PHARMACIA

Pharmacia 71: 1–6
DOI 10.3897/pharmacia.71.e115198

Research Article

Assessment of anxiety and depression among professional healthcare workers during the COVID-19 pandemic – observational cross-sectional study

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Received 3 November 2023 ♦ **Accepted** 10 November 2023 ♦ **Published** 8 February 2024

Citation: Mohammed MM, Fawzi HA (2024) Assessment of anxiety and depression among professional healthcare workers during the COVID-19 pandemic – observational cross-sectional study. Pharmacia 71: 1–6. https://doi.org/10.3897/pharmacia.71.e115198

Abstract

Aim: Evaluate the prevalence of depression among professional healthcare workers (PHCW) during the COVID-19 pandemic.

Methods: A cross-sectional study was conducted during the fourth wave of COVID-19 infection in Iraq. A semi-structured questionnaire in English was used to obtain information about the study variables.

Results: The study included 314 participants, with a mean age of 34.3 years, slightly higher male to female sex (55.1 to 44.9%), doctors represent (26.1%), pharmacist represent (26.4%) while 36.9% includes other PHCW (nurse, laboratory technician, doctor assistance, and paramedics). There was a high prevalence of depression in the current study (98.4%). There was no significant association between total HADS with sex, specialty, and duration of working in COVID-19 isolation wards. Meanwhile, age above 50 years appears to be associated with higher HADS scores compared to younger PHCW.

Conclusion: Healthcare practitioners faced a heightened susceptibility to experiencing depression throughout the COVID-19 pandemic.

Keywords

COVID-19, age, health care provider, depression

Introduction

The late-2019 outbreak of unexplained pneumonia in China resulted in the arrival of an unfamiliar kind of coronavirus, which caused a novel respiratory ailment. With the quick spread of the illness in China and other countries, the new coronavirus, scientifically known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the subsequent disease known as Coronavirus Disease 2019 (COVID-19), sparked widespread concern worldwide (Sadeghi Dousari et al. 2020). During the ongoing global pandemic caused by the SARSCoV2 virus, five distinct mutant strains have been identified: alpha, beta, gamma, delta, and omicron (Dhar et al. 2021; Vöhringer et al. 2021; Gu et al. 2022; Hart et al. 2022; Ozer et al. 2022; Viana et al. 2022).

Countries in the Middle East drew upon their prior encounters with the SARS and Middle East respiratory syndrome (MERS) outbreaks to shape their strategies in addressing the COVID-19 pandemic (Cousins 2020; Sawaya et al. 2020). The initial detection of COVID19 occurred on February 24 in Iraq, when an Iranian student visiting the city of Najaf was identified as the first case. The Ministry of Health has reported registering new infections on a near-daily basis. During the initial influx of imported cases, most cities and villages adhered to the health guidelines provided (Dawood and Dawood 2021). Iraq is one of the select nations experiencing elevated mortality rates associated with the virus, standing at 2.6%, which is twice the rate observed in other countries (Dawood and Dawood 2021).

Several points are emphasized; one of the primary challenges associated with entering a quarantine was the significant reduction in income experienced by most individuals employed during the epidemic. Moreover, a decline in interpersonal cooperation was seen, with many individuals refusing admission to designated quarantine facilities and some re-entering the country through unauthorized means (Wilder-Smith and Freedman 2020). The unpredictable nature of pandemics has resulted in several economic, financial, health, and social challenges for the population of Iraq in the wake of the COVID-19 outbreak. Therefore, individuals must acknowledge and comprehend that public health is paramount. Certain individuals subjected to quarantine had a sense of confinement, like that of a correctional facility, while others perceived it as a form of retribution. However, once they are safely released from quarantine, their morale has been uplifted, leading to heightened well-being. Consequently, they desire to adhere to the prescribed quarantine practices and regulations (Dawood and Dawood 2021).

Throughout the severe acute respiratory syndrome (SARS) outbreak, mental health issues were also noted. Prior studies found that post-traumatic stress disorder (PTSD) and depression disorders were widespread among healthcare workers (HCWs) during the SARS pandemic (Lu et al. 2006; Lee et al. 2007; McAlonan et al. 2007). A systematic review revealed that conditions such as SARS, Middle East respiratory syndrome (MERS), and COVID-19 had a substantial effect on the mental state of HCWs, causing them to suffer from fear, insomnia, psychological distress, burnout, anxiety features, depression symptoms, and PTSD features (Salazar de Pablo et al. 2020).

