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The Effect of the COVID-19 Pandemic on the Mental Health of Healthcare Providers (HCPs) for Patients with Confirmed or Suspected Cases of COVID-19

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Abstract

The healthcare providers who actively participated in the COVID-19 pandemic were more likely to experience mental health problems. This cross-sectional study sought to understand the effect of the COVID-19 pandemic on healthcare providers' mental health. It evaluated a sample of 220 out of 2000 who participated in the Saudi Arabia Eastern Province pandemic. Tylor scale was used to analyze the anxiety levels, where the independent variables included age, gender, job type, job nature, and faith degree (religious commitment). The results indicated a significant relationship between the independent variables analyzed. The Tylor scale showed that (34.55%) of the participants had middle anxiety levels, and (11.81%) of the participants had high anxiety levels. The study also found that other sample characteristics do not correlate with TMAS levels. This study provides information that may help mitigate the effects of COVID-19 in the healthcare system. Practical solutions, including education and policy reformulations, may be incorporated into addressing healthcare providers' mental health needs and challenges.

Keywords: COVID-19; healthcare provider; mental health; anxiety; Tylor Scale.

تأثير جائحة كورونا كوفيد19 على مقدمي الرعاية الصحية للمرضى الذين لديهم اصابات مؤكدة من كورونا أو مشتبه به

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ملخّص

كان مقدمو الرعاية الصحية الذين شاركوا بنشاط في جائحة COVID-19 أكثر عرضة لمشاكل الصحة العقلية. فقد سعت هذه الدراسة المقطعية إلى فهم تأثير جائحة COVID-19 على الصحة النفسية لمقدمي الرعاية الصحية. وتكونت عينة الدراسة من220 من 2000 مقدمي الرعاية الذين استجابوا للدراسة، والذين شاركوا في مواجهة الجائحة في المنطقة الشرقية بالمملكة العربية السعودية. جرى استخدام مقياس تايلور لتحليل مستويات القلق، وقد تضمنت المتغيرات المستقلة العمر والجنس ونوع الوظيفة وطبيعة الوظيفة ودرجة الالتزام الديني. أشارت النتائج إلى وجود علاقة معنوية بين بعض المتغيرات المستقلة التي حُللت. فقد أظهر مقياس تايلور أن (34.55)٪ من المشاركين لديهم مستويات قلق متوسطة، و (11.81)٪ من المشاركين لديهم مستويات عالية من القلق. وجدت الدراسة أيضًا أن خصائص العينة الأخرى لا ترتبط بمستويات TMAS. توفر هذه الدراسة معلومات قد تساعد في التخفيف من آثار COVID-19 في نظام الرعاية الصحية. يمكن دمج الحلول العملية، بما في ذلك إعادة التوعية ورسم سياسات تدخل نفسي اجتماعي مناسبة، وذلك لتلبية حاجات وتحديات الصحة النفسية لمقدمي الرعاية الصحية.

الكلمات الدالة: كوفيد-19، مقدم رعاية صحية، صحة نفسية، قلق، مقياس تايلور.

Introduction:

The COVID-19 pandemic was a significant blow to healthcare systems worldwide and healthcare providers (El-Boghdadly, et al., 2020, Giorgi et al., 2020, Chen et al., 2020, Bin Nafisah et al. 2021). Previous viral outbreaks were a burden to the frontline providers with mental health disorders and adverse physical health (Muller et al., 2020). Exposure to COVID-19 may also lead to mental health among healthcare providers (Xu et al., 2021).

