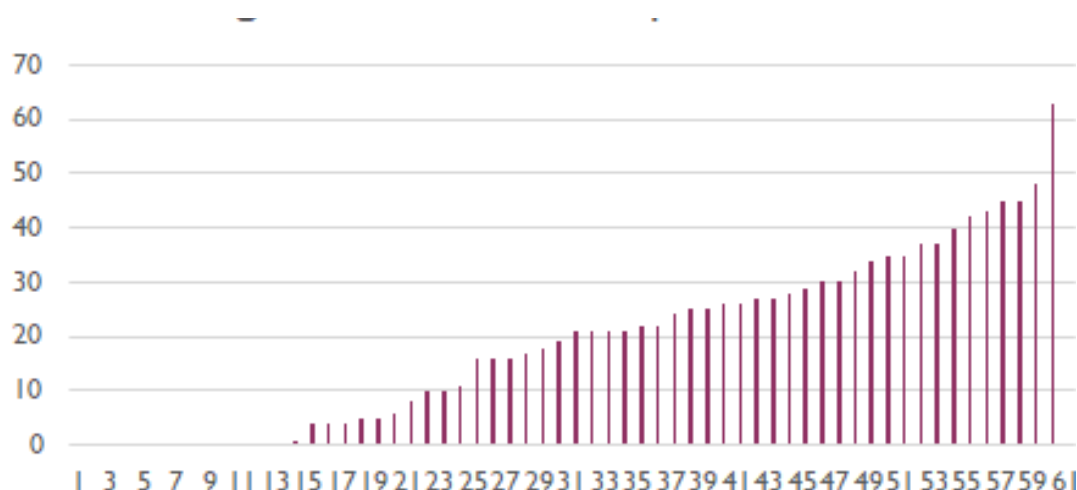

Figure 5 IES-R and Sleep Disturbance

Discussion

Generally recognized for their emotional resilience, health care workers must now face additional layers of responsibilities and mental and physical hardships(7). Targeted individual and organizational strategies for mental health and overall wellness for health care workers are critical for these courageous individuals. Based on the narrative review of the literature, we believe the following are necessary strategies for health care workers' wellness provided in the Table 4 (7).

Table 4 Strategies for healthcare worker wellness

1. Immediate and individualized access to mental health resources.
2. Short-term and long-term individualized wellness and mental health interventions to address the physical and emotional tolls of COVID-19.
3. Individual AND organizational strategies to optimize wellness for healthcare providers in areas of nutrition, exercise, mindfulness, sleep quality, and reducing burnout.
4. Quality, accessible PPE for all HCWs to provide security and reduce likelihood of infection for themselves and their loved ones.
5. Opportunities to research and implement telehealth in a variety of settings to limit exposure to infection.
6. Reduce stigma on mental health symptoms and the psychological impact of significant stressful events within HCWs.
7. Development of new HCW community groups and encouragement of participation to allow connections and reduce feelings of isolation.

In addition, the increase in work hour and work intensity leads to the poor mental health of medical staff. This result is consistent with a growing literature showing that working longer hours each day is associated with significantly greater stress-related symptoms of medical staff, such as headache, and gastrointestinal upset (8). *Table 5* shows that scores of anxiety and perceived stress were approaching the ones found in our study; with a score ranging from 32 to 40% in acute stress disorder and from 15 to 40% in PTSD according to the similar studies (9–16) .

Table 5 Results of test scores in similar studies

Our study	• HADS • IES-R • GSAQ	ASD: 28% PTSD: 15% Total: 43%	23%	15%	65%
Sanghera J and al, UK, 2020 (9). Systematicreview (44 studies)	• GAD-7, CIM10	ASD:32% PTSD : 36%	35%	45%	36%
Serrano-Ripoll MJ, Spain,2020 (10). Systematic review and meta-analysis: (117)	Non specified	ASD:40% PTSD: 15%	30%	24%	-
Altmayer et al, France 2021 (11). Cross-sectionnal (65)	• HADS, • PTSD checklist • DSM V	PTSD: 16%	19%	9%	-
Liang et al, China 2019 (12). Cross-sectional (899)	• PHQ-9 • GAD-7	-	13%	23%	10%
Zhang et al, China 2020 (8). Cross-sectional (524)	• GAD-7 • ISI (insomnias everity index)	-	41%	31%	39%
Ezzat et al, UK 2021 (2). Cohortin 7 countries (515)	• PHQ-9	ESPT: 17-35%		6-49%	60-86%

