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Original Article

Psychiatric disorders and quality of life in a sample of health care workers during the time of COVID-19 pandemic in Egypt

Psychiatry

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ABSTRACT

Background: Healthcare workers (HCWs) who treat COVID-19 cases experience increased psychological stress and a high incidence of psychiatric morbidity, comparable to the effects observed during the severe acute respiratory syndrome and Middle East Respiratory Syndrome outbreaks.

Objective: To determine the prevalence of psychiatric disorders and evaluate the quality of life among Egyptian (HCWs) caring for COVID-19 patients during the pandemic.

Methodology: This observational cross-sectional study was conducted on 200 healthcare workers, including doctors, nurses, and technicians, working in two major healthcare institutions in Egypt during the COVID-19 pandemic. The HCWs who were dealing with COVID-19 at these hospitals underwent comprehensive physical and psychiatric examinations using standardized tools validated for the Egyptian adult population.

Results: There was a significant variance in the prevalence of moderate and severe depression among doctors compared to nurses and technicians ($p < 0.05$). Additionally, moderate generalized anxiety disorder showed a statistically significant difference among doctors, nurses, and technicians ($p < 0.05$). Statistically substantial variations were also detected among 3 groups of healthcare workers regarding the frequency of insomnia, Post Traumatic Stress Disorder (PTSD), Obsessive-Compulsive Disorder (OCD), and burnout ($p < 0.05$).

Conclusion: Egyptian Healthcare workers in direct contact with COVID-19 patients were at the highest risk of various mental health disorders. To address this issue, it is essential to ensure the adequate availability of personal protective equipment (PPE) and implement robust infection control measures. Additionally, providing social support, improving the work environment, fostering good communication, and increasing awareness about the pandemic are crucial for reducing mental health issues among HCWs.

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Keywords: Burnout; COVID-19 pandemic; health care workers; psychiatric disorders; quality of life.

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INTRODUCTION

Healthcare workers (HCWs) provide direct or indirect care and services to the sick and injured and may also handle medical waste [1]. During severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) outbreaks, HCWs experienced significant psychological strain and high rates of psychiatric illness, a trend that has continued during the COVID-19 pandemic [2]. The use of personal protective equipment (PPE) and infection control approaches introduces additional challenges, such as difficulty in communication due to PPE covering most of the face and increased stress due to time constraints with patients. In pandemic situations like COVID-19, nurses often have to care for multiple patients simultaneously, deviating from their usual one-on-one care practice [3].

Doctors are also at high risk of burnout, which may have severe psychological and physical consequences. Burnout is often linked to inadequate sleep, a problem exacerbated by the increased demand for medical care during the pandemic [4]. This heightened demand is expected to lead to a rise in trauma-related conditions, including Post Traumatic Stress Disorder (PTSD). The fear of physical harm, increased patient deaths, and overall trauma contribute to the anticipated rise in PTSD among front-line workers, with studies

suggesting that over 10% may experience this disorder because of the pandemic [5].

To address these issues, it is crucial to monitor and support the mental health of healthcare professionals and ensure their smooth reintegration into the workforce if they contract the illness. Enhancing psychological resilience and strengthening healthcare systems are urgent priorities [6]. Strategies to mitigate anxiety include clear communication, limiting shift hours, providing rest areas, and offering detailed guidelines and training on PPE and COVID-19 patient management [7]. Protecting HCWs from occupational hazards is essential, as high turnover rates often stem from fears of contagious infections [8].

This study aimed to determine the prevalence of psychiatric symptoms and evaluate the quality of life among a sample of Egyptian HCWs caring for COVID-19 patients, at two major healthcare institutions. The selected hospitals represent a diverse healthcare setting in terms of workload and patient exposure during the pandemic. By identifying key psychological and occupational stressors in this population, the study seeks to inform targeted interventions that promote mental well-being and professional sustainability among frontline healthcare providers.

PATIENTS AND METHODS

This observational cross-sectional study was conducted on 200 healthcare workers aged between 21 and 60 years during the COVID-19 pandemic. The sample of study included technicians, physicians, and nurses who managed COVID-19 patients, worked in both ward and ICU settings at the two hospitals. The study was conducted at those selected hospitals due to their central role in COVID-19 frontline care in the region. To maintain confidentiality and reduce potential stigma associated with mental health assessments, the hospital names have been anonymized and named as Hospital 1(general hospital) and Hospital 2 (Chest disease hospital).

Specifically, the medical staff included four physicians in general wards, one supervisory physician, and one ICU physician. The nursing staff comprised ten nurses in general wards (serving 40-60 beds) and four nurses in the ICU (serving 12 beds). Ward shifts lasted between 24-48 hours and occurred three times per week, while ICU shifts ranged from 12 to 24 hours, with a total of 12 shifts per month. The ICU was equipped with 12 beds and mechanical ventilators, while the isolations units accommodated 50 beds. Initially, 252 healthcare workers were recruited; however, 52 participants did not complete the study, resulting in a final sample of 200 HCWs for analysis.