The governments worldwide enacted quarantine and lockdown measures to reduce the Coronavirus spread in areas with high infection rates. On March 5th, 2020, a lockdown was imposed in the Qatif region in the eastern part of Saudi Arabia in response to the confirmed COVID-19 cases (Ali et al., 2020). The first confirmed Coronavirus in Saudi Arabia was on March 2nd, 2020, where the number doubled within one month (Al-Dossary et al., 2020). The Coronavirus's outburst was a significant blow to the healthcare providers because the disease was hardly unknown. During the COVID-19 pandemic, physicians who stayed in Qatif lacked social support because they could not socialize with their families and relatives (Al Sulais et al., 2020). The region was under quarantine, which led to the hospital staff's reduction. Two-thirds of Saudi Arabian physicians feel worried and isolated (Al Sulais et al., 2020). The concerns come from the high levels of stigmatization in social life due to their work with COVID-19 patients Alajmi, A., Al-Olimat, H., Ghaboush, R., & Buniaian, N. (2021). However, Anil and Alagha (2020) argued that the lockdown due to COVID-19 significantly impacted the Qatif region's air quality. Despite the benefits to the environment, the lockdown adversely affected healthcare providers' mental illness.

The anxiety levels are expected to impact healthcare professionals' mental health and their quality of work. Khanal et al. (2020) found that 41.9% of healthcare providers have anxiety symptoms. Therefore, the current study assesses the anxiety level among healthcare providers in the Eastern Province of Saudi Arabia. The results will help understand the mental health effects on healthcare providers caused by the COVID-19 pandemic and provide them with the necessary mental support. Similarly, Naser et al. (2020) found that the COVID-19 pandemic led to anxiety and depression.

Social support is crucial in the management of mental health problems. However, the onset of COVID-19 leads to social distancing measures and stay-at-home orders. Consequently, the social distancing measures and the lockdown deprived healthcare providers of the needed social support. Paradoxically, actions taken to minimize the pandemic's spread deemed social support impossible. Hou et al. (2020) suggested that social support among healthcare providers was critical in managing the mental health consequences of the COVID-19 pandemic.

Methodology

1- Sample size and missing data

The unit of analysis for this research was individual healthcare providers who deal with COVID-19. An online questionnaire was distributed to all HCPs working the cluster of hospitals and centers dedicated to Corona COVID-19 Virus cases. The approximate number of HCPs was 2000. However, only 227 filled forms were received, with 220 usable questionnaires. Missing values in all variables did not exceed 1.72% of values. Missing data analysis was followed to examine whether values were missing completely at random (MCAR). Little's MCAR test (Little, 1988) was significant, Chi-Square (934) = 1444.43, $p < 0.05$, at this point, because the data are not missing completely at random, it is unsafe to listwise delete cases with missing values or singly impute missing values. However, missing data should use multiple imputations to analyze (Buuren (, 2018). Because the data have a monotone pattern of missing values, and the Monotone method was suitable to study data. Furthermore, the procedure of multiple imputations was logistic regression.

The current study is an analytical cross-sectional study design that assessed the impact of the COVID-19 crisis on Healthcare providers. The study was conducted in all governmental hospitals in the eastern province of Saudi Arabia. In the Eastern Province, Saudi Arabia, there are 12 hospitals and 188 primary healthcare centers. Two thousand employees actively participated in the COVID-19 crisis.

The questionnaire used includes two parts: socio-demographic characteristics (age, sex, ethnicity, occupational status, income, age at first marriage, number of children, and other relevant questions—the Taylor Manifest Anxiety

Scale (TMAS) to assess COVID-19 psychological impact on healthcare providers. We used the Arabic validated version of TMAS, tested it on the current sample to show relatively high-reliability testing (Cronbach's α =0.704) (Taber 2018). We used appropriate statistical tools to analyze the data. The level of significance is 5% (P-value </= 0.05).

2. Ethical Clearance

Ethical approval was obtained from concerned agencies both in Saudi Arabia and Jordan. From Saudi Arabia, approval was granted from the human resource department of the cluster hospitals. In addition, informed consent was obtained from all participants to maintain confidentiality and anonymity for the data source. Participants were informed that participation is voluntary and that they can withdraw from the study at any time. Besides, only those who expressed their informed consent to participate were involved in the study. In addition, ethical approval was obtained from the IRB of the University of Jordan, decision 19/2021/88, dated 14/2/2021.

