

PSYCHOLOGICAL SITUATION OF LIBYAN HEALTHCARE WORKERS DURING THE COVID-19 EPIDEMIC

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Abstract: **Objective:** Healthcare workers, particularly those working in departments that provide care for patients with coronavirus disease 2019 (COVID-19), are at a higher risk of this contagious disease than those who work in other departments. Healthcare workers fighting against the coronavirus disease 2019 (COVID-19) pandemic are under tremendous pressure, which puts them at an increased risk of developing psychological problems. The aim of this study was to assess the psychological status of healthcare workers during the COVID-19 outbreak in Libya. **Methods:** A cross-sectional, web-based survey using a self-administered questionnaire was conducted in 2020 among healthcare workers during the COVID-19 pandemic. Psychological problems were assessed using the Generalized Anxiety Disorder Scale, Patient Health Questionnaire and Insomnia Severity Index. **Results:** The prevalence of symptoms of anxiety, depression, and insomnia in healthcare workers during the COVID-19 pandemic in Libya was 30.1%, 31.9% and 18.9% respectively. The Psychological impact of COVID-19 score of participants was mild among Libyan healthcare workers. **Conclusion:** Psychological problems are prevalent among healthcare workers during the COVID-19 pandemic. Receiving negative information and participating in frontline work appear to be important risk factors for psychological problems. The mental health of various healthcare workers must be protected during the COVID-19 pandemic through timely interventions and correct responses to information. **Keywords:** psychological impact, healthcare, Libya, Covid19.

1. INTRODUCTION

In December 2019, a new severe type of pneumonia, later known as novel coronavirus disease (COVID-19) is an extremely expanding pandemic caused by a novel human coronavirus, it was first announced among patients with viral pneumonia in Wuhan, Hubei, China to become the most important health problem worldwide (WHO, 2020). They were found to be related with the Huanan seafood market in Wuhan, in the Hubei province of China, where other non-aquatic animals were also being sold before the outbreak (Cascella, M., 2020).

Globally, during the current situation of closures, Health care workers are at the first line of the defense against the COVID-19 pandemic and are not only exposed to the COVID-19 virus due to their frequent exposure to infected individuals, but also to psychological stress, long work hours, fatigue, occupational stigma and physical violence (Gan, W.H., 2020). It is well established that transmission of the disease among HCWs is associated with overcrowding, absence of isolation room facilities, and environmental contamination. However, this is likely compounded by the fact that some HCWs have inadequate awareness of infection prevention practices. Compared with the general population, healthcare workers are facing tremendous pressure from COVID-19, especially those who might be in contact with suspected or confirmed cases, due to the high risk of infection, inadequate protection, loss of control, and lack of experience in managing the disease, overwork, and negative feedback from patients, perceived stigma, significant lifestyle changes, quarantine and less family support. These factors increase the incidence of psychological problems among healthcare

workers, such as fear, anxiety, depression and insomnia, which can negatively affect work efficiency and long-term well-being (Que, J., et al. 2020).

A more comprehensive understanding of psychological burden among different groups of healthcare workers during this period is crucial for providing psychological support, improving mental health support services and strengthening mental healthcare worldwide. This cross-sectional study investigated the prevalence of psychological problems in different healthcare workers during the COVID-19 pandemic in Libya and explored the demographics that are associated with various psychological problems.

2. LITERATURE REVIEW

Psychological Impact of COVID-19 and its Association with demographic Characteristics

Facing this large-scale infectious public health event (COVID-19), health care workers are under both physical and psychological pressure (Chen, Q., 2020). Previous research on other infectious diseases, including severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and Ebola virus disease, has consistently shown that many health care professionals report symptoms of anxiety and depression, both during and after the outbreak, causing a severe impact on their coping abilities, in some cases with long-lasting effects (Braquehais, M.D2020).