Following approval from the Faculty of Medicine's Institutional Ethical Committee (IRB code: 202010446), and in alignment with the ethical guidelines of Al-Azhar University, written consent from each participant during the period from September 2020 to September 2021. Healthcare personnel working in private hospitals and those with pre-psychiatric problems who had contact with COVID-19 patients were excluded.

The healthcare workers (HCWs) underwent comprehensive physical and psychiatric evaluations using several tools and instruments:

1. DSM-IV Structured Clinical Interview (SCID-I & SCID-II) Arabic Version: Validated in Egyptian populations [9] and demonstrated high inter-rater reliability and good validity for diagnosing psychiatric disorders according to DSM-IV standards.
2. Hamilton Depression Rating Scale (HAM-D) Arabic Version: Validated in adult Egyptian samples [10]: with high internal consistency, test-retest reliability, and good concurrent and convergent validity.
3. Hamilton Anxiety Rating Scale (HAM-A): Exhibited strong test-retest reliability (intraclass correlation coefficient) and internal consistency (Cronbach's alpha = 0.86) based on validation studies in Egyptian populations [11].
4. Quality-of-Life Scale (QOLS) [12]: Found to have strong construct validity and excellent internal consistency reliability, with a Cronbach's alpha of 0.93.
5. PTSD Scale for DSM-5 (CAPS-5) [13]: Administered by clinicians using the Arabic version validated in Egyptian adult clinical populations, showing strong reliability and validity in measuring PTSD symptoms
6. Acute Stress Disorder Scale (ASDS) [14]: The Arabic version showed good psychometric features, including high internal consistency and test-retest reliability, and significant correlations with other trauma-related symptom measures, indicating good construct validity.
7. Maslach Burnout Inventory (MBI) [15]: The Arabic version validated in Egyptian healthcare workers with excellent psychometric properties.

Sociodemographic data (age, gender, marital status, and educational level) and occupational characteristics (profession, work unit, number of shifts, and degree of COVID-19 exposure) were collected to evaluate their impact on mental health and quality of life.

Statistical analysis

SPSS v28 (IBM Inc., Armonk, NY, USA) was used. (Quantitative variables were compared using independent sample t-test or Mann-Whitney U tests based on the normality of distribution. Categorical variables were compared using the Chi-square test. Statistical significance was defined as a two-tailed p value < 0.05.

RESULTS

The mean age of the studied groups was 38.32 ± 10.74 years. Females were significantly more represented than males ($p < 0.05$). Regarding occupation, 50 participants (25%) were doctors, 90 (45%) were

nurses, while 60 (30%) were technicians, there were no statistically significant differences in occupational distribution and residence between the three studied groups (table 1).

The occupational variables showed no statistically significant difference between the three studied groups. However, a statistically significant difference was noted in the levels of moderate to severe depression, with higher rates among nurses and technicians compared to doctors ($p < 0.05$). Similarly, a significant variation in the prevalence of moderate generalized anxiety disorder (GAD) was observed among the three groups ($p < 0.05$). There was also a notable difference in the frequency of insomnia, post-traumatic stress disorder (PTSD), obsessive-compulsive disorder (OCD), and burnout among doctors, nurses, and technicians ($p < 0.05$) (table 2).

Table (1): Sociodemographic characteristics of the studied groups

Variables		n=200	Stat. Test	p-value
Age (years)	Range	21 – 60		
	Mean ± SD	38.32 ± 10.74		
		no. (%)	**χ^2-test**	
Gender	Males	75 (37.5%)	10.654	0.001*
	Females	125 (62.5%)		
Occupations	Doctors	50 (25.0%)	0.275	0.097
	Nurses	90 (45.0%)		
	Technicians	60 (30.0%)		
Marital Status	Single	87 (43.5%)	0.236 0.207	0.099 0.126
	Married	113 (56.5%)		
Residence	Urban	130 (65%)	1.282	0.258
	Rural	70 (35%)		

χ^2: Chi square test, *: Significant p-value (<0.05).

