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Mental Health Disorders among Healthcare Workers in Sheikh Khalifa Medical City, Ajman during the COVID-19 Pandemic

Ghada S. Fouda[1*], Noha M Abu bakr Elsaid[2,3]

[1]Department of Emergency, Faculty of Medicine, Suez Canal University.[2]Department of Public Health, Community, Occupational and Environmental Medicine, Faculty of Medicine, Suez Canal University, Ismailia, Egypt. [3]Department of Basic Medical Sciences, Faculty of Medicine, King Salman International University, South Sinai, Egypt.

Abstract

***Background*: The COVID-19 disease caused by coronavirus was declared a pandemic in March 2020. The fast spread of this pandemic put healthcare facilities under stress and put a great burden on healthcare workers around the world, including UAE. *Aim*: This study aimed to protect the mental health of HCWs and to promote the social support of healthcare workers in Sheikh Khalifa Medical City Ajman (SKMCA), UAE during the COVID-19 pandemic. *Subjects and Methods*: this was a web-based cross-sectional analytic study where a form including four sections to assess socio-demographic characteristics, perceived stress, anxiety, and depression respectively. The form was randomly distributed via email to the selected healthcare workers in SKMCA with the help of the education and training center. Data was collected in the period from 1st of January to the end of March 2021. *Results*: The mean age of healthcare workers was 37.2 ± 8.7 years, 70% were females, about 74% were married and 59.2% were nurses. The mean score of stress, depression, and anxiety scale was 17.2 ± 4.8, 6 ± 3.4, and 4.8 ± 2.3 respectively. The majority of the participants (72.5) had moderate stress. Half of the participants (50.2%) had mild depression. About 55% of healthcare workers had mild anxiety. Being a female was a significant risk factor for stress (OR=1.994, 95% CI (1.130-3.519) (*p*= 0.017), while being a nurse and allied health decreased the probability of stress (OR=0.295, 95% CI (0.125-0.699) (*p*=0.006); OR=0.145, 95 % CI (0.053-0.398) (*p*<0.001) respectively. Being married was significantly associated with anxiety (Or=2.294, 95% CI (1.323- 3.977) (*p*=0.003). Being a physician increases the probability of depression (OR=6.798, 95%CI (2.140-21.592) (*p*=0.001).**

Keywords: *Healthcare workers; Covid-19; mental health; UAE*

Introduction

In December 2019, a novel coronavirus disease (COVID-19) endemic started in Wuhan city, China. In only a span of a month, the disease caused by the virus was considered a public health emergency by the World Health Organization and was declared a pandemic by March 2020[(1)]. The fast spread of this pandemic put healthcare facilities under stress. It puts a great burden on healthcare workers (HCWs) around the world, including UAE[(1)] Changes in the healthcare system in the United Arab Emirates (UAE) have been made

**Corresponding Author: ghada_fouda@med.suez.edu.eg*

in response to the COVID-19 pandemic's public health needs. Currently, HCWs are working tirelessly to prevent further spread of the disease. During COVID-19, healthcare providers are on the front lines, with a higher chance of being exposed to and contracting the virus, this could put HCWs in a state of mental turmoil, resulting in anxiety, stress, or depression.[2] The reasons for such adverse psychological outcomes range from excessive workload/work hours, inadequate personal protective equipment, frequently changing protocols and feeling inadequately supported. [3-6] Another important reason for such psychological impact is the infection rate among medical staff, caring for colleagues who have also fallen ill, and putting their own families at risk of infection.[7] The psychological impact on HCWs was highlighted by evidence from earlier viral outbreaks and preliminary data from the COVID-19 pandemic.[8-10] In a recent systematic review of 19 studies focused on COVID-19, the estimated prevalence of depression and anxiety among HCWs was 25 % (95 % CI, 17% -33 %) and 26% (95% CI, 18% - 34%), respectively. Another fast systematic evaluation of 29 studies found that the median prevalence of anxiety was 24% and depression was 21% (Muller et al., 2020)[8]. When these figures are compared to WHO estimates for prevalent mental diseases in the global population, which show that 4.4 % of people have depression and 3.6 % have anxiety disorders (including post-traumatic stress disorder), the COVID-19 pandemic had a significant influence on HCW's mental health.[11] So, supporting healthcare workers' mental health is a critical part of the public health response. We aimed to help protect the mental health of HCWs and to promote social support and a sense of personal autonomy during the COVID-19 pandemic in Sheikh Khalifa Medical City, Ajman, UAE. So, we estimated the proportions of stress, depression, and anxiety among healthcare workers during the COVID-19 pandemic. Moreover, we described the pattern of mental health disorders (degree and severity) among healthcare workers during the COVID-19 pandemic in Sheikh Khalifa Medical City Ajman, UAE. In addition, we determined the risk factors associated with stress, depression, and anxiety among healthcare workers during the COVID-19 pandemic in Sheikh Khalifa Medical City Ajman, UAE.