It is critical to investigate mental health issues such as anxiety and depression in professional healthcare workers (PHCW) since sustaining their psychological and physical health is vital to providing high-quality treatment. Thus, the current study aimed to assess the anxiety and depression among PHCW during the covid-19 pandemic.

Methods

Ethical approval

The study was approved by the Research Ethics Committee of Mustansiriyah University – College of Pharmacy [Approval number: 20, Research number: 32, date: November 1, 2021]. All participants provided electronic, written informed permission via the Google form. Only individuals who gave their permission could access the online questionnaire.

Study design

A cross-sectional study that involved 323 PHCW, the study included all consenting participants, using the non-probability (convenience) sampling approach until the desired sample size was obtained. After excluding incomplete data entry, the final number of participants was 314.

Study settings

The study was conducted during the fourth wave of COVID-19 infection in Iraq (January 2022 to May 2022); the infection rate was 1,000 to 8,000 cases daily (Rudaw 2022; Worldometers 2023). A semi-structured questionnaire in English was used to obtain information about the study variables, which contain the following sections:

1. Section A: General information which has age, sex, duration of working in COVID-19 isolation wards (less than three months, three months, and more than three months), and specialty (pharmacist, physician, dentist, and other health care workers).
2. Section B: Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith 1983) ["The HADS is a 14-item self-report rating scale on a 4-point Likert scale (range 0–3). It is intended to assess anxiety and depression (7 items per subscale). The total score is the sum of the 14 items, and the score for each component is the sum of the seven items (ranging from 0 to 21)."] score value equal to or above 11 considered depression (8 – 10 borderline), and seven or less normal (Herrmann 1997; Snaith 2003); this score was used with permission (ICON plc, ePROVIDE, no. 2316775).

Data collection

After getting the necessary approval from the institution's director and the hospitals' responsible authorities, a list of PHCWs working in the associated hospitals, along with their phone numbers and email addresses, was obtained from the Human Resources department.

In light of the ongoing pandemic, a questionnaire was created in Google Forms, and the link was delivered to the respondents via WhatsApp or email.

The Google form contains the data sheet and consent form. On the first page of the document, each respondent provided electronic consent. Only willing individuals can access the Google form and may fill it out. Any personal identifiers were removed from the Google form to guarantee participant confidentiality. The Google form link was distributed until the sample size 323 was met.

Study area

The study was conducted in Baghdad province, the capital of Iraq; this city has 46 public hospitals and 36 private hospitals, nine small primary health care centers (PHCCs), and 207 large PHCCs with 216 PHCCs (Cetorelli and Shabila 2014).

Sample size

Sample size estimation was based on the following equation:

$$minimum\ sample\ size\ (n) = p\frac{(1-p)Z^2_{0.95}}{d^2}$$

Where n is the minimal sample size, p is the prevalence of depression among PHCW was 10.6% (Chew et al. 2020). The Z represents the Z-score at a 95% confidence interval, which equals 1.96; *d* represents the marginal error set to 0.04 (Daniel and Cross 2018). Thus, the minimal sample size was estimated to be approximately 323.

Statistical analysis

The current study used GraphPad Prism version 10.0.1 for statistical analysis. The descriptive statistics were reported as mean ± standard deviation (SD), while number and percentage were used for categorical variables. Independent t-test, or one-way ANOVA, is used to analyze the statistical significance; a p-value is considered significant if ≤0.05.

Data availability

Underlying data:

Zenodo: Hospital Anxiety and Depression Scale (HADS). https://zenodo.org/doi/10.5281/zenodo.10066476.

The project contains the following underlying data:

Data sets of Hospital Anxiety and Depression Scale (HADS). Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

Extended data:

Zenodo: Hospital Anxiety and Depression Scale - Ethical approval. https://zenodo.org/doi/10.5281/zenodo.10066511.

The project contains the following underlying data:

- STROBE Checklist.
- Ethical approval.

Results

The study included 314 participants, with a mean age of 34.3 years, slightly higher male to female sex (55.1 to 44.9%), doctors represent (26.1%), pharmacist represent (26.4%) while 36.9% includes other PHCW (nurse, laboratory technician, doctor assistance, and paramedics), as illustrated by Table 1.

