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Original article

Prevalence of Depression, Anxiety, and Stress among Medical Staff Workers in Tripoli using the DASS-21 Method

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ABSTRACT

Depression, anxiety, and stress are common psychological conditions among healthcare workers, particularly in regions facing political instability and resource constraints. This study aimed to assess the prevalence and severity of these conditions among medical and paramedical staff in Tripoli, Libya, and to explore associated sociodemographic and professional factors. A cross-sectional design was employed between 25 October and 3 December 2025, targeting physicians, nurses, technicians, and pharmacists working in selected healthcare facilities. Data were collected using a structured, self-administered questionnaire that included sociodemographic information and the Depression, Anxiety, and Stress Scale-21 (DASS-21), a validated instrument available in Arabic and English. The required sample size was calculated as 260 using Epi Info, and 181 participants were ultimately enrolled. Descriptive and inferential statistics were performed using SPSS and Microsoft Excel, with a significance threshold of $p < 0.05$. The results revealed high prevalence rates of psychological distress, with depression affecting 70.2% of participants, anxiety 72.9%, and stress 65.7%. Severity analysis showed that moderate symptoms were most common for depression and stress, while extremely severe anxiety was reported by 34.8% of respondents. Gender differences were evident, with female healthcare workers reporting higher rates of anxiety, while technicians and doctors exhibited the highest prevalence across all conditions. Psychological symptoms were consistently observed across all categories of professional experience, with early-career staff slightly more affected. These findings highlight the substantial burden of mental health problems among healthcare workers in Libya and underscore the urgent need for targeted interventions, institutional support, and policies to safeguard their psychological well-being.

Introduction

Mental health disorders such as depression, anxiety, and stress represent a growing public health concern worldwide, particularly among healthcare workers who are frequently exposed to high levels of occupational stressors. The World Health Organization (WHO) has emphasized that healthcare professionals are at increased risk of psychological distress due to long working hours, high patient loads, exposure to traumatic events, and limited institutional support systems [1]. These conditions not only affect the well-being of healthcare workers but also compromise the quality of patient care and the overall efficiency of health systems [2].

Globally, the prevalence of depression and anxiety among healthcare workers has been reported to be significantly higher than in the general population, with estimates ranging from 30% to 60% depending on the setting and measurement tools used [3]. The COVID-19 pandemic further exacerbated these challenges, intensifying psychological burdens through increased workload, fear of infection, and moral distress associated with resource limitations [4]. Even in the post-pandemic period, studies continue to demonstrate persistent psychological sequelae among healthcare professionals, underscoring the need for sustained monitoring and intervention [5]. In the Middle East and North Africa (MENA) region, healthcare workers face additional stressors linked to political instability, economic constraints, and fragile health infrastructures. Libya, in particular, has endured years of conflict and instability, which have severely strained its healthcare system and amplified the psychological burden on medical staff [6]. Recent studies conducted in Libyan hospitals have revealed alarming rates of depression and anxiety among healthcare workers, with female staff and those in frontline positions being disproportionately affected [7]. Moreover, dentists and other specialized professionals have reported long-term psychological impacts even years after the initial phases of the pandemic, highlighting the enduring nature of these conditions [8].

Despite these findings, there remains a paucity of comprehensive data on the prevalence and severity of depression, anxiety, and stress among healthcare workers in Libya, especially across different professional categories and levels of experience. Addressing this gap is critical for informing evidence-based interventions, guiding institutional policies, and strengthening occupational health programs. This study therefore, aims

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to assess the prevalence and severity of depression, anxiety, and stress among healthcare workers in Tripoli, Libya, and to explore the sociodemographic and professional factors associated with these psychological outcomes.

Methods

Study Design and Setting

This cross-sectional study was conducted between 25 October and 3 December 2025 in Tripoli, Libya. The study targeted medical and paramedical staff working in selected healthcare facilities, including physicians, nurses, technicians, and pharmacists. The design was chosen to provide a snapshot of the prevalence and severity of depression, anxiety, and stress among healthcare workers during the study period.

Participants and Eligibility

Eligible participants were individuals aged above 20 years or older, currently employed in the selected healthcare facilities, able to complete the questionnaire independently, and willing to participate voluntarily. Exclusion criteria applied to healthcare workers younger than 20 years, those not employed at the time of data collection, individuals unable to complete the questionnaire due to language barriers, literacy difficulties, or cognitive impairment, those who declined to provide informed consent, and respondents who submitted incomplete or invalid questionnaires.