3. Conflict of interest: Authors declare no conflict of interest.

4. Funding: None.

5. Description of the Sample

Table (1) shows the descriptive statistics for the sample. The sample size was 220, with females constating (60.9%), majority married (80.9%), nurses constitute a large segment of the sample (43.2%) followed by physicians (32.3%), and a high majority of them their work assignment was continuous at the cluster of hospitals and centers devoted for the diagnosis and treatment of coronal COVID 19 cases.

Table (1) Characteristics of the Sample

Personal Data	Categories	Counts	%
Gender	Male	86	39.1%
	Female	134	60.9%
	Total	220	100.0%
Marital status	Single	42	19.1%
	Married	178	80.9%
	Total	220	100.0%
Job type	Doctors	71	32.3%
	Allies health professions	37	16.8%
	Nurses	95	43.2%
	Administration	17	7.7%
	Total	220	100.0%
Job duration	Continuous	192	87.3%
	Discontinuous	28	12.7%
	Total	220	100.0%

Results:

TMAS Score description

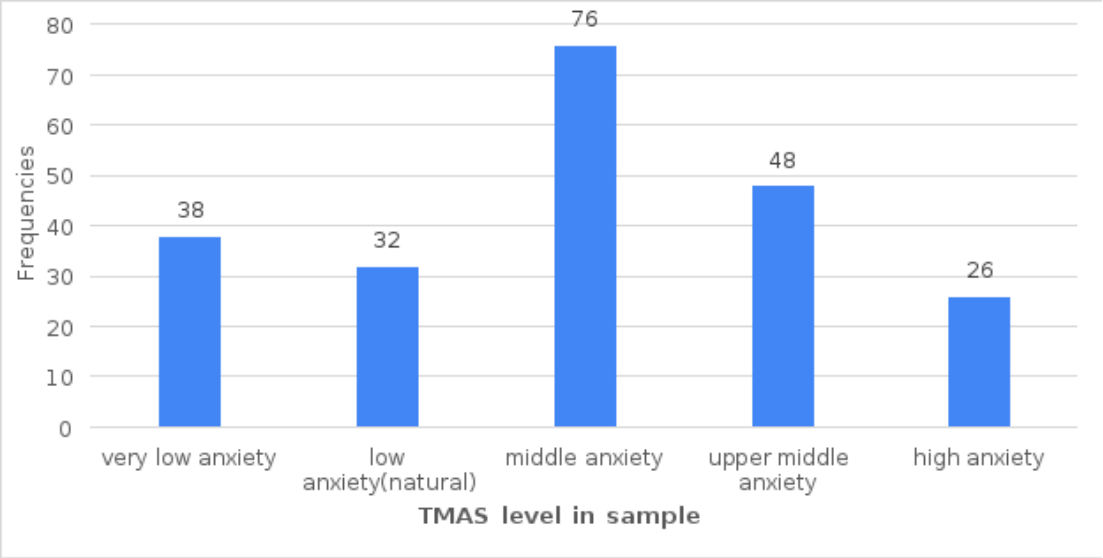

Figure (1). TMAS level across sample members

The above figure represents the values of TMAS level in the study sample. The highest category in the TMAS scale was moderate anxiety with 76 (%34.55)participants, and the lowest category was high anxiety with 26 (%11.81) participants.