Subjects and Methods

A web-based cross-sectional analytical study was designed. The target population was Sheikh Khalifa Medical City Ajman (SKMCA) healthcare workers including physicians, nurses, allied health (technicians), pharmacists, and employees who are in direct contact with patients such as front office ED clerks from 21 to 60 years. Healthcare workers in SKMCA who have previous mental health issues or workers who have been on leave or who are not working with COVID-19 patients for other reasons were excluded. The sample size was calculated using Epi info. Assuming that 71% of the subjects in the population have the factor of interest, the study would require a sample size of 317 for estimating the expected proportion with 5% absolute precision and 95% confidence[12]. Results produced by Statulator beta[12]. The sample was collected by a simple random sample method. A list of all healthcare workers was obtained including physicians, nurses, technicians, and pharmacists.

The Google form was randomly distributed *via* email to the selected healthcare workers in Sheikh Khalifa Medical City Ajman with the help of the education and training center. Data was collected from the 1st of January to the end of March 2021.

Data collection tool

A self-administered online questionnaire on a Google form was emailed to the target population. It included four sections: 1. Socio-demographic part: (age, gender, marital status, and specialty). 2. Perceived stress section: (PSS 10): consists of 10 questions about feelings and thoughts during the last month. The answers to each question are on 5 rate scales ranging from 14-26 indicating moderate stress, and scores from 27-40 are considered high perceived stress[13]. 3. Generalized anxiety disorder 7 items (GAD 7) part: it consists of 7 questions on feeling in the last two weeks, the answers are on 4 rate scales ranging from not at all, to nearly every day. The total score was calculated[14,15]. 4. Patient health questionnaire (depression module) (PHQ-9) part: it consists of 9 questions on feeling in the last two weeks. The answers are on a 4-rate scale ranging from not at all, to nearly every day. Each answer has a score, and then the total score will be calculated. A score from 1-4 indicates minimal depression. A score from 5-9 indicates mild depression, a score from 10-14 indicates moderate depression, A score from 15-19 indicates moderately severe depression, and a score from 20-27 indicates severe depression[16].

Statistical Analysis

All data was entered into SPSS version 23, quantitative data such as age was presented as mean and standard deviation, while qualitative data such as percentage of perceived stress or depression was presented as frequency and percentage. The difference between frequencies of mental health disorders among different socio-demographic categories was assessed by the Chi-square test. Regression analysis was used to determine the significant risk factors associated with mental health disorders among healthcare workers. A *p*-value of less than 0.05 was considered statistically significant[17].

Ethical considerations

Ethical approval was received from both the SKMCA ETR department and the research ethics committee of the Ministry of Health and Prevention, UAE with approval reference number: MOHAP/DXB-REC/ OOO/No.136 /2020. Informed consent was taken before starting the survey by checking a box in the first part of the Google form. The collected data was kept secret for only research use. The participants were informed that responding is voluntary and that they could refuse to respond without stating any reason. The aim of the research was achieved without disturbing the work rhythm.

