Influence of COVID-19 on the Mental Health Status of Healthcare Professionals: A Comparative Study

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ABSTRACT

Background: The COVID-19 pandemic had a tremendous impact on healthcare systems globally. Healthcare personnel, particularly those on the front lines, have endured significant psychological pressures. The mental health toll on healthcare workers has been severe, with research revealing higher rates of fatigue, suicidal ideation, and psychological stress. Emotional tiredness among healthcare workers can lead to workplace errors, shifts in attitudes toward patients, poor service quality, and decreased productivity.

Aims: This study aimed to assess and compare the impact of COVID-19 on the mental health of healthcare workers across different hospital departments.

Setting and design: This study is A comparative cross-sectional design was employed at Thumbay University Hospital, Ajman, UAE.

Materials and Methods: Data were collected using the Depression, Anxiety, and Stress Scale-21 (DASS-21) from 170 healthcare professionals across various hospital departments.

Results: Descriptive statistics, chi-square tests, logistic regression, and correlation analysis were performed with SPSS and STATA software. Statistical significance was determined at $P \leq 0.05$. Among the 170 participants, 51.2% reported depression, 62.4% anxiety, and 44.1% stress. Significant relationships were discovered between age ($P = 0.01$ and 0.002) and gender ($P = 0.008$ and 0.005) in terms of anxiety and stress, with younger and female staff reporting higher levels of psychological distress. The ICU and emergency room staff were the most affected. Stress and anxiety showed a substantial link ($r = 0.79$, $P < 0.001$), while stress and depression had a moderate correlation ($r = 0.59$, $P < 0.001$).

Conclusion: The study highlights the urgent need for department-specific mental health interventions in healthcare settings. Younger and female healthcare staff, particularly those in high-exposure departments like the ICU, emergency, and pharmacy staff, require focused support to mitigate long-term psychological consequences.

Keywords: *Mental Health, COVID-19, Healthcare professionals, Stress, Anxiety, Depression*

1. INTRODUCTION

On 31st December 2019, the first case of coronavirus was reported, and the world has not been the same since then [1]. This virus has spread across the globe like wildfire, taking away many lives and continues to do so. The novel coronavirus outbreak was then declared a global pandemic on March 11, 2020 [2]. Coronavirus has resulted in a great deal of burden worldwide. Harmful effects of this include an increase in stress from known and unknown factors, high rates of infection, sudden financial instability faced by so many individuals and uncertainty of the unforeseeable future with regards to the impacts caused. It has been a traumatic experience for all types of occupations around the world, but the impact was even harsher on the frontline healthcare workers. It has been an emotionally, mentally, and physically challenging journey for them all. Healthcare workers have faced many challenges, such as helping infected patients battle COVID-19, working to decrease the infection rate, planning, and working on short and long-term goals. They are also successfully continuing to provide care

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for non-COVID patients, in addition to handling personal responsibilities outside the work setting. Mental burden and overall well-being of the workers have gained an immense amount of recognition, where studies conducted show an increase in rates of exhaustion, suicidal tendencies, and mental stress [3-4].

Healthcare workers undergo emotional fatigue, which may result in mistakes and accidents in the workplace, affect the providers' attitude to patients and in turn influence the treatment provided, as well as lead to less production output [5]. It is important for healthcare providers to be able to overcome and manage many stress triggers to be available for their patients, their family, and their own selves. Everyone has a different level of resistance to triggers and different abilities to cope with those triggers maturely so that they are not harmed by them. Prior to the COVID-19 pandemic, research had already established and listed multiple existing stressors in the healthcare setting [6]. Now, healthcare providers are expected to balance between those stressors and deal with the pandemic [7]. It is important to closely coordinate between clinicians and local/state/federal level public health workers to share authentic information and better patient care [8,9]. There are fact sheets published by different organizations, and different tools are established to measure/monitor COVID-19 cases and their impact [10,11]. The purpose of our study is to collect data that would provide insight into the impact of COVID-19 on the mental health of healthcare providers, in turn aiding in and calling for interventions to combat the crisis.

2. METHODS

This study used a comparative cross-sectional design with 170 English-speaking healthcare personnel aged 18 and up, organized into six groups: ICU, Operation Theatre/Surgical, medical ward, Emergency, Radiology, and Pharmacy staff. The Depression Anxiety Stress Scales (DASS-21) assesses suffering in depression, anxiety, and stress. Data was analyzed using SPSS v.25 and STATA v.13.0, with a statistical significance level of $P \leq 0.05$. The Spearman rank correlation examined the relationships between groups and stress/depression/anxiety ratings. The Wilcoxon rank sum test and logistic regression were used to assess bivariate correlations between exposures, variables, and outcomes (depression, stress, anxiety) at a 5% significance level.