Table (2). TMAS Levels

Characteristics	Categories	TMAS levels					
		very low anxiety/opinion n (%)	low anxiety (natural)/ opinion n (%)	middle anxiety/opinion n (%)	upper middle anxiety/opinion n n (%)	high anxiety/opinion n n (%)	Chi square tests of independence
Gender	Male	15(39.5)	17(53.1)	34(44.7)	12(25)	8 (30.8)	X^2 (4, N = 220) = 8.426, p =.077 φ=0.199 n=220
	Female	23(60.5)	15(46.9)	42(55.3)	36(75)	18(69.2)	
	Total	38(100)	32(100)	76(100)	48(100)	26(100)	
Marital status	Single	6(15.8)	4(12.5)	13(17.1)	16(33.3)	3(11.5)	X^2 (4, N = 220) = 8.626, p =.071 φ=0.198 n=220
	Married	32(84.2)	28(87.5)	63(82.9)	32(66.7)	23(88.5)	
	Total	38(100)	32(100)	76(100)	48(100)	26(100)	
Job type	Doctors	16(42.1)	10(31.3)	28(36.8)	6(12.5)	11(42.3)	X^2 (12, N = 220) = 37.399, P <.001 φ=0.238*** n=220
	Allies health professions	6(15.8)	7(21.9)	17(22.4)	6(12.5)	1(3.8)	
	Nurses	9(23.7)	11(34.4)	27(35.5)	34(70.8)	14(53.8)	
	Administration	7(18.4)	4(12.5)	4(5.3)	2(4.2)	0	
	Total	38(100)	32(100)	76(100)	48(100)	26(100)	
Job duration	Continuous	35(92.1)	28(87.5)	63(82.9)	44(91.7)	22(84.6)	X^2 (4, N = 220) = 3.111, p =.539 φ=0.118 n=220
	Discontinuous	3(7.9)	4(12.5)	13(17.1)	4(8.3)	4(15.4)	
	Total	38(100)	32(100)	76(100)	48(100)	26(100)	
Religiosity	Low	0	2(6.3)	5(6.6)	0	2(7.7)	X^2 (8, N = 220) = 21.735**, p =.005 φ=0.236** n=220
	Moderate	12(31.6)	21(65.6)	45(59.2)	26(54.2)	17(65.4)	
	High	26(68.4)	9(28.1)	26(34.2)	22 (45.8)	7(26.9)	
	Total	38(100)	32(100)	76(100)	48(100)	26(100)	

*P<0.05, **P<0.01, ***P<0.001 φ=effect size (Cramer's V coefficient) A significant difference with an effect size > Cohen's definition of "small"

Table (2) shows that 150 of 220 participants (68.2%) identified anxiety from the Job type. Robust significant relationship was found between TMAS levels and Job type where the chi-square X^2 (12, N = 220) = 37.399, P <0.001 φ=0.238. Results show that nurses have the highest anxiety symptoms, with 78.9% then Allied health professions 64.9%, but the Administration job has the lowest anxiety symptoms in the sample with 35.3% .Besides, the above table shows that there is (a significant) relationship between religiosity level and TMAS levels based on X^2 (8, N = 220) = 21.735, p =.005 φ=0.236. The participants having low religiosity level suffer from anxiety symptoms with 77.8%, its high percentage, but the participants have a high degree of faith record low percentage in the sample with 61.1%. Finally, the sample's other characteristics do not significantly affect TMAS levels.

The participants who were doing the administrator jobs had the lowest anxiety prevalence of 35.3%. This low level of anxiety may be explained by the fact that administrative staff interact less with the confirmed and suspected COVID-19 patients. The increase in the number of confirmed cases was a burden to the healthcare facilities. The administrator had to adopt innovative measures that helped improve care provision.

Moreover, this study found that 26 (11.81%) participants had high anxiety levels, and 76 (34.54%) participants had middle anxiety levels. These results indicated that most healthcare providers had anxiety concerns. Anxiety among healthcare providers may weaken inpatient care confidence (Al-Dossary et al., 2020). Nurses' mental health may influence their trauma, psychological stress, and turnover interventions (Al-Dossary et al., 2020). Therefore, the mental health of HCWs is essential to their wellbeing and the wellbeing of their patients

The prevalence of anxiety symptoms among nurses, health professionals, and administrators was 78.9%, 64.9%, and 35.3%, respectively. Similarly, Brandford and Reed (2016) found that registered nurses have a higher prevalence of anxiety symptoms than others. The anxiety levels can be attributed to infections among healthcare providers—the impact of COVID-19 influences people who often interact with confirmed cases. Mental health impacts among healthcare providers affect their work performance (Khanal et al., 2020). Therefore, the issues need to be addressed to manage the COVID-19 pandemic effectively. Effective leadership helps in ensuring that positive patient outcomes are achieved. The healthcare providers will also have an opportunity to use evidence-based strategies in healthcare.