Results

This study included 309 HCWs with a mean age of 37.2 ± 8.7 years, 70% were females, and 74% were married. The study included different occupational categories. Most HCWs were nurses (59.2 %), followed by physicians (20.1%). A quarter of HCWs (22.3%) worked in the emergency department, followed by the intensive care unit (12.3%). The majority of HCWs had siblings (70.9%)

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Table 1: Sociodemographic characteristics of participants (n = 309)		
Characteristic	**No.**	%
Age (years)		
<30	64	20.7
≥30	245	79.3
Mean ± SD.	37.2 ± 8.7	
Gender		
Male	92	29.8
Female	217	70.2
Marital status		
Single	78	25.2
Married	227	73.5
Divorced	4	1.3
Offspring		
No	90	29.1
Yes	219	70.9
Number of kids (n=219)		
1	53	24.2
2	103	47
3+	63	28.7
Classification		
Physician	62	20.1
Nurse	183	59.2
Allied Health	42	13.6
Pharmacy	17	5.5
Other	5	1.6
Department		
Emergency	69	22.3
Radiology	18	5.8
Obstetrics and Gynecology	35	11.3
Internal medicine	23	7.4.
Surgery	17	5.5
Orthopedic	18	5.8
Anesthesia / ICU	38	12.3
Pediatrics	32	10.4
Clinic pathology	35	11.3
Ophthalmology	15	4.9
Psychiatry	9	2.9
Years of experience		
< 1 year	1	0.3
1 -5 years	49	15.9
6 - 10 years	76	24.6
11 - 15 years	85	27.5
16 - 20 years	41	13.3
21 - 30 years	43	13.9
> 30 years	14	4.5
Mean ± SD.	13.57±8.46	

Above quarter of HCWs (27.5%) had from eleven to fifteen years' experience as shown in table 1. The mean score and grades of stress, depression, and anxiety are shown in table 2. The mean score of stress, depression and anxiety scale was 17.2 ± 4.8, 6 ± 3.4 and 4.8 ± 2.3 respectively. Regarding the degree of mental health disorders among HCWs, the cut-off values used were perceived stress score (≥14), anxiety score (≥5), and depression score (≥5). Most of the participants (72.5) had moderate stress. Half of the participants (50.2%) had mild depression. About 55% of health care workers had mild anxiety. Regarding the relation between socio-demographic characteristics and the presence of mental health disorders, there was a statistically significant difference in the frequency of mental health disorders among different socio-demographic characteristics. Gender was a significant risk factor for stress (p= 0.033), while marital status was significantly associated with anxiety (p=0.011). Occupational categories were statistically significantly associated with all mental health disorders including stress (p=0.002), depression (p=<0.001), and anxiety (p=0.03). Age of children, number of children, department of work, and years of experience weren't statistically significant with any of the mental health disorders as shown in Table 3.

Table 2: Perceived Stress Scale, depression (PHQ) and Generalized Anxiety Disorder (GAD) scores and grades among HCWs (n= 309)

	No.	%
Perceived Stress Scale (PSS)		
Low (0–13)	76	24.6
Moderate (14–26)	224	72.5
High (27–40)	9	2.9
Mean ± SD.	17.2 ± 4.8	
Median (range)	17 (5–29)	
Depression score (PHQ9)		
No depression	7	2.3
Minimal depression. (1 – 4)	106	34.3
Mild depression (5 – 9)	155	50.2
Moderate depression (10 – 14)	35	11.3
Moderately severe depression (15 –19)	6	1.9
Mean ± SD.	6 ± 3.4	
Median (range)	6 (0–16)	
Generalized Anxiety Disorder (GAD7)		
No anxiety (<5)	135	43.7
Mild anxiety (5–9)	169	54.7
Moderate (10–14)	4	1.3
Severe (≥15)	1	0.3
Mean ± SD.	4.8 ± 2.3	
Median (range)	5 (0–15)	