In one study of mental health, out of 230 healthcare workers who responded to measures of mental health evaluation, 53 (23.04%) had psychosocial problems. The psychological impact on healthcare workers included the following conditions: overall anxiety (23–44%), severe anxiety (2.17%), moderate anxiety (4.78%), mild anxiety (16.09%), stress disorder (27.4–71%), depression (50.4%), and insomnia (34.0%), the incidence of anxiety and stress disorder is high among medical staff. Medical institutions should strengthen the training of psychological skills of medical staff. Special attention should be paid to the mental health of female nurses (Huang, JZ, 2020). In addition, another study conducted in China with a large proportion of participants reported symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]) and distress (899 [71.5%]) (Lai, Jianbo, et al.2020).

There are studies showed, there is association between sociodemographic characteristics of HCWs and psychological effect of COVID-19. Nurses, women, frontline healthcare workers, and those overworked status, working in Wuhan, China, reported more severe degrees of all measurements of mental health symptoms than other healthcare workers. Another study found that Anxiety in females was higher than in males (25.67% vs. 11.63%), nurses higher than doctors (26.88% vs. 14.29%) (Huang, J. Z., et al 2020). Frontline healthcare workers engaged in direct COVID-19 patient care were at higher risk of depression, anxiety, insomnia, and distress (Lai, J., 2020). Research in New York City has shown that health care workers, particularly physicians in training, are at a relatively high risk for the development of depressive symptoms, due to factors like intense workloads, financial concerns, sleep deprivation, high rates of cynicism among mentors and colleagues, among other professions (Feingold, J. H., et al 2021).

3. MATERIALS AND METHODS

Study population and data collection

A cross-sectional study was performed using the online survey due to quarantine at that time. Healthcare professionals, including physicians, medical residents, nurses, technicians and public health professionals were invited to voluntarily participate in the self-administered online survey. The study sample was not restricted to specialties; any Libyan HCW could join. The sample size was calculated using Kerjici and Morgan's formula (1970): $n = [z^2 * p * (1 - p) / e^2] / [1 + (z^2 * p * (1 - p) / e^2 * N)]$. Where: $z = 1.96$ for a confidence level (α) of 95%, $p =$ proportion 50% (expressed as a decimal), $N =$ population size, $e =$ margin of error 5%. A self-administered questionnaire was designed and adapted according to previous studies amid HCWs Chinese to investigate the prevalence of psychological problems in different healthcare workers (Que, J., Le Shi 2020). This questionnaire was imported from the Generalized Anxiety Disorder Scale, Patient Health Questionnaire and Insomnia Severity Index.

The questionnaire covered the following: (I) Demographic characters: age, sex, hospital, department, and education. (II) Mental and emotional state of healthcare workers: It consists of GAD-7, PHQ-9 and ISI questions that assessed anxiety, depression, and insomnia during the COVID-19 pandemic.

General Anxiety Disorder-7 (GAD-7): A 7-item self-administered tool that uses some of the DSM-V criteria for GAD (generalized anxiety disorder) to identify potential cases of GAD as well as measure the severity of anxiety symptoms. It can also be used as a screening measure of panic, social anxiety, and PTSD. It is designed to assess the patient's health status during the previous 2 weeks. The items enquire about the degree to which the patient has been bothered by feeling nervous, anxious or on edge, not being able to stop or control worrying and worrying too much about different things. Also having trouble relaxing, being, so restless that it is hard to sit still, becoming easily annoyed or irritable and feeling afraid as if something might happen (Williams, N. 2014). The Generalized Anxiety Disorders Scale (GAD-7), consisting of seven items with 4-point Likert scale ranging from 0 = *Not at all* to 3 = *Nearly every day*. The scores are then totaled and presented from 0 to 21. The total score categories: 0-4 mild, 5-9 moderate, 10-14 moderately severe, and 15-21 severe. Scores of 5, 10 and 15 represent cut-off points for mild, moderate and severe anxiety, respectively. When screening for an anxiety disorder, a recommended cut-off point for referral for further evaluation is 10 or greater (Williams, N. 2014). A high score signifies a high level of anxiety and a score of ≥ 10 is indicative of the presence of anxiety.