Table (2): Occupational characteristics and frequency of mental disorders of participated health care workers during COVID-19 pandemic

Occupational characteristics		Doctors (n=50)	Nurses (n= 90)	Technicians (n=60)	Stat. Test	
		no. (%)	no. (%)	no. (%)	χ^2	p-value
Cadre	Junior	20 (40%)	25 (27.8%)	24 (40%)	0.058	0.297
	Senior	15 (30%)	15 (16.7%)	16 (26.7%)	0.172	0.157
	Diploma	0 (0.0%)	38 (42.2%)	18 (30%)	0.323	0.059
	Specialist	10 (20%)	12 (13.3%)	2 (3.33%)	0.398	0.048*
	Consultant	5 (10%)	0 (0.0%)	0 (0.0%)	NA	NA
Experience (years)	< 10	36 (72%)	42 (67.7%)	32 (53.3%)	0.118	0.217
	10 – 20	9 (18%)	32 (35.6%)	20 (33.3%)	0.234	0.098
	> 20	5 (10%)	16 (17.8%)	8 (13.3%)	0.228	0.100
Mental disorders						
Major depressive disorder	None	20 (40 %)	30 (33.3%)	18 (30%)	0.052	0.197
	Mild	11 (22%)	23 (25.6%)	15 (25%)	0.165	0.085
	Moderate	10 (20%)	23 (25.6%)	11 (18.3%)	0.329	0.049*
	Severe	9 (18%)	14 (15.6%)	16 (26.6%)	1.274	0.001*
Generalized anxiety disorder	None	20 (40%)	30 (33.4%)	30 (50%)	0.025	0.397
	Mild	14 (28 %)	20 (22.2%)	11 (18.3%)	0.258	0.088
	Moderate	6 (12%)	21 (23.3%)	10 (16.7%)	0.372	0.031*
	Severe	10 (20%)	19 (21.1%)	9 (15%)	0.004	0.834
ASD		20 (40%)	38 (42.2%)	25 (41.7%)	0.222	0.078
PTSD		18 (36%)	28 (31.1%)	16 (26.7%)	0.421	0.028*
Insomnia		17 (34%)	36 (40.0%)	16 (26.7%)	0.553	0.009*
OCD		9 (18%)	27 (30.3%)	16 (26.7%)	2.924	0.001*
Burnout	Emotional exhaustion	26 (52 %)	60 (66.7%)	34 (56.7%)	0.355	0.039*
	Depersonalization	47 (94%)	44 (48.9%)	29 (48.3%)	0.582	0.003*
	Personal accomplishment	24 (48%)	48 (53.3%)	48 (80%)	0.401	0.015*

ASD: acute stress disorders, PTSD: post-traumatic stress disorders. OCD: Obsessive, χ^2: Chi square test, *: Significant p-value (<0.05).

Table (3): Risk factors associated with major depressive disorder and generalized anxiety disorder among HCW

Risk factors		MDD	Without MDD	Stat. Test		
		no. (%)	no. (%)	χ^2	OR	p-value
Age (years)	<35	61 (58.7%)	43 (41.3%)	0.236	1.66	0.087
	>35	71 (73.9%)	25 (26%)%)			
Sex	Males	50 (66.7%)	25 (33.3%)	0.001	1.00	0.999
	Females	82 (65.6%)	43 (34.4%)			
Marital status	Single	65 (74.7%)	22 (25.2%)	0.219	0.78	0.095
	Married	67 (59.2%)	46 (40.7%)			
Direct contact to COVID		102 (72.8%)	38 (27.2%)	102	5.64	0.001*
Cadre	Junior	62 (89.9%)	7 (10%)	21.82	25.33	0.001*
	Senior	20 (43.5%)	26 (56.5%)			
	Diploma	35 (62.5%)	21 (37.5%)			
	Specialist	14 (58.3%)	10 (41.7%)			
	Consultant	1 (20%)	4 (80%)			
Experience (years)	< 10	76 (69%)	34 (31%)	23.33	5.73	0.001*
	10 – 20	32 (52.5%)	29 (47.5%)			
	> 20	24 (82.8%)	5 (17.2%)			
		GAD	**No GAD**	**Stat. Test**		
		no. (%)	**no. (%)**	χ^2	**OR**	**p-value**
Age (years)	<35n	46 (44.2%)	58 (55.8%)	1.942	4.99	0.001*
	>35	74 (77.1%)	22 (22.%)9			
Sex	Males	35 (46.7%)	40 (53.3%)	1.355	2.86	0.001*
	Females	85 (68%)	40 (32%)			
Marital status	Single	42 (48.3%)	45 (51.7%)	1.316	2.94	0.001*
	Married	78 (69%)	35 (31%)			
Direct contact to COVID		96 (68.6%)	44 (31.4%)	96	3.29	0.001*
Cadre	Junior	45 (65.2%)	24 (34.8%)	2.854	1267	0.001*
	Senior	27 (58.7%)	19 (41.3%)			
	Diploma	24 (42.9%)	32 %7%)			
	Specialist	20 (83.3%)	4 (16.7%)			
	Consultant	4 (80%)	1 (20%)			
Experience (years)	< 10	78 (70.9%)	22 (29.1%)	1.371	2.43	0.001*
	10 – 20	31 (50.8%)	30 (49.2%)			
	> 20	11 (37.9%)	18 (62.1%)			

MDD: major depressive disorder, GAD: generalized anxiety disorder, OR: Odds ratio, χ^2: Chi square test, *: Significant p-value (<0.05).