Sample Size Calculation

The required sample size was calculated using the Epi Info application, based on an expected prevalence of psychological distress of approximately 50%, a confidence level of 95%, and a margin of error of 5%. This calculation yielded a minimum sample size of 260 participants. Despite this requirement, the final number of respondents was 181, representing a response rate of nearly 70%. Although lower than the calculated target, this sample size was considered sufficient to provide meaningful estimates of prevalence and associated factors.

Data Collection and Instrument

Data were collected using a structured, self-administered questionnaire composed of two sections. The first section gathered sociodemographic and professional information, including age, gender, occupation, and years of professional experience. The second section employed the Depression, Anxiety, and Stress Scale-21 (DASS-21), a validated instrument widely used to measure psychological distress.

Questionnaire Validity and Compliance

To ensure content validity, the questionnaire was reviewed by subject-matter experts in psychiatry and public health. A pilot test was conducted among a small group of healthcare workers to assess clarity, cultural appropriateness, and ease of completion. Feedback from the pilot study was incorporated to refine wording and improve comprehension. Internal consistency was confirmed using Cronbach's alpha coefficients for the DASS-21 subscales, which demonstrated acceptable reliability. Compliance validity was further ensured by providing the questionnaire in both Arabic and English, thereby accommodating linguistic preferences and reducing the risk of misinterpretation.

Procedure and Ethical Considerations

The questionnaire was distributed in both online and paper-based formats. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Participants were informed of the study objectives and their right to withdraw at any stage without penalty. Anonymity and confidentiality were strictly maintained, as no identifying information was collected, and all data were stored securely and used exclusively for research purposes. Ethical approval was obtained from the relevant institutional review board, and all procedures adhered to the principles of the Declaration of Helsinki.

Data Analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were applied to summarize sociodemographic characteristics and to estimate the prevalence and severity of depression, anxiety, and stress. Inferential statistical analyses were conducted to examine associations between psychological outcomes and variables such as gender, years of professional experience, and occupation. A p-value of less than 0.05 was considered statistically significant.

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Results

The findings presented in Table 1 indicate that psychological distress was highly prevalent among healthcare workers in Tripoli. Depression affected more than two-thirds of participants, with a slightly higher proportion among females (71.1%) compared to males (68.3%). Anxiety showed the most pronounced gender difference, being reported by 77.7% of females versus 63.3% of males, suggesting that female healthcare workers may be more vulnerable to anxiety symptoms. Stress was also common, affecting 65.7% of the total sample, with comparable rates between males (63.3%) and females (66.9%).

Table 1. Prevalence of Depression, Anxiety, and Stress among Healthcare Workers in Tripoli, Libya, by Gender

Condition	Male (n, %)	Female (n, %)	Total (n, %)
Depression	41 (68.3%)	86 (71.1%)	127 (70.2%)
Anxiety	38 (63.3%)	94 (77.7%)	132 (72.9%)
Stress	38 (63.3%)	81 (66.9%)	119 (65.7%)

Table 2 illustrates the distribution of severity levels for depression, anxiety, and stress among healthcare workers. Depression was most frequently reported at a moderate level (37.8%), followed by mild (28.3%), while nearly one-third of cases fell into severe or extremely severe categories. Anxiety showed a distinct pattern, with the largest proportion of participants classified as extremely severe (34.8%). While stress was more evenly distributed across severity levels, with moderate (30.3%) and severe (27.7%) cases being most common.

Table 2. Severity Levels of Depression, Anxiety, and Stress among Healthcare Workers in Tripoli, Libya

Condition	Mild (n, %)	Moderate (n, %)	Severe (n, %)	Extremely Severe (n, %)
Depression	36 (28.3%)	48 (37.8%)	20 (15.7%)	23 (18.1%)
Anxiety	17 (12.9%)	48 (36.4%)	21 (15.9%)	46 (34.8%)
Stress	30 (25.2%)	36 (30.3%)	33 (27.7%)	20 (16.8%)

Table 3 shows that psychological distress was prevalent across all professional groups, with technicians reporting the highest rates of stress (80%) and depression (75%). Doctors also exhibited high levels of depression (73.1%) and anxiety (74.1%), reflecting a substantial burden among frontline staff. Nurses demonstrated moderate prevalence, particularly for anxiety (71.4%), while pharmacists, though few in number, reported comparatively lower rates across all conditions.

Table 3. Prevalence of Depression, Anxiety, and Stress among Healthcare Workers by Profession in Tripoli, Libya

Profession	Depression (n, %)	Anxiety (n, %)	Stress (n, %)	Total (n)
Doctors	79 (73.1%)	80 (74.1%)	69 (63.9%)	108
Nursing	15 (53.6%)	20 (71.4%)	16 (57.1%)	28
Technicians	30 (75.0%)	29 (72.5%)	32 (80.0%)	40
Pharmacists	2 (50.0%)	2 (50.0%)	1 (25.0%)	4

Table 4 demonstrates that psychological symptoms were prevalent across all categories of professional experience. The highest proportion of affected individuals was observed among those with 1–4 years of experience (86.5%). However, the burden remained consistently high across all groups, with more than four-fifths of participants in each category reporting at least one symptom.