The Patient Health Questionnaire-9 (PHQ-9): is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module, which scores each of the 9 DSM-IV criteria as "0" (not at all) to "3" (nearly every day). PHQ-9 score ≥ 10 had a sensitivity of 88% and a specificity of 88% for major depression (Kroenke, K., Spitzer, R. L., & Williams, J. B. 2001). The total score categories: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe. Total scores of 5, 10, 15, and 20 represent cut points for mild, moderate, moderately severe and severe depression, respectively. A high score signifies a high level of depression and a score of ≥ 10 is indicative of the presence of depression.

The Insomnia Severity Index (ISI) has seven items with 5-point Likert scale ranging from 0 = None to 4 = very severe. The total score categories: 0-7 = No clinically significant insomnia 8-14 = Subthreshold insomnia 15-21 = Clinical insomnia (moderate severity) 22-28 = Clinical insomnia (severe).

According to previous studies, a GAD-7 score ≥ 10 indicates moderate to severe anxiety, a PHQ-9 score ≥ 10 indicates moderate to severe depression and an ISI score ≥ 15 indicates moderate to severe insomnia. The overall mild psychological problems were defined as any symptom of mild anxiety, depressive or insomnia, and the overall moderate/severe psychological problems were defined as any symptom of moderate/severe anxiety, depressive or insomnia (Que, J., et al. 2020).

Statistical analysis

Once all necessary data was obtained and checked for completeness, it was coded and analyzed using the Statistical Package for Social Sciences software version (SPSS 23). Descriptive analysis focused on frequencies, and percentages. Association testing using non-parametric Mann-Whitney U and Kruskal Wallis H tests was applied to compare scores of each variable with various demographic factors. Mann-Whitney Test was done to compare two independent groups, while Kruskal Wallis was done to identify the statistical differences between two or more independent ordinal variables that are not normally distributed.

4. RESULTS

Demographic characteristics

Two hundred and seventy-four healthcare workers from different cities in Libya have completed the survey. Nearly half of the participants (51.1%) were females and 48.9% males. Their mean age was 43.68 ± 12.3 years and ranged from 25 to 67 years old. More than half (70.4%) were university graduates, 17.8% had postgraduate studies, and only 3.3% had less than high school education. The majority (67.9%) of the study participants were physician and the others (13%) pharmacist, (9%) technicians, (6%) other HCWs and (4%) nurses. The majority (80.7%) of the study participants were working at the university hospital and general hospitals while 19.3% of the respondents were working in private clinics, pharmacies and other. Those who worked in direct contact with patients represented 75.5% of the study group. All participants claimed that the most used source of information about COVID-19 was (54.4%) social media, mass media and government web sites while seminar and workshops was the least used 6.9% and physician.

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Table 1: Demographic characteristics of the study group (n= 392)

	N	%
Gender		
Male	195	49.7
Female	197	50.3
Age (years)		
25-34 years	130	33.2
35-44 years	105	26.8
45-54 years	56	14.3
55 years and above	101	25.8
Education		
PhD	35	8.9
Master	49	12.5
Bachelor	253	64.5
Diploma	46	11.7
High school education	9	2.3
Work experience		
Less than 5 years	113	28.8
5-10 years	104	26.5
More than 10 years	175	44.6
professions		
Physician	208	53.1
Nurse	44	11.2
Pharmacist	78	19.9
Technician	44	11.2
Employee	18	4.6
Work place		
Public Clinic/Hospital	267	68.1
Private Clinic/Hospital	51	13.0
Pharmacy	39	9.9
Medical analysis lab	35	8.9
Work location		
Tripoli	181	46.2
Benghazi	90	23.0
Misrata	20	5.1
Alzawia	18	4.6
Al bayda	12	3.1
Ben valid	10	2.6
Khoms	9	2.3
Zuwara	9	2.3
Sirte	13	3.3
Sabha	9	2.3
Sebratha	11	2.8
Garyan	10	2.6
Direct contact with patient		
Yes	242	61.7
No	81	20.7
Maybe	69	17.6

Prevalence of psychological problems in healthcare workers

The majority of response of GAD-7, PHQ-9 and ISI scales scoring are mild, none, no clinical insomnia respectively as shown in Table 2. For anxiety, 30.1% of the healthcare workers had GAD-7 scores ≥ 5 , including 19.4% with mild anxiety and 10.7% with moderate/severe anxiety. For depression, 31.9% of the healthcare workers had PHQ-9 scores ≥ 5 , including 21.4% with mild depression and 10.5% with moderate/severe depression. For insomnia, 18.9% of the healthcare workers had ISI scores ≥ 8 , including 17.6% with subthreshold insomnia and 1.3% with moderate/severe insomnia.