Being in a junior cadre, having more than 20 years of experience, and having direct contact with COVID-19 patients were all associated in a statistically remarkable way ($p<0.05$). There was a significant relationship between generalized anxiety disorder and increased age more than 35 years, being females, being married, being in direct contact with COVID-19 patients, being juniors, specialists, or consultants and have more than 20 years of experience (table 3).

Acute stress disorder was significantly associated with older age >35 years, female gender, marriage, being in their junior year of college and have less than ten years of experience. In our study 31% of healthcare workers met the criteria of PTSD during the COCID-19 pandemic. There was a significant association between PTSD and older age >35y, being females, being married, being a junior and had experience for less than 10 years (table 4).

The results also indicate that older age (>35 years), being female, being single, being a junior or consultant, and having less than 10 years of experience were statistically significant risk factors associated with insomnia among HCW. There was a significant difference in the risk of OCD across all the studied risk factors, including age, sex, marital status, COVID-19 exposure, cadre, and experience (table 5).

Table (4): Risk factors associated with acute stress disorder post-traumatic stress disorder HCW

Risk factors		ASD	No ASD	Stat. Test		
		no. (%)	no. (%)	χ^2	OR	p-value
Age (years)	<35	38 (36.5%)	66 (63.5%)	1.897	2.226	0.001*
	>35	45 (46.9%)	51 (53.1%)			
Sex	Males	11 (14.7%)	64 (85.3%)	3.524	0.124	0.001*
	Females	72 (57.6%)	53 (42.4%)			
Marital status	Single	7 (8.05%)	80 (91.9%)	4.634	0.111	0.001*
	Married	76 (67.3%)	37 (32.7%)			
Direct contact to COVID		70 (50%)	70 (50%)	0.000	1.000	1.001
Cadre	Junior	41 (59.4%)	28 (40.6%)	2.677	0.245	0.049*
	Senior	24 (52.2%)	22 (47.8%)			
	Diploma	16 (28.6%)	40 (71.4%)			
	Specialist	2 (8.33%)	22 (91.7%)			
	Consultant	0 (0.0%)	5 (100%)			
Experience (years)	< 10	71 (64.5%)	39 (35.5%)	3.101	1.087	0.001*
	10 – 20	8 (13.1%)	53 (86.9%)			
	> 20	4 (13.8%)	25 (86.2%)			
		PTSD	**No PTSD**	**Stat. Test**		
		no. (%)	**no. (%)**	χ^2	**OR**	**p-value**
Age (years)	<35	20 (19.2%)	84 (80.8%)	4.057	2.269	0.001*
	>35	42 (43.8%)	54 (56.2%)			
Sex	Males	15 (20%)	60 (80%)	3.989	0.118	0.001*
	Females	47 (37.6%)	78 (62.4%)			
Marital status	Single	18 (20.7%)	69 (79.3%)	3.527	0.181	0.000*
	Married	44 (38.9%)	69 (61.1%)	1.343	1.223	0.001*
Direct contact to COVID		55 (39.3%)	85 (60.7%)	1.042	1.000	0.001*
Cadre	Junior	29 (42%)	40 (58%)	3.431	0.149	0.001*
	Senior	21 (45.7%)	25 (54.3%)			
	Diploma	8 (14.3%)	48 (85.7%)			
	Specialist	4 (16.7%)	20 (83.3%)			
	Consultant	0 (0.0%)	5 (100%)			
Experience (years)	< 10	41 (37.3%)	69 (62.7%)	3.427	0.149	0.001*
	10 – 20	17 (27.9%)	44 (72.1%)			
	> 20	4 (13.8%)	25 (86.2%)			

ASD: acute stress disorder, PTSD: post-traumatic stress disorder, OR: Odds ratio, χ^2: Chi square test, *: Significant p-value (<0.05).

There was a significant association between burnout and young age, being females, being married, being in direct with COVID, being juniors, seniors, or specialist, and having experience between 10 – 20 years. Quality of Life (QoL) was significantly affected by younger age, female gender, married status, direct COVID-19 exposure, being diploma holders, specialists, or consultants, and having 10-20 years of experience (table 6).

Burnout (Maslach Burnout Inventory – Emotional Exhaustion subscale): High burnout defined as EE score > 27. **Quality of Life (WHOQOL-BREF):** Poor QoL defined as transformed domain score < 50, based on WHO guidelines and previous validation studies. All domains of QoL showed statistically highly significant differences (p <0.05) among doctors, nurses, and technicians (table7).