The results showed a significant correlation between religiosity level and TMAS levels. The study by Archer (2017) argued that religiosity might influence boosting self-esteem and addressing mental illness. The participants who had a low degree of religiosity were most likely to suffer from anxiety symptoms. The results show that healthcare providers with a high degree of faith expressed in their religiosity levels are more likely to deal positively with the pandemic. The findings show that nurses had the highest anxiety levels than healthcare professionals and administrators. This result depicts nurses' critical role at the frontlines in responding to the pandemic. Therefore, their likelihood of anxiety symptoms is high, which may later lead to mental health complications.

Discussion

This study examined the effects of the COVID-19 pandemic on medical providers' mental health in Saudi Arabia Eastern Province. Healthcare professionals with anxiety symptoms are more likely to suffer from mental health problems including stigma, (Khanal et al., 2020). Stigmatization may affect their personality and wellbeing and lead to poor workplace performance (Hsieh & Tsai, 2019). Therefore, social support is vital for handling such harsh conditions.

The ambiguity surrounding the causes and spread of COVID -19 led to emerging anxiety among frontline and non-front-line healthcare providers at risk of infections. The increasing number of confirmed cases and deaths affected HCPs because they directly contacted and managed the infected cases (Khanal et al., 2020). The vulnerability of HCPs to infections; caused them to fear their lives. Faith and religiosity play a significant role in mitigating the existential fears of HCPs, as will be seen from the result of this study.

Among HCPs, nurses were at the center of managing COVID-19 patients in the healthcare facility. The study by Khanal et al. (2020) attributed the high anxiety levels among nurses because of the high amount of time spent caring for patients. Our findings also indicated that nurses had higher percentages of anxiety symptoms. The experiences of nurses

may be distressing because they encounter patients frequently. Therefore, they have interacted with COVID-19 patients and understand their feelings. The distress may cause discomfort and anxiety symptoms that may appear after some time.

Factors Affecting Mental Health

External and internal factors are likely to affect HCWs' mental health based on their exposure to the virus. Around 68.2% of the participants in this study identified anxiety stemming from their job assignments. The type of jobs and duties they perform may influence people's mental health issues. Healthcare providers may have different healthcare roles determined by their education and skills. Skilled nurses are more likely to be involved in direct contact and managing confirmed and suspected COVID-19 patients. The exposure levels are likely to influence healthcare levels' mental health.

Additionally, some healthcare providers may have a stressful and demanding nature of their jobs. Therefore, some responsibilities were stressful because healthcare providers had to protect themselves. Precautionary measures such as wearing personal protective equipment had to be embraced in healthcare facilities (Khanal et al., 2020, Choi et al., 2021). Some of these changes caused anxiety among healthcare providers.

The healthcare providers worked in challenging environments to fight against an invisible enemy. Their exposure to workplace pressures influenced their personality; thus, affecting their mental health (Greenberg, 2020). The job type and nature of the job influenced how the healthcare providers managed the pandemic. A powerful and effective manager may help overcome workplace pressures (Greenberg, 2020). However, this study found that some participants were anxious because of their job type. Their anxiety could be mitigated by having effective leadership in managing the COVID-19 pandemic and having adequate psychosocial support.

The religious commitment may influence healthcare providers' management of anxiety levels due to the COVID-19 pandemic. This study's findings indicated that the participants with a higher degree of faith (religiosity) recorded a low percentage of anxiety levels. Forouhari et al. (2019) defined faith as a set of beliefs and customs likely to manifest. It may influence how an individual is interacting with people. Mental health has a positive relationship with moral obligation and religious orientation (Forouhari et al., 2019).

Findings also show that age may significantly impact the management of stressful conditions for healthcare providers. Experienced Healthcare providers are most likely to manage the requirements effectively. However, COVID-19 may be a threat to the vulnerable, especially the elderly. Older people, especially those with a compromised immune system, may face complications when they contracted the virus. Therefore, age may be considered as a factor that may contribute to anxiety levels among older adults.