Table (3): Stress, anxiety, and depression among different socio-demographicss characteristics (n = 309)													
Characteristic	**Stress**				**Depression (PHQ9)**				**Anxiety (GAD7)**				**To-tal**
	<14 (n=76)		**(≥14) (n=233)**		**<5 (n=149)**		**(≥5) (n=160)**		**<5 (n=135)**		**(≥5) (n=174)**		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Age (years)													
<30	20	31.3	44	68.8	34	53.1	30	46.9	27	42.2	37	57.8	**64**
≥30	56	22.9	189	77.1	115	46.9	130	53.1	108	44.1	137	55.9	**245**
χ^2(p)	1.927 (0.165)				0.778(0.378)				0.074(0.786)				
Gender													
Male	30	32.6	62	67.4	46	50	46	50	34	37	58	63	**92**
Female	46	21.2	171	78.8	103	47.5	114	52.5	101	46.5	116	53.5	**217**
χ^2(p)	**4.536*(0.033*)**				0.166 (0.683)				2.414 (0.120)				
Marital status													
Married	55	24.2	172	75.8	108	47.6	119	52.4	109	48	118	52	**227**
Other	21	25.6	61	74.4	41	50	41	50	26	31.7	56	68.3	**82**
χ^2(p)	0.062(0.803)				0.142(0.707)				**6.514*(0.011*)**				
Offspring													
No	25	27.8	65	72.2	42	46.7	48	53.3	35	38.9	55	61.1	**90**
Yes	51	23.3	168	76.7	107	48.9	112	51.1	100	45.7	119	54.3	**219**
χ^2(p)	0.693(0.405)				0.123 (0.726)				1.189 (0.275)				
Number of kids	**(n=51)**		**(n=168)**		**(n=107)**		**(n=112)**		**(n=100)**		**(n=119)**		
1	14	26.4	39	73.6	28	52.8	25	47.2	23	43.4	30	56.6	**53**
2	24	23.3	79	76.7	52	50.5	51	49.5	50	48.5	53	51.5	**103**
3+	13	20.6	50	79.4	27	42.9	36	57.1	27	42.9	36	57.1	**63**
χ^2(p)	0.538(0.764)				1.352 (0.509)				0.654(0.721)				
Classification													
Physician	7	9.2	55	23.6	7	4.7	55	34.4	19	14.1	43	24.7	**62**
Nurse	48	63.2	135	57.9	114	76.5	69	43.1	87	64.4	96	55.2	**183**
Allied Health	18	23.7	24	10.3	18	12.1	24	15.0	22	16.3	20	11.5	**42**
Pharmacy	3	3.9	14	6.0	10	6.7	7	4.4	7	5.2	10	5.7	**17**
Other	0	0.0	5	2.1	0	0.0	5	3.1	0	0.0	5	2.9	**5**
χ^2(p)	15.007* (^{M}p=0.002*)				54.291*(<0.001*)				10.604* (0.031*)				
Department													
Emergency	19	25.0	50	21.5	36	24.2	33	20.6	26	19.3	43	24.7	**69**
Radiology	2	2.6	16	6.9	10	6.7	8	5.0	6	4.4	12	6.9	**18**
OB and Gyn	10	13.2	25	10.7	16	10.7	19	11.9	19	14.1	16	9.2	**35**
Internal medicine	2	2.6	12	5.2	2	1.3	12	7.5	2	1.5	12	6.9	**14**
Nutrition	4	5.3	5	2.1	5	3.4	4	2.5	4	3.0	5	2.9	**9**
Surgery	3	3.9	14	6.0	5	3.4	12	7.5	6	4.4	11	6.3	**17**
Orthopedic	4	5.3	14	6.0	8	5.4	10	6.3	8	5.9	10	5.7	**18**
Anesthesia / ICU	11	14.5	27	11.6	19	12.8	19	11.9	19	14.1	19	10.9	**38**
Pediatrics	6	7.9	26	11.2	14	9.4	18	11.3	16	11.9	16	9.2	**32**