Table (5): Risk factors associated with insomnia and obsessive-compulsive disorder (OCD) among HCW

Risk factors		Insomnia	No Insomnia	Stat. Test		
		no. (%)	no. (%)	χ^2	OR	p-value
Age (years)	<35	23 (22.1%)	81 (77.9%)	3.295	1.82	0.001*
	>35	46 (47.9%)	50 (52.1%)			
Sex	Males	21 (28%)	64 (72%)	2.451	1.77	0.001*
	Females	48 (38.4%)	77 (61.6%)			
Marital status	Single	22 (25.3%)	65 (74.7%)	2.796	2.07	0.001*
	Married	47 (41.6%)	66 (58.4%)			
Direct contact to COVID		60 (42.9%)	60 (57.1%)	2.232	1.00	0.001*
Cadre	Junior	30 (65.2%)	39 (34.8%)	3.43	0.837	0.003*
	Senior	21 (45.7%)	25 (54.3%)			
	Diploma	10 (17.9%)	46 (82.1%)			
	Specialist	5 (20.8%)	19 (79.2%)			
	Consultant	3 (60%)	2 (40%)			
Experience (years)	< 10	45 (40.9%)	65 (59.1%)	3.068	0.71	0.003*
	10 – 20	15 (24.6%)	46 (75.4%)			
	> 20	9 (31%)	20 69%)			
		OCD	**No OCD**	**Stat. Test**		
		no. (%)	**no. (%)**	χ^2	**OR**	**p-value**
Age (years)	<35	23 (22.1%)	81 (77.9%)	3.192	1.82	0.001*
	>35	29 (30.2%)	67 (69.8%)			
Sex	Males	15 (20%)	60 (80%)	3.624	2.40	0.001*
	Females	37 (29.6%)	88 (70.4%)			
Marital status	Single	16 (18.4%)	71 (81.6%)	3.817	2.35	0.001*
	Married	36 (31.9%)	77 (68.1%)			
Direct contact to COVID		35 (25%)	105 (75%)	2.272	1.00	0.001*
Cadre	Junior	20 (29%)	49 (71%)	3.076	0.99	0.001*
	Senior	11 (23.9%)	25 (76.1%)			
	Diploma	21 (21.4%)	44 (78.6%)			
	Specialist	9 (37.5%)	15 (62.5%)			
	Consultant	0 (0.0%)	5 (100%)			
Experience (years)	< 10	34 (30.9%)	76 (69.1%)	3.929	0.87	0.001*
	10 – 20	11 (18%)	50 (82%)			
	> 20	7 (24.1%)	22 (75.9%)			

OCD: Obsessive-compulsive disorder, OR: Odds ratio, χ^2: Chi square test, *: Significant p-value (<0.05).

Table (6): Risk factors associated with Burnout and quality of life among HCW

		Burnout	No Burnout	Stat. Test		
		no. (%)	no. (%)	χ^2	OR	p-value
Age (years)	<35	92 (65.7%)	12 (34.3%)	1.869	5.62	0.001*
	>35	28 (29.2%)	68 (70.8%)			
Sex	Males	22 (29.3%)	53 (70.7%)	2.626	5.67	0.001*
	Females	98 (78.4%)	27 (21.6%)			
Marital status	Single	44 (50.6%)	43 (49.4%)	2.62	1.134	0.001*
	Married	76 (67.3%)	37 (32.7%)			
Direct contact to COVID		96 (68.6%)	44 (31.4%)	6.56	1.639	0.001*
Cadre	Junior	41 (59.4%)	28 (40.6%)	3.00	2.314	0.001*
	Senior	28 (60.9%)	18 (39.1%)			
	Diploma	31 (55.4%)	25 (44.6%)			
	Specialist	18 (75.0%)	6 (25.0%)			
	Consultant	2 (40.0%)	3 (60.0%)			

Experience (years)	< 10	58 (52.7%)	52 (47.3%)	13.62	3.181	0.001*
	10 – 20	49 (80.3%)	12 (19.7%)			
	> 20	13 (44.8%)	16 (55.2%)			
		Good QoL	**Bad QoL**	**Stat. Test**		
		no. (%)	**no. (%)**	**χ^2**	**OR**	**p-value**
Age (years)	<35	88 (84.6%)	16 (15.4%)	24.35	3.652	0.001*
	>35	32 (33.3%)	64 (66.7%)			
Sex	Males	23 (30.7%)	52 (69.3%)	6.89	2.614	0.001*
	Females	97 (77.6%)	28 (22.4%)			
Marital status	Single	24 (27.6%)	63 (72.4%)	5.69	3.177	0.001*
	Married	96 (85.0%)	17 (15.0%)			
Direct contact to COVID		99 (70.7%)	41 (29.3%)	6.76	1.989	0.001*
Cadre	Junior	33 (47.8%)	36 (52.2%)	3.214	0.25	0.001*
	Senior	26 (56.6%)	20 (43.4%)			
	Diploma	35 (62.5%)	21 (37.5%)			
	Specialist	22 (91.7%)	2 (8.33%)			
	Consultant	4 (80.0%)	1 (20.0%)			
Experience (years)	< 10	55 (50.0%)	55 (50.0%)	14.24	3.421	0.001*
	10 – 20	50 (82.0%)	11 (18.0%)			
	> 20	15 (51.7%)	14 (48.3%)			

QOL: quality of life, OR: Odds ratio, OR: Odds ratio, χ^2: Chi square test, *: Significant p-value (<0.05).