3. RESULTS

This study included 170 healthcare providers, with a 70% female participation rate and a majority under the age of 40 (83%). The most represented departments were Anesthesia (19.4%), ICU (11.2%), and Emergency (10%), as shown in Table 1 and Figure 1.

Participants' mental health condition was measured using the Depression Anxiety Stress Scales (DASS-21) in three domains: depression, anxiety, and stress. Overall, 51.2% of subjects scored in the abnormal range (scores ≥ 5) for depression, with 14.7% suffering moderate symptoms, 7.1% severe, and 12.4% very severe. For anxiety, 62.4% reported abnormal levels (scores ≥ 4), with 26.5% experiencing extremely severe symptoms. Table 1 shows that 44.1% of participants had stress levels over the usual threshold (scores ≥ 8), with 17.1% moderate and 10.6% severe stress.

Table 1: Association between participants' demographic factors and their Mental Health using the Wilcoxon rank sum test

Variable	Total, n (%)	Mental health problems	Normal DASS-21 Score, n (%)	Abnormal DASS-21 Score, n (%)	P Value
Gender					
Male	51 (30)	Depression	25 (49.0)	26 (51.0)	0.97
		Anxiety	27 (52.9)	24 (47.1)	0.008*
		Stress	37 (72.5)	14 (27.4)	0.005*
Female	119 (70)	Depression	58 (48.7)	61 (51.3)	0.97
		Anxiety	37 (30.1)	82 (68.9)	0.008*
		Stress	58 (48.7)	61 (51.2)	0.005*
Age					
≤30 years	80 (47.1)	Depression	39 (48.8)	41 (51.3)	0.93
		Anxiety	25 (31.3)	55 (68.8)	0.01*
		Stress	34 (42.5)	46 (57.5)	0.002*

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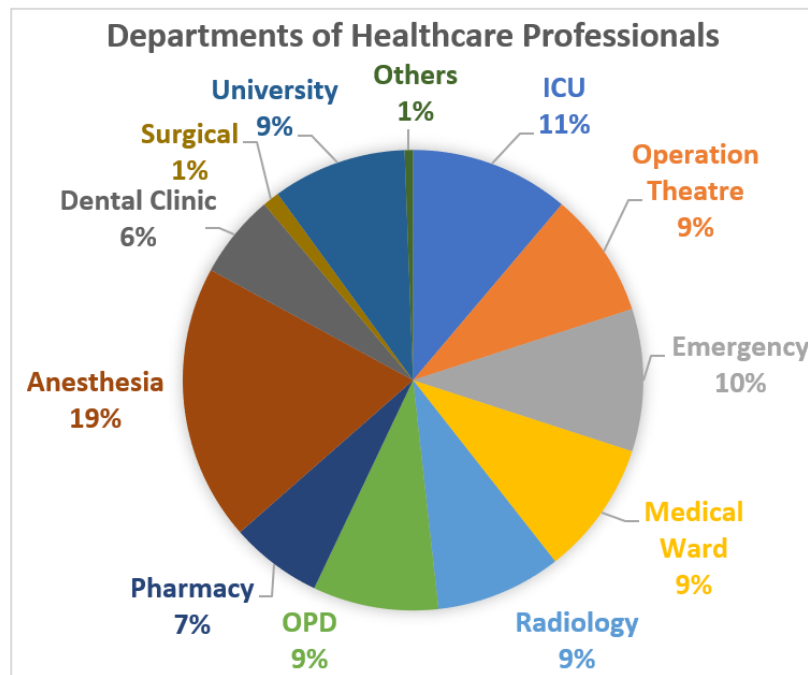| 31-40 years	61 (35.9)	Depression	29 (47.5)	32 (52.5)	0.93
		Anxiety	21 (34.4)	40 (65.6)	0.01*
		Stress	39 (63.9)	22 (36.1)	0.002*
>40 years	29 (17.1)	Depression	15 (51.7)	14 (48.3)	0.93
		Anxiety	18 (62.1)	11 (37.9)	0.01*
		Stress	22 (75.9)	7 (24.1)	0.002*

*Statistically significant (P ≤0.05).

Figure 1: Shows the departments to which the participants belong

Bivariate analysis using the Wilcoxon rank sum test found significant relationships between age and anxiety (P=0.01) and stress (P=0.002). Younger professionals (≤30 years) reported higher levels. Similarly, gender was substantially linked with anxiety (P=0.008) and stress (P=0.005), with female healthcare workers reporting greater rates than males (Table 1). There were no significant relationships between demographic characteristics and depression ratings (P=0.97 for gender and P=0.93 for age). Individuals under 30 have an almost threefold increased risk of experiencing stress, according to logistic regression analysis (Adjusted OR = 2.99; 95% CI: 1.06-8.5; P=0.03). However, demographic characteristics did not significantly predict depression or anxiety.