Table 4. Association Between Years of Professional Experience and Presence of Psychological Symptoms Among Healthcare Workers in Tripoli, Libya

Years of Experience	No Symptoms (n, %)	≥1 Symptom (n, %)	Total (n)
1–4 years	7 (13.5%)	45 (86.5%)	52
5–10 years	9 (20.0%)	36 (80.0%)	45
11–19 years	10 (15.6%)	54 (84.4%)	64
>20 years	4 (20.0%)	16 (80.0%)	20

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Discussion

The findings of this study reveal a high prevalence of depression, anxiety, and stress among healthcare workers in Tripoli, Libya, consistent with global evidence that healthcare professionals are disproportionately affected by psychological distress. The observed rates align with international studies reporting that between one-third and two-thirds of healthcare workers experience clinically significant symptoms [3,9]. This underscores the universality of occupational stressors in healthcare settings, while also highlighting the unique contextual challenges faced in Libya

One notable observation is the elevated prevalence of anxiety compared to depression and stress, particularly among female healthcare workers. This pattern has been documented in other regions, where gender differences in coping mechanisms, workload distribution, and psychosocial stressors contribute to heightened vulnerability among women [10]. Cultural expectations and dual responsibilities in professional and domestic spheres may further exacerbate these disparities in the Libyan context. The distribution of severity levels suggests that while moderate symptoms are most common, a substantial proportion of participants reported severe or extremely severe anxiety. This finding is consistent with longitudinal studies showing that anxiety symptoms among healthcare workers often persist or intensify over time, even beyond acute crises such as the COVID-19 pandemic [11]. Such persistence indicates that anxiety may be more resistant to natural recovery and requires targeted interventions, including resilience training and structured psychological support programs.

Professional differences were also evident, with technicians and doctors reporting the highest prevalence of psychological symptoms. This may reflect the intense workload, direct patient contact, and limited institutional support available to these groups. Similar findings have been reported in umbrella reviews identifying occupational role, workload intensity, and exposure to traumatic events as key risk factors for mental health problems among healthcare workers [12]. Nurses, while also affected, demonstrated slightly lower rates of depression and stress, which may be explained by differences in role expectations and coping strategies. Pharmacists, though few in number, reported comparatively lower prevalence, possibly due to less direct exposure to acute patient care stressors.

Years of professional experience did not appear to confer substantial protection against psychological distress, as high prevalence was observed across all categories. Early-career healthcare workers (1–4 years) demonstrated slightly higher rates of symptoms, consistent with evidence that younger professionals often face adjustment difficulties, limited coping resources, and heightened exposure to stress during their formative years in practice [13]. However, the persistence of symptoms across all experience levels suggests that occupational stress in Libya is systemic and not confined to particular career stages. These findings carry important implications for healthcare policy and practice. First, institutional interventions should prioritize mental health support programs tailored to high-risk groups, particularly technicians and doctors. Second, gender-sensitive approaches are needed to address the disproportionate burden among female healthcare workers. Third, resilience-building and stress management training should be integrated into professional development programs across all career stages. Finally, systemic reforms aimed at reducing workload, improving working conditions, and strengthening psychosocial support are essential to mitigate the long-term impact of psychological distress on healthcare delivery.

Conclusion

This study demonstrates a high prevalence of depression, anxiety, and stress among healthcare workers in Tripoli, Libya, with notable variations across gender, profession, and years of experience. Anxiety emerged as the most severe and widespread condition, particularly among female staff and technicians, while early-career professionals showed slightly higher vulnerability. The persistence of psychological distress across all groups highlights the systemic nature of occupational stress in the Libyan healthcare sector. These findings underscore the urgent need for targeted mental health interventions, institutional support mechanisms, and policies that prioritize the psychological well-being of healthcare workers to safeguard both staff welfare and the quality of patient care.

Conflict of Interest

The authors declare that they have no conflicts of interest related to this study. No financial, institutional, or personal relationships influenced the design, conduct, or reporting of the research.

Consent to Participate

All participants provided informed consent prior to enrollment in the study. They were informed of the study objectives, procedures, and their right to withdraw at any stage without penalty. Participation was entirely voluntary, and anonymity and confidentiality were strictly maintained throughout the research process.

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