Clinic pathology	6	7.9	29	12.4	17	11.4	18	11.3	13	9.6	22	12.6	**35**
Ophthalmology	5	6.6	10	4.3	11	7.4	4	2.5	10	7.4	5	2.9	**15**
Psychiatry	4	5.3	5	2.1	6	4.0	3	1.9	6	4.4	3	1.7	**9**
χ^2(p)	9.916 (^{MC}p=0.536)				15.392 (0.165)				15.701 (0.153)				
Years of experience													
<12 years	36	47.4	103	44.2	72	48.3	67	41.9	59	43.7	80	46.0	**139**
≥12 years	40	52.6	130	55.8	77	51.7	93	58.1	76	56.3	94	54.0	**170**
χ^2(p)	0.232 (0.630)				1.296 (0.255)				0.159 (0.690)				

*χ^2: Chi-square test M: Fisher's exact test *****: Statistically significant at p ≤ 0.05*

Table 4 shows predictors of mental health disorders using a logistic regression model. Being a female was a significant risk factor for stress (OR=1.994, 95% CI (1.130-3.519) (*p*= 0.017), while being a nurse and allied health decreased the probability of stress (OR=0.295, 95% CI (0.125-0.699) (*p*=0.006); OR=0.145, 95 % CI (0.053-0.398) (*p*<0.001) respectively. Being a physician increases the probability of depression (OR=6.798, 95%CI (2.140-21.592) (*p*=0.001).

Discussion

Since the end of 2019, the world has been facing the worst crisis in the century, COVID-19 the novel coronavirus disease, with more than 200 million affected, and 4.5 million deaths worldwide to date. Healthcare workers around the world are facing the biggest challenge to themselves and their families since the start of the pandemic, being emotionally disturbed, under emotional and workload stress, being anxious about getting infected, or transmitting the infection to their family members.

Table 4: Multivariate logistic regression analysis for the parameters affecting stress and depression (n = 309)

	Stress		Depression (PHQ9)		Anxiety (GAD7)	
	p	**OR (95%CI)**	**p**	**OR (95%C.I)**	**p**	**OR (95%C.I)**
Gender						
Females	**0.017***	1.994 (1.130-3.519)	**0.184**	1.451 (0.838-2.513)	**0.159**	0.690 (0.411-1.156)
Classification						
Physician	**-**	-	**0.001***	6.798 (2.14-21.59)	**0.922**	0.949 (0.33-2.730)
Nurse	**0.006***	0.295(0.125-0.699)	**0.119**	0.491 (0.20-1.20)	**0.098**	0.446 (0.172-1.162)
Allied Health	**<0.001***	0.145(0.053-0.398)	**0.833**	1.118 (0.39-3.17)	**0.052**	0.333 (0.11-1.008)
Pharmacy	**0.404**	0.532(0.121-2.346)	**-**	-	**-**	-
Marital status						
married/other	**-**	-	**-**	-	**0.003***	2.294 (1.323- 3.977)

*OR: Odd`s ratio, C.I: Confidence interval, LL: Lower limit, UL: Upper Limit, #: All variables with p<0.05 were included in the multivariate, *****: Statistically significant at p ≤ 0.05*

Our study aimed to describe the mental health problems affecting the frontline healthcare workers during the COVID-19 pandemic in Sheikh Khalifa Medical City Ajman, UAE. Data collection was done from January 2021 to March 2021,