Correlation analysis found a strong positive correlation between stress and anxiety (Pearson r=0.79, P<0.001) and a moderate positive correlation between stress and depression (Pearson r=0.59, P<0.001), indicating that stress significantly contributes to anxiety and depression among participants.

Table 2: Distribution of Depression, Anxiety, and Stress Levels Across Hospital Departments

Variable	Total No of participants	Depression		Anxiety		Stress	
		Normal, n (%)	Abnormal, n (%)	Normal, n (%)	Abnormal, n (%)	Normal, n (%)	Abnormal, n (%)
ICU	19	8 (41.1)	11 (57.9)	1 (5.2)	18 (94.7)	6 (31.6)	13 (68.4)
Operation Theatre	15	6 (40)	9 (60)	1 (6.7)	14 (93.3)	5 (33.3)	10 (66.7)

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Emergency	17	5 (29.4)	12 (70.6)	2 (11.7)	15 (88.2)	1 (5.9)	16 (94.1)
Medical Ward	16	7 (43.8)	9 (56.3)	4 (25)	12 (75)	7 (43.8)	9 (56.3)
Radiology	15	12 (80)	3 (20)	11 (73.3)	4 (26.7)	9 (60)	6 (40)
OPD	15	10 (66.7)	5 (33.3)	9 (60)	6 (40)	13 (86.7)	2 (13.3)
Pharmacy	11	3 (27.3)	8 (72.7)	2 (18.2)	9 (81.8)	5 (45.5)	6 (54.5)
Anaeshesia	33	12 (36.4)	21 (63.6)	13 (39.4)	20 (60.6)	22 (66.7)	11 (33.3)
Dental Clinic	10	6 (60)	4 (40)	6 (60)	4 (40)	6 (60)	4 (40)
Surgical	2	2 (100)	0 (0)	2 (100)	0 (0)	2 (100)	0 (0)
University	16	10 (62.5)	6 (37.5)	10 (62.5)	6 (37.5)	14 (87.5)	2 (12.5)
Others	1	1 (100)	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)
Total	170	82 (48.2)	88 (51.8)	62 (36.5)	108 (63.5)	91 (53.5)	79 (46.5)

A department-specific examination revealed that ICU, Emergency, and Pharmacy professionals had the highest incidence of aberrant mental health scores. Emergency and ICU showed higher percentages of abnormal mental health outcomes, while Radiology and OPD demonstrated comparatively lower rates of anxiety and stress (Table 2 and Figure 1).

4. DISCUSSION

This study highlights the significant psychological toll the COVID-19 pandemic has imposed on healthcare providers, especially those in high-exposure roles. The high prevalence of anxiety (62.4%), depression (51.2%), and stress (44.1%) among participants aligns with findings from earlier studies, which demonstrated increased mental health burdens among frontline workers during pandemics [12, 13].

Age and gender emerged as significant factors in mental health vulnerability. Younger healthcare workers were particularly affected, corroborating findings by Lin et al., which suggested that inexperience and longer duty shifts contribute to psychological strain in younger professionals [10]. Female workers reported significantly higher anxiety and stress levels, consistent with prior literature, which indicated women are more susceptible to psychological distress during health crises [13,14].

The strong correlation found between stress and anxiety, and the moderate correlation with depression, confirms previous work that positions stress as a precursor to more severe mental health outcomes [3,7]. Departments with higher direct exposure to COVID-19, such as the ICU and Emergency, reported significantly higher levels of distress, echoing observations from De Kock et al. and the WHO frontline stories report [14].

These findings emphasize the need for immediate and sustained mental health interventions. As highlighted in studies by the British Medical Association and Elbqry et al. prioritizing the psychological welfare of healthcare workers is crucial to maintaining performance and preventing errors [15,16]. Moreover, proactive strategies, including mental health support programs, resilience training, and organizational changes, should be integrated into healthcare systems to mitigate long-term psychological impacts [17].

This study also supports global calls to action for high-quality data on COVID-19's psychological effects [18]. Understanding the depth and breadth of mental health challenges faced by healthcare workers is not only vital for their well-being but also for ensuring sustained, high-quality patient care.

5. CONCLUSION

This study emphasizes the urgent need for structured psychological support for healthcare providers, particularly in high-risk environments. These findings highlight the increased mental health burden experienced by certain frontline healthcare groups. Mental health monitoring, peer support, counselling, and institutional policies prioritizing wellbeing can mitigate adverse outcomes. Understanding departmental and demographic variations enables tailored interventions to enhance resilience and performance.

Limitations: Cross-sectional design limits causal inference. Use of convenience sampling may reduce generalizability. Self-reported data risk under- or over-reporting. Limited departmental coverage may not reflect the full hospital ecosystem. No follow-up to assess symptom persistence over time.

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