Table 2: Frequency analysis of GAD-7, PHQ-9 and ISI scoring

GAD-7	n	%	PHQ-9	n	%	ISI	n	%
Mild	274	69.9%	None	267	68.1%	No Clinical insomnia	318	81.1%
Moderate	76	19.4%	Mild	84	21.4%	Subthreshold insomnia	69	17.6%
Moderately Severe	30	7.7%	Moderate	16	4.1%	Clinical insomnia (Moderately Severe)	5	1.3%
Severe	12	3.1%	Moderately Severe	16	4.1%	Clinical insomnia(sever)	-	-
			Severe	9	2.3%			

The Psychological state towards COVID-19 score of participants was mild among Libyan healthcare workers, which was low than expected because of feeling of stigma among the Libyan population about mental illness, which prevents them from disclosing it. Table 3 and table 4 present participants' frequency in GAD-7 PHQ-9 and insomnia scales, that show the majority of response was none and not at all.

Table 3: Results of participants' frequency in GAD-7 and PHQ-9 scales

	Not at all answers N (%)	Several days answers N (%)	More than half the days answers N (%)	Nearly every day answers N (%)
Anxiety (GAD-7)				
Feeling nervous, anxious or on edge	253 (64.5%)	104 (26.5%)	18 (4.6%)	17 (4.3%)
Not being able to control worrying	291 (74.2 %)	67 (17.1%)	19 (4.8%)	15 (3.8 %)
Worrying too much about different things	254 (64.8%)	87 (22.2%)	21 (5.4%)	30 (7.7%)
Trouble relaxing	272 (69.4%)	91 (23.2%)	8 (2%)	21 (5.4%)
Being so restless that it's hard to sit still	293 (74.7%)	77 (19.6%)	10 (2.6%)	12 (3.1%)
Becoming easily annoyed or irritable	246 (62.8%)	99 (25.3%)	22 (5.6%)	25 (6.4%)
Feeling afraid as if something awful might happen	261 (66.6%)	96 (24.5%)	7 (1.8%)	28 (7.1%)
Depression (PHQ-9)				
Little interest or pleasure in doing things	244 (62.2%)	104 (26.5%)	21 (5.4%)	23 (5.9%)
Feeling down, depressed, or hopeless	283 (72.2%)	80 (20.4%)	8 (2%)	21 (5.4%)

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Feeling tired or having little energy	234 (59.7%)	114 (29.1%)	15 (3.8%)	29 (7.4%)
Poor appetite or overeating	296 (75.5%)	67 (17.1%)	8 (2%)	21 (5.4%)
Feeling bad about yourself	292 (74.5%)	70 (17.9%)	15 (3.8%)	15 (3.8%)
Moving or speaking so slowly that other people could have noticed? Or the opposite	314 (80.1%)	56 (14.3%)	8 (2%)	14 (3.6%)
Trouble concentrating on things	288 (73.5%)	61 (15.6%)	16 (4.1%)	27 (6.9%)
Thoughts that you would be better off dead or of hurting yourself in some way	305 (77.8%)	60 (15.3%)	12 (3.1%)	15 (3.8%)
Difficulty falling asleep	295 (75.3%)	76 (19.4%)	7 (1.8%)	14 (3.6%)