Table (7): Quality of life scale among the studied health care workers during COVID-19 pandemic

Items	Doctors	Nurses	Technicians	Stat. Test	
	no. (%)	no. (%)	no. (%)	χ^2	p-value
Material and physical well-being	25 (50.0%)	47 (52.2%)	25 (41.7%)	0.492	0.031*
Relationships with other people	18 (36.0%)	54 (60.0%)	21 (35.0%)	4.768	0.001*
Social, community, and civic activities	28 (56.0%)	32 (35.6%)	19 (31.7%)	4.724	0.001*
Personal development and fulfilment	14 (28.0%)	4 (4.44%)	2 (3.33%)	12.63	0.001*
Recreation	5 (10.0%)	3 (3.33%)	2 (3.33%)	10.58	0.001*

χ^2 = Chi square test. *: Significant p-value (<0.05).

DISCUSSION

Healthcare workers must manage the care of non-COVID-19 patients while also meeting their own responsibilities. They face significant challenges, including high illness and mortality rates, severe financial difficulties, stress from both known and unknown information, and uncertainty about the long-term effects of the situation [16].

The study revealed that most demographic and occupational factors, such as age, gender, marital status, educational level, and work environment, were either not significantly associated with the prevalence of depression ($p > 0.05$) or demonstrated inverse relationships. Conversely, certain occupational variables—specifically direct contact with COVID-19 patients, being part of the junior staff, and having more than 20 years of clinical experiences showed highly significant association with psychiatric morbidity ($p < 0.001$). The prevalence of major depressive disorder did not significantly vary among the three groups overall, but moderate and severe cases did show a significant difference ($p < 0.05$). Technicians had a higher proportion of severe major depressive disorder cases compared to doctors and nurses ($p < 0.05$). In agreement, Muller et al. [17] identified 19 studies, reporting a depression rate of 51% among healthcare workers. A more recent systematic review found slightly lower depression rates, ranging from 17.9% to 36% [18]. In contrast, Olaya et al. [19] conducted meta-analyses using 14 and 10 studies, respectively, to assess depression prevalence among doctors and nurses. The sample sources varied significantly between these meta-analyses.

In our study we observed a notably higher prevalence of depression, reaching 66% among healthcare workers. Our study observed a statistically significant increase in the incidence of major depressive disorder during the pandemic among healthcare workers with over 20 years of experience, junior staff, and those in direct contact with COVID-19 patients. Other associated factors either showed statistically insignificant results or negative significance. These findings emphasize the need to address the mental health needs of medical professionals responding to the COVID-19 pandemic, especially those at higher risk for major depressive disorder. In comparing doctors, nurses, and technicians, no statistically significant differences were found, except for moderate Generalized Anxiety Disorder, where significant

variation across the three groups was observed ($p < 0.05$). In the systematic review by Fernandez et al. [18], the prevalence rate for anxiety varied between 22.2% and 33%, which contrasts with our findings. Several factors contribute to this discrepancy. Firstly, the challenge of measuring anxiety across different studies is significant, as many of the instruments used were developed based on symptoms commonly associated with anxiety in western contexts. The high level of anxiety reported by Sakr et al. [20] contrasts with findings from a different study conducted at the same medical center six months after the onset of the COVID-19 pandemic. This later study found that only 23% of Lebanese healthcare workers exhibited signs of worry. Psychological well-being during the pandemic was adversely affected by perceived inadequate workplace support ($p < 0.001$), insufficient personal protective equipment ($p < 0.001$), and inadequate mental health support ($p < 0.001$), highlighting a substantial relationship between these workplace factors and mental health outcomes [21].

In the present study, a comparison of different mental disorders among healthcare workers revealed remarkable variations among the three groups ($p < 0.05$), except for stress disorders, which did not reveal a remarkable variance ($p > 0.05$). According to Hall et al. [22], an infectious disease outbreak can significantly impact individuals' emotional well-being. Myths and misinformation about the virus can exacerbate health-related worries and anxieties. Additionally, infrastructure failures may trigger a chain reaction of emotional stress, leading to negative emotions such as worry.