Table 1. Assessment of participants characteristics.

Parameters	Value
Number	314
Age (y), mean ± SD	34.3 ± 8.5
Sex	
Female	141 (44.9%)
Male	172 (55.1%)
Specialty	
Pharmacist	83 (26.4%)
Physician	82 (26.1%)
Dentist	33 (10.5%)
Other PHCW	116 (36.9%)
How long have you worked in COVID-19 isolation wards?	
< 3 months	121 (38.5%)
>3 months	193 (61.5%)

There was a high prevalence of depression in the current study (98.4%), as illustrated by Table 2.

There was no significant association between total HADS with sex, specialty, and duration of working in COVID-19 isolation wards. Meanwhile, age above 50 appears to be associated with higher HADS scores than younger PHCW, as illustrated by Table 3.

Discussion

This study, conducted online, aimed to examine the potential harmful impact of the COVID19 outbreak on the mental health of healthcare workers in Iraq. The current study findings showed an interesting point: "a very high rate of depression among PHCW," which is one of the highest reported in the literature, and increased risk of depression associated with age above 50 years. In a particular study examining the impact of COVID-19, it was shown that the collective occurrence of general anxiety disorder and depressive symptoms amounted to 35% and 20%, respectively (Huang and Zhao 2020). These findings indicate a very high risk of depression among PHCWs during the fourth wave of the disease in Iraq.

The COVID-19 pandemic has been associated with an elevated susceptibility to anxiety and depression among healthcare personnel. The pandemic has emerged as a significant public health issue, giving rise to global apprehension and adversely affecting individuals' psychological well-being (Wang et al. 2020).

Table 2. Assessment of Hospital Anxiety and Depression Scale and its components.

Parameters	Value	Parameters	Value
Total score	19.7 ± 5.5		
Normal	5 (1.6%)		
Depression	309 (98.4%)		
Q1: I feel tense or 'wound up'		**Q8: I feel as if I am slowed down:**	
Most of the time	61(19.4%)	Nearly all the time	51(16.2%)
A lot of the time	77(24.5%)	Very often	98(31.2%)
From time to time, occasionally	106(33.8%)	Sometimes	120(38.2%)
Not at all	70(22.3%)	Not at all	45(14.3%)
Q2: I still enjoy the things I used to enjoy:		**Q9: I get a sort of frightened feeling, like 'butterflies' in the stomach:**	
Definitely as much	52(16.6%)	Not at all	40(12.7%)
Not quite so much	89(28.3%)	Occasionally	74(23.6%)
Only a little	102(32.5%)	Quite Often	120(38.2%)
Hardly at all	71(22.6%)	Very Often	80(25.5%)
Q3: I get a sort of frightened feeling as if something awful is about to happen:		**Q10: I have lost interest in my appearance:**	
Very definitely and quite badly	54(17.2%)	Definitely	69(22.0%)
Yes, but not too badly	84(26.8%)	I don't take as much care as I should	100(31.8%)
A little, but it doesn't worry me	112(35.7%)	I may not take quite as much care	96(30.6%)
Not at all	64(20.4%)	I take just as much care as ever	49(15.6%)
Q4: I can laugh and see the funny side of things:		**Q11: I feel restless as I have to be on the move:**	
As much as I always could	61(19.4%)	Very much indeed	52(16.6%)
Not quite so much now	107(34.1%)	Quite a lot	90(28.7%)
Definitely not so much now	85(27.1%)	Not very much	99(31.5%)
Not at all	61(19.4%)	Not at all	73(23.2%)
Q5: Worrying thoughts go through my mind:		**Q12: I look forward with enjoyment to things:**	
A great deal of the time	45(14.3%)	As much as I ever did	49(15.6%)
A lot of the time	88(28.0%)	Rather less than I used to	109(34.7%)
From time to time, but not too often	104(33.1%)	Definitely less than I used to	103(32.8%)
Only occasionally	77(24.5%)	Hardly at all	53(16.9%)
Q6: I feel cheerful:		**Q13: I get sudden feelings of panic:**	
Not at all	54(17.2%)	Very often indeed	42(13.4%)
Not often	101(32.2%)	Quite often	81(25.8%)
Sometimes	99(31.5%)	Not very often	122(38.9%)
Most of the time	60(19.1%)	Not at all	69(22.0%)
Q7: I can sit at ease and feel relaxed:		**Q14: I can enjoy a good book, radio, or TV program:**	
Definitely	45(14.3%)	Often	93(29.6%)
Usually,	94(29.9%)	Sometimes	101(32.2%)
Not Often	114(36.3%)	Not often	78(24.8%)
Not at all	61(19.4%)	Very seldom	42(13.4%)

Table 3. Comparison of HADS with other variables.