Table 4: Results of participants' frequency in insomnia severity index scale

Insomnia (ISI)	None	Mild	Moderate	Sever	Very sever
Difficulty falling asleep	276 (70.4%)	90 (23%)	9 (2.3%)	17 (4.3%)	-
Difficulty staying asleep	276 (70.4%)	88 (22.4%)	10 (2.6%)	18 (4.6%)	-
Problems waking up too early	266 (67.9%)	81 (20.7%)	10 (2.6%)	35 (8.9%)	-
	Not at all	A little	Somewhat	Very much	
HowSATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?	277 (70.7%)	74 (18.9%)	29 (7.4%)	12 (3.1%)	-
How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?	259 (66.1%)	80 (20.4%)	39 (9.9%)	14 (3.6%)	-
HowWORRIED/DISTRESSED are you about your current sleep problem?	273 (69.6%)	74 (18.9%)	33 (8.4%)	12 (3.1%)	-
To what extent do you consider your sleep problem to INTERFERE with your daily functioning currently?	258 (65.8%)	81 (20.7%)	38 (9.7%)	15 (3.8%)	-

Overall the relation between the demographic characteristics and depression state about COVID-19 expect Professions, shows significant different between libyan healthcare workers (p-value < 0.05). The mean depression score was higher in the older age, male, PhD holder, HCWs more than 10 years' experience. The mean anxiety score regarding COVID-19 was higher significant in older age (mean rank=228.18) than younger age (mean rank=175.33). The mean anxiety score was significant higher in master holder than PhD, bachelor, diploma and high education school respectively. Additionally, significantly increased anxiety score was detected in healthcare workers which had more than 10 years' experience. No significant difference anxiety according to gender and Professions were noted. The mean insomnia score was higher in the PhD holder (mean rank=253.49) and nurses (mean rank=142.30). Refer to table 5 for more details.

Table 5: Relation between sociodemographic characteristics of study participants and their psychological three dimensions in this study

	Anxiety	P value	Depression	P value	Insomnia	P value
Age^a		0.000*		0.000*		0.440
25-44 years	175.33		174.76		194.05	
45-67 years	228.18		229.04		200.17	
Gender^a		0.054		0.012*		0.213
Male	205.42		208.34		201.37	
Female	187.67		184.78		191.68	
Education^b		0.007*		0.005*		0.000*
PhD	211.41		232.24		253.49	
Master	233.15		219.14		215.54	
Bachelor	191.42		193.11		186.85	
Diploma	185.57		176.03		193.15	
High school education	137.50		134.00		159.50	
Work experience^b		0.000*		0.000*		0.616
>5 years	185.49		176.19		194.40	
5-10 years	168.70		174.57		191.84	
<10 years	220.13		222.65		200.62	
Professions^b		0.405		0.409		0.003*
Physician	189.60		200.10		184.22	
Nurse	218.59		214.22		230.70	
Pharmacist	201.06		183.83		199.67	
Technician	199.57		189.84		207.88	
Employee	194.94		182.75		213.25	

5. DISCUSSION

The mean Psychological state towards COVID-19 score of participants was mild among Libyan healthcare workers, which was low than expected because of feeling of stigma among the Libyan population about mental illness, which prevents them from disclosing it. The prevalence of symptoms of anxiety, depression, and insomnia in Libyan healthcare workers during the COVID-19 pandemic were 30.1%, 31.9% and 18.9% respectively, which are lower than Huang, J. Z., et al (2020) that found out anxiety (23–44%), depression (50.4%), and insomnia (34.0%). In addition, another study conducted in China with a large proportion of participants reported symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]) and distress (899 [71.5%]) (Lai, J., et al.2020).

There is association between sociodemographic characteristics of HCWs and depression state about COVID-19 expects Professions. This comes in opposite to research in New York City, which has shown that health care workers, particularly physicians in training, are at a relatively high risk for the development of depressive symptoms, due to factors like intense workloads, financial concerns, sleep deprivation, high rates of cynicism among mentors and colleagues, among other professions (Feingold, J. H., et al 2021).

Limitations

This study has several limitations. This was an online cross-sectional survey and the sample is not necessarily a good representation. In addition, there is no representation of all healthcare workers in all types of hospitals in Libya, using Google's online sample collection form.

6. RECOMMENDATION

This study was conducted in a single country with low resource levels and a lower number of detected COVID-19 infections than other countries, which may have affected the results. Future multinational studies, using more extensive and varied populations, are needed to validate these findings. It also recommended that the future researcher interview health care workers for further investigation.

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