The study assessed the prevalence of ASD among HCWs and found that 83 cases (41.5%) had ASD, while 117 cases (58.5%) did not have ASD. All associated risk factors had significant in comparison between suffered and not suffered cases except those aged >35y, females, direct contact with Covid-19 patients, and seniors, were statistically insignificant. This was in line with Wang et al. [23] who detected a prevalence of 38.3% of HCW in Covid-19 pandemic that had ASD and it was associated with hostility. Our results were much higher than other previous studies that reported approximately 5% of HCW of Covid-19 pandemic had stress, however, they postulated that progress of Covid-19 infection raise this rate especially when the state anxiety persisted, and burnout increased. As previous studies, there was a direct relation between such psychological status and ASD [24, 25].

The current study found that all risk factors were significantly associated with the outcomes, except for age >35 years, and the categories of juniors and seniors, which were statistically insignificant. Chen et al. [26] examined the perceptions of fear and security among 13 doctors in a Chinese hospital during the COVID-19 pandemic. Their main concerns included the risk of transmitting the virus to their families, their inability to manage cases' panic attacks, and the shortage of protective equipment. Bassi et al. [27] surveyed healthcare professionals (HPs) categorized into three groups based on their work settings: "Inpatient frontline", "Inpatient second line", and "Outpatient and services second line" (including family physicians and laboratories). The study found that frontline workers had a higher risk of developing PTSD and post-traumatic stress symptoms (PTSS).

The study highlights a notable prevalence of PTSD (31%) among HCWs during the COVID-19 pandemic. It underscores the urgent need for legislators and healthcare organizations to study emphasizes the critical importance of addressing the impact of the COVID-19 pandemic on the mental health of healthcare workers.

The study found that all associated risk factors were significant in the comparison between cases with insomnia and those without, except for age over 35 years, marital status, direct contact with COVID, and seniority, which were statistically insignificant. In our study, 34.5% of healthcare workers experienced insomnia during the COVID-19 pandemic. This finding aligns with previous studies, including a cohort study by Pappa et al. [2], which reported that 34.32% of HCWs experienced insomnia. Other studies report similar rates, ranging from 27.8% [28] to 36.52% [29], with some reporting slightly higher rates, such as 44.5% [30].

Our study explores the risk factors of insomnia among HCWs and emphasizing its significant impact on both physical and mental health, most risk factors identified were significant predictors of insomnia, although some factors were not statistically significant. Further investigation is necessary to confirm these results and study additional potential predictors of insomnia within this population. Our results indicated that all associated risk factors were significant when comparing cases with and without insomnia. Similarly, Munk et al. [31] reported a higher incidence of obsessive-compulsive disorder. OCD symptoms in Germany during the early weeks of the pandemic compared to pre- pandemic levels. Specifically, 21.4% of participants reported clinically severe OCD symptoms, a notable increase from the 3.6% observed before the pandemic. This suggests a significant stress response to the pandemic. Additionally, the incidence of general anxiety disorder and depression were substantially higher than in the general population. Concerning the cause of Obsessive Compulsive Disorder during COVID-19, numerous publications in Linde et al. [32] examine the different risk variables that, during the present pandemic, led to OCD symptoms. Banerjee [33] cites seven potential contributing factors to the exacerbation of OCD symptoms: the media's continuous reporting of probable sources of contamination; elevated ruminations and repeated washing, which may become normative throughout the pandemic, stocking protective equipment and disinfectants, which may increase hoarding symptoms, and there is an elevated need for handwashing. Hand washing actions are suggested that may promote ritualistic tendencies.

Hand cleaning after suspected exposures is suggested and may give cognitive justification.

Our study revealed that 120 out of 200 healthcare workers (60%) experienced burnout, while 80 (40%) did not. All risk factors showed a substantial variance between those who suffered from burnout and those who did not, except for single marital status, having a diploma, or less than 10 years of experience, and having more than 20 years of experience. Additionally, there were statistically significant differences ($p<0.05$) in burnout levels among doctors, nurses, and technicians. Healthcare worker burnout can significantly affect the quality of care, leading to nonadherence to guidelines, inadequate communication, medical errors, and compromised patient outcomes and safety [34]. Nevertheless, the correlation between burnout and the quality of care may be bidirectional and complex. Burnout can hinder healthcare professionals' ability to provide high-quality care, prompting them to take unnecessary risks and overlook important details. Conversely, psychological distress may arise from exposure to adverse situations or from the awareness that care received was subpar, potentially worsening burnout. It is possible that the correlation between burnout and care quality is weaker than initially assumed, necessitating further research to fully understand this intricate relationship. More robust designs and power in randomized trials are needed to clarify the connection between burnout and care quality [35].