The relationship between TMAS levels and job type was examined in this study. The anxiety levels differed based on the job type. The anxiety symptoms for the health professionals were at 64.9%. Anxiety symptoms are more likely to occur because of the interaction level with confirmed and suspected COVID-19 patients. Those healthcare providers who have more contact with COVID -19 cases are more likely to experience higher anxiety levels.

In this study, the participants who had a previous history of health problems had higher odds of having anxiety symptoms. The health history may influence how an individual handles stressful conditions. Similarly, Khanal et al. (2020) found that health providers with mental health problems had higher rates of anxiety, depression, and insomnia symptoms. Therefore, medical history may be vital for the management of mental health.

Nevertheless, this study's implication may involve advocating for appropriate policies to mitigate healthcare providers' mental health problems. Al-Dossary et al. (2020) argued that increasing COVID-19 awareness and control guidelines might be required to improve self-care. These may be practical approaches that may help manage healthcare providers' stressful conditions. The strategies to improve healthcare systems may help mitigate the effects of COVID-19 (Al-Dossary et al., 2020). Incorporating training programs may also effectively manage the anxiety symptoms of health providers. Therefore, holistic interventions may be effective in the reduction of adverse effects of COVID-19 on healthcare providers.

Limitations of the Study

This study had to overcome obstacles before obtaining the results and analyzing them. The research was carried out between April and August 2020, when the COVID-19 pandemic was heightened. Because very little was understood about the diseases, it was difficult to elicit information from specific participants. Based on the participants' evidence, biased and vague information may be gathered. Despite its limitations, the current study added to the literature on the psychosocial effects of the COVID-19 on healthcare providers in a Middle Eastern country.

Conclusion

The Coronavirus pandemic's impact on healthcare professionals' mental health affects many aspects of their lives. This study found that healthcare providers' anxiety levels may harm their well-being and ability to provide healthcare for the public. However, age, gender, job type, job nature, and religiosity significantly impacted anxiety levels. In addition, there was a significant difference between TMAS levels and Job type. The study also indicated that the participants with low religiosity levels suffer from anxiety symptoms. Anxiety symptoms were high in nurses, healthcare professionals, and administrators based on the level of interactions. These results provide a framework for holistic interventions to address the psychological impacts of COVID 19 on healthcare providers. Psychosocial support measures should be used to mitigate the mental health impacts of the Coronavirus pandemic. The interventions may help manage the COVID-19 pandemic on healthcare professionals' mental health.

Recommendations

Positive attitudes and knowledge may be effective in the management of mental health problems among healthcare providers. Knowledge and expertise may help healthcare professionals understand the COVID-19 pandemic. The study by Al-Dossary et al. (2020) found that awareness, perceptions, clinical practices, and attitudes can help manage the COVID-19 pandemic. These aspects are practical because they may help healthcare providers address mental health problems and respond to their challenges, including fear, ambiguity, and existential concerns. Additionally, adopting appropriate technology may be a reasonable approach to mitigate anxiety impacts. Telehealth technologies may help provide information on effective strategies to manage stressful conditions. Social support can be augmented by using communication technology whereby health precautions are not compromised. Thus, healthcare providers can interact with their families, relatives, and friends, contributing to their reciprocal social support needs. Social workers in the medical field may be contributing to the well-being of HCPs and their families (Alkozahe, H. (2020).

Greenberg et al. (2021) suggest that "once the crisis begins to recede, staff must be actively monitored, supported, and, where necessary, provided with evidence-based treatments." Badahdah et al. (2020) study highlighted the urgency of providing administrative and psychological support and current and accurate information on COVID-19 to health care workers. Alikhani et al. (2020) also suggested several practical measures to mitigate the adverse mental health impact of COVID 19 on healthcare providers.

Among the most important recommendations of this study is to conduct further studies utilizing larger and diverse samples. It is also essential to investigate the experience of the families of HCPs, to better understand the impact of COVI-19 on both groups.

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