Greenberg et al, UK, 2021 (13). Cross-sectionnal 709 participants	• PHQ-9	PTSD : 40%	Severe: 11%	Severe: 6%	-
Poncelet and al, France 2021 (14). Prospective (218)	Percieved stress scale (PSS)	Prevalence of hight stress 9%	-	-	-
Binnie A and al, Canada, 2021 (15). Cohort (310)	• GHQ-12	64,5%>3 in GHQ	-	-	-
Pestana and al, Brasil (16). 2022 Cross-sectionnal study (376)	IES-R (impact of events scale revised)	PTSD: 33,8%	-	-	-

Anxiety ranged from 13 to 41% VS 23% in our study, depression from 9 to 49% VS 15% in our findings, as for sleep disturbances: they ranged from 10 to 86% VS 65% in our study.

We can see those cross-sectional studies across UK (2), and Brazil had higher PTSD scores than our study, ranging from 33 to 40% (16).

To sum up: Highest scores in IES-R were observed in nurse staff, female gender, participants aged<25, with less work experience, and low income; whereas more anxiety was observed in seniors and age category between 25 and 30. In the same perspective, the cohort of Ezzat and al, found that gender and occupation were associated with the outcome: female, junior and senior residents had increased risk (2). In addition, a Turkish cross-sectional study found that professionals aged 25 and under had higher anxiety scores, but the sleep quality in nurses was higher (3). A Canadian cohort study, conducted on 310 professionals found that psychological distress exceeded 65% in female workers and nurse staff (15,17).

In another hand, a Brazilian systematic review that explored the association between history of mental illness, living away from home and perceived stress found no statistically significant results (16). According to a multicenter study, Caillet and al found that the fear of being infected, inability to rest, difficulties in caring for loved ones, managing negative emotions, and participating in end-of-life decisions could potentiate psychological distress; this psychological distress was found to be highest among nurse staff and female workers (17).

Moreover, an Italian study conducted during the acute phase of the pandemic, suggested strategies aiming to promote psychological wellbeing among ICU professionals, by describing their needs through a survey (1).

The results in staff interventions: aimed to promote safety, self-efficacy and a sense of belonging, restore calmness, normalize acute reactions, and maintain mental openness. Whereas, the results in family interventions: aimed to contain and legitimize emotions, enhance preexisting resources, integrate the event into a biographical narration, preserve the relationship with the patient and facilitate the elaboration of grief.

Regarding the prevention of burnout in these healthcare workers, CBT (cognitive behavioral therapy) was found to be effective, especially in stressful contexts other than that of the COVID-19 pandemic (18) . Moreover, there is evidence of

the effectiveness of CBT in the prevention of a number of psychiatric disorders in at-risk individuals, such as PTSD and depression (19,20). Despite a growing interest in the field of web-based psychological interventions, internet-based CBT remains underdeveloped (20,21), and, to our knowledge, internet-based CBT programs specifically designed to address stress related conditions in healthcare workers are lacking (22).

Limitations

Our study had certain limitations: first the sample size that was small and thus will make it difficult to conduct conclusions that are applicable to the population

And second, the reporting bias because the questionnaire was conducted online and the participants that answered were more likely the most suffering

Conclusion :

In summary, our findings suggest that frontline medical staff and the general public widely experience symptoms of depression, anxiety, and insomnia. The severity was higher among the medical staff than that in the general public even after the end of the pandemic. Pandemics have negative social, economic and psychological effects on the population. Frontline medical staff can suffer considerable psychosocial distress during stressful conditions. The burden on mental health is impairing. Effective prevention and support strategies should be set up to manage the most vulnerable and provide the necessary care.

Conformité aux normes éthiques

Déclaration de conflit d'intérêts
Aucun conflits d'intérêts à déclarer.

Déclaration d'approbation éthique
Le présent travail de recherche ne contient aucune étude réalisée sur des sujets humains ou animaux par aucun des auteurs.

Déclaration de consentement éclairé
Le consentement éclairé a été obtenu de tous les participants individuels inclus dans l'étude.

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