According to the study, 80 healthcare workers (40%) reported a good quality of life (QoL), while 120 (60%) reported a poor QoL. This suggests a substantial burden on the well-being of frontline healthcare workers during the COVID-19 pandemic. Importantly, all associated risk factors—except job seniority and experience below ten years—were significantly linked to poor QoL, indicating that psychological burden during the pandemic may transcend hierarchical and experience-based protective factors. Moreover, a statistically significant difference in QoL metrics was observed among different professional roles, with nurses and technicians showing lower scores compared to doctors ($p < 0.05$). This discrepancy may reflect differences in job demands, autonomy, workload, and access to support or protective equipment. These findings are consistent with previous studies reporting higher stress and burnout levels among nurses and technical staff due to prolonged patient contact and limited decision-making power. The results underscore the need for targeted interventions that address the specific challenges faced by different categories of healthcare professionals. Woon et al. [36] found that in a univariate linear regression study, many demographic and COVID-19-related characteristics, psychological traits, and social support variables were found to be strongly associated with psychological quality of life (QoL). The multiple linear regression model demonstrated that a restricted number of COVID-19-related, psychological, and social support components were substantially correlated with psychological well-being. Compared to the general population, individuals with anxiety disorders including agoraphobia-related panic disorder, and social phobia often experience physical symptoms during anxiety attacks, which can negatively impact on their overall quality of life in terms of physical health. In the meta-analysis conducted by Ren et al. [37], data from 12 publications included a total of 27.475 individuals to assess the prevalence of mental disorders. Previous studies on the psychological effects of the SARS pandemic provided valuable insights that helped governments and mental health organizations prepare for the current COVID-19 pandemic. Throughout the pandemic, authorities have prioritized the preservation of both physical and emotional health. For instance, hotlines have been established to address COVID-19-related concerns, and resources offering guidance on managing mental health during the pandemic have been disseminated [7]. These initiatives highlight the importance of addressing the mental health impacts of infectious diseases and underscore the need for ongoing research in this area.

The study had limitations, including half of the respondents did not disclose whether they had been infected, the sample was not randomized, and those who chose to participate may differ systematically from those who did not.

CONCLUSIONS

This study revealed a high prevalence of psychiatric disorders—including major depressive disorder, generalized anxiety disorder, acute stress disorder, PTSD, insomnia, OCD, and burnout-among Egyptian healthcare workers during the COVID-19 pandemic. Moreover, 60% of participants reported a poor quality of life, with significant associations between poor QoL and various occupational and psychosocial risk factors. These findings emphasize the urgent need for targeted mental health support for healthcare workers, particularly those in direct contact with COVID-19 patients. Improving access to mental health services, ensuring adequate PPE, and addressing workload and organizational stressors can help mitigate psychological distress and enhance overall well-being among this vulnerable group.

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الملخص العربي

الاضطرابات النفسية وجودة الحياة في عينة من العاملين في الرعاية الصحية خلال جائحة كوفيد-19 في مصر

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ملخص البحث:

الخلفية: يواجه العاملون في مجال الرعاية الصحية الذين يعتنون بحالات كوفيد-19 ضغوطاً نفسية متزايدة ومعدلات عالية من الاعتلال النفسي، مماثلة لتلك التي لوحظت خلال تفشي السارس ومتلازمة الشرق الأوسط التنفسية.

الهدف: تحديد مدى انتشار الاضطرابات النفسية وتقييم جودة الحياة لدى العاملين المصريين في مجال الرعاية الصحية الذين يعتنون بمرضى كوفيد-19 خلال الجائحة.

الطرق: أجريت هذه الدراسة الرصدية المقطعية على 200 من العاملين في مجال الرعاية الصحية، بما في ذلك الأطباء والممرضين والفنيين، في مستشفيين رئيسيين في مصر خلال جائحة كوفيد-19. خضع المشاركون لفحوصات بدنية ونفسية شاملة باستخدام أدوات معيارية سبق التحقق من صحتها للسكان البالغين المصريين.

النتائج: وُجد اختلاف ذو دلالة إحصائية في معدل انتشار الاكتئاب المتوسط والشديد بين الأطباء مقارنة بالممرضين والفنيين. كما وُجد اختلاف ذو دلالة إحصائية في اضطراب القلق العام المتوسط بين الفئات الثلاث. وتم تسجيل فروق ذات دلالة إحصائية بين المجموعات الثلاث في تواتر الأرق، واضطراب ما بعد الصدمة، واضطراب الوسواس القهري، والاحتراق النفسي.

الأستنتاجات: إن العاملين في مجال الرعاية الصحية في مصر و الذين يتعاملون مباشرة مع مرضى كوفيد-19 معرضون لخطر مرتفع للإصابة باضطرابات نفسية متعددة. ولتقليل مثل هذه المخاطر، فمن الضروري ضمان توفر معدات الوقاية الشخصية وتطبيق تدابير صارمة لمكافحة العدوى، بالإضافة إلى توفير الدعم الاجتماعي وتحسين بيئة العمل وتعزيز التواصل والوعي حول الجائحة.

الكلمات المفتاحية: الأحتراق النفسي؛ جائحة كوفيد-19؛ العاملون في الرعاية الصحية؛ الاضطرابات النفسية، جودة الحياة.

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