Parameters	HADS	p-value
Age		
<40 years	19.4±5.5a	0.037
40 – 50 years	19.9±5.6ab	
≥50 years	22.6±5.1b	
Sex		
Female	19.8 ± 5.4	0.780
Male	19.6 ± 5.6	
Specialty		
Pharmacist	19.8±5.0	0.726
Physician	20.2±5.8	
Dentist	19.0±5.5	
Other PHCW	19.5±5.7	
How long have you worked in COVID-19 isolation wards?		
< 3 months	19.2 ± 5.0	0.187
>3 months	20.1 ± 5.8	
Similar letters in the same column indicate no significant difference.		

In a previous study in Iraq, which assessed the impact of COVID-19 on depression during the third wave, 29.7% of the PHCW had depression, and the authors reported an association between depression with sex, occupation, and smoking, among other predictors (Mohammed et al. 2021). In their study, Li et al. provided evidence indicating that a significant proportion of healthcare workers, specifically 24%, experienced varied degrees of anxiety. In comparison, 33% of this population exhibited symptoms of depression amidst the COVID-19 epidemic (Li et al. 2020). The 2003 SARS outbreak elicited a comparable psychological impact on the general population (Ko et al. 2006); this suggests that the pandemic is causing psychological destabilization throughout the impacted society. Lai et al. conducted a study on healthcare professionals during the Coronavirus outbreak, whereby they observed a prevalence of depression symptoms in 50.4% of participants and anxiety symptoms in 44.6% of participants (Lai et al. 2020). Two Turkish studies examined the impact of COVID-19 on the risk of depression; the first one showed that 68% of PHCW had depression using HADS (Turan et al. 2022), and the second one showed a 23.6% risk of depression in the general population (Özdin and Bayrak Özdin 2020). These findings may indicate the higher level of stress on the Iraqi PHCW, which may be caused by the fact that Iraq had one of the highest rates of infection and mortality in the world; in addition, the resources-limited

nature of working in Iraqi hospitals all these increased the level of depression and its rates.

In the current study, sex did not affect the risk of depression; however, Turan et al. reported that female PHCW had a higher risk of depression during the COVID-19 outbreak (Turan et al. 2022), which is informed by other studies (Bahrami and Yousefi 2011; Kim et al. 2014; Lim et al. 2018), however in the current study due to high rate of depression in the overall sample, sex did not appear to be different between both sexes.

Looking at the COVID-19 outbreak, it is evident that medical health professionals assume the role of primary responders. Consequently, they face a significantly greater chance of viral exposure than the general population. As mentioned earlier, the reality can potentially impact healthcare professionals' psychological well-being adversely. The primary factors contributing to psychological distress may be attributed to several challenges, including a pervasive sense of insecurity within the workplace, the enduring burden of excessive workloads in hospital settings, and the insufficient availability of medical protective equipment (Zhang et al. 2020).

Study limitations

The present study is subject to many limitations. The study has a cross-sectional design, which precludes the ability to establish causal relationships. Given that the survey was conducted during the fourth outbreak of COVID-19 of the pandemic in Iraq, it is plausible that this temporal context may have contributed to a heightened prevalence of anxiety and depression among the participants. Furthermore, there was a lack of opportunity to evaluate the psychological states of individuals before the onset of the COVID-19 pandemic. Likewise, the primary methodology employed in our study involved the utilization of self-reported questionnaires as a means of assessing psychiatric symptoms without the inclusion of clinical diagnosis. Utilizing a combination of structured clinical interviews and functional neuroimaging as the preferred method for making mental diagnoses would yield outcomes that are more representative of reality.

Conclusion

Healthcare practitioners faced a heightened susceptibility to experiencing depression throughout the COVID-19 pandemic. The findings of our study indicate that some characteristics may pose significant risks for healthcare workers in developing depression, like being older than 50 years old.

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