one year after the start of the pandemic, and before starting the vaccination program. Regarding the degree of mental health disorders among HCWs, the cut-off values used were: perceived stress score (≥14), anxiety score (≥5), and depression score (≥5). The majority of the participants (72.5) had moderate stress. Half of the participants (50.2%) had mild depression. About (55%) of healthcare workers had mild anxiety. More than half of the participants reported symptoms of anxiety (51.5%). Mild anxiety was reported in (28.8%) of participating HCP, (12.68 %) of the participants registered moderate anxiety scores, while (9.95 %) reported severe anxiety. Depression symptoms were revealed in (38.3 %) of participating providers. Among all participants, (4.3%) and (2.7%) reported moderately severe and severe depression, respectively, while (22.5%), and (8.8%) of the participating healthcare providers documented mild and moderate depression. Compared to previous studies done in UAE and similar to our results, they found HCWs suffered from anxiety (51.5%), and depression (38.3%). [18] Most of their participants (77.4%) were within the normal to the mild range, (9%) at a moderate level, and (13.5%) were within the severe to extremely severe range. Further analysis of the results showed statistically significant differences between age, gender, nationality, profession, and marital status of the respondents in levels of Depression and Anxiety. [18] Another study done in Abu Dhabi one year before our study, it showed Stress (7.9%) Moderate levels of scores were shown for Depression (11.4%), Anxiety (7.9%). [19] The higher percentage of mental health disorders in Ajman compared to Abu Dhabi, may be due to the strict closure done in Abu Dhabi early in this pandemic. Consistent with our results, a similar study done in China, Wuhan city, during the start of COVID19 pandemic, showed that (71.5%) of the healthcare workers suffered from stress (50.4%) suffered from depression and (44.6%) suffered from anxiety. [20] Also similar to our results, a study done in Lebanon and Iraq showed that healthcare workers suffered from stress (43.4%), depression (60%), and anxiety (42.9%). [21] Regarding the degree of each of the mental health disorders, they found that (41.8%) of the participants had moderate depression, (16.7%) had severe, and (19.6%) had extremely severe depression, while (40.1%) showed moderate anxiety, (14.4%) had severe, and (30.2%) had extremely severe anxiety. (37.3%) of their participants were moderately stressed, (18.2%) were severely stressed, and (23.1%) were extremely severely stressed[21]. Compared to another study done in Mexico healthcare workers suffered from mental health problems in less percentages, as (37%) had stress, (37.5%) had depression and (15.8%) had anxiety[22]. Unlike our study, two studies done in Italy and USA showed less percentage of mental health problems, in the Italian study HCWs suffered from stress (21.90%), anxiety (19.80%), and depression (24.73%), while in the American study (31%) endorsed mild anxiety, and 33% Clinically meaningful anxiety; (29%) reported mild depressive symptoms, and (17%) moderate to severe depressive symptoms; (5%) endorsed suicidal

ideation[23,24]. Compared to a study done in Egypt there was a huge difference from our results, as almost all the HCWs had mental health issues, (98.5%) had Stress (94%) had depression and (90.5%) suffered from anxiety. Only (1.3%) showed low perceived stress while (98.5%) showed moderate to severe stress. About (9.5%) did not experience generalized anxiety, while the remaining (90.5%) had different degrees of anxiety as mild anxiety showed the highest per cent affecting about (40%) of participants followed by moderate anxiety about (32%) then severe anxiety, (18.5%). Regarding depression, (94%) of participants showed mild to severe depression[25]. The difference between our results compared to the Egyptian study may be due to the support given to the frontline HCWs physically and psychologically, personal protective equipment was always available, including N95 masks and respirators, availability of PCR swabs for any contact or suspected HCWs, also there was hotline for psychological support to the staff, and accommodation for the HCWs who wanted to stay away from their family during the start of the pandemic, within few months the vaccination program started which gave more relief to our staff. Regarding the relation between socio-demographic characteristics and the presence of mental health disorders, there was a statistically significant difference in the frequency of mental health disorders among different socio-demographic characteristics. Gender was a significant risk factor for stress. Being a female, nurse, and allied health professional increase the probability of stress while being a physician increases the probability of depression. Consistent with the Italian study being a female nurse is more liable to mental health problems[23]. Unlike a study done in China and Mexico, nurses had less probability of mental health problems[22]. Further studies on a large-scale including cohort studies are needed to follow up on the mental health wellbeing of HCWs. Social support and targeted psychological interventions should be directed to the most commonly affected HCWs including females, physicians, and married ones.

Conclusion

This study found a variable spectrum of mental health disorders among healthcare workers during the COVID-19 pandemic in Sheikh Khalifa Medical City, Ajman. Females more complained of stress, while married participants were more affected by anxiety. Physicians more complained about depression.

Strengths of the study

The study includes a representative from all health categories including physicians, nurses, allied health, and pharmacists. The sample was taken randomly which will increase the generalization of our results

Limitation of the study: this study was a cross-sectional study. There was no follow-up for the mental health condition of HCWs.

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