

# Prevalence of Depression, Anxiety and Stress Among Healthcare Professionals in Mogadishu-Somalia

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## Abstract:

**Introduction:** Healthcare professionals have always faced significant mental health challenges due to the demanding nature of their work. These challenges include long hours, high-pressure environments, and the emotional toll of patient care. However, the COVID-19 pandemic has amplified these issues, leading to unprecedented levels of stress, anxiety, and depression among healthcare workers (HCWs).

**Method:** In a cross-sectional study conducted among healthcare professionals in Mogadishu during April, May, and June of 2024, a sample size of 385 participants was recruited using a convenience sampling approach. The Depression, Anxiety, and Stress Scale 42 (DASS 42) questionnaire was employed to assess mental health, and the data were collected and administered via KoBoToolbox. data analysis was performed using SPSS software.

**Result:** In the study, 69.5% of healthcare professionals scored within the normal range for depression, 7.5% experienced mild depression, 11.8% had moderate depression, 9.2% were classified as having severe depression, and 2.0% were found to have extremely severe depression. For anxiety, 57.0% of healthcare professionals scored in the normal range, 9.2% had mild anxiety, 11.1% showed moderate anxiety, 9.2% were classified as having severe anxiety, and 13.4% experienced extremely severe anxiety. Regarding stress, 70.5% of healthcare professionals scored within the normal range, 8.2% experienced mild stress, 13.1% had moderate stress, 7.2% were classified as having severe stress, and 1.0% were found to have extremely severe stress.

**Discussion:** The study on healthcare professionals in Mogadishu, Somalia, found varying levels of psychological distress, with 69.5% showing normal levels for depression, 57.0% for anxiety, and 70.5% for stress. Compared to during the pandemic, normal levels have increased for depression (53.5%) and anxiety (30.7%) but decreased for stress (84.8%). During the pandemic, a significant percentage of

healthcare professionals experienced mild depression (24.9%), anxiety (36.2%), and stress (6.9%), with moderate symptoms also prevalent (Ahmed et al., 2022). Post-pandemic, there was a decrease in mild symptoms but persistent moderate levels of depression (11.8%), anxiety (11.1%), and stress (13.1%). During the pandemic, severe anxiety was prevalent at 10.7%, severe depression at 1.8%, and severe stress at 1.1% (Ahmed et al., 2022). Post-pandemic, severe depression rose to 9.2%, severe anxiety remained at 9.2%, and severe stress increased to 7.2%. Additionally, 13.4% experienced extremely severe anxiety, 2.0% extremely severe depression, and 1.0% extremely severe stress.

### **Introduction:**

Depression, anxiety, and stress represent a substantial portion of psychological morbidity among healthcare professionals.[1] Healthcare workers (HCWs) are among the high-risk groups for adverse mental health outcomes worldwide.[2] Healthcare workers have long been susceptible to depression, anxiety, and other mental health challenges due to the demands of their profession. This vulnerability has been exacerbated by the COVID-19 pandemic, leading to increased levels of stress and frustration among healthcare professionals.[3]

Burnout syndrome is a state of physical, emotional, and mental exhaustion that results from prolonged exposure to job stressors or work situations that are emotionally demanding.[4]. Burnout significantly impacts healthcare workers, resulting in lower quality care and increased rates of errors.[3]. Burnout among healthcare professionals remains a significant challenge impacting healthcare practice and the quality of care delivered.[4]. Burnout among healthcare workers leads to poor work performance, absenteeism, depression, anxiety, dissatisfaction with work-life balance, increased fatigue, higher turnover, absenteeism due to illness, reduced productivity, and organizational conflicts.[3] Burnout among healthcare professionals is increasingly recognized as a critical challenge affecting healthcare systems, patient care, and patient safety globally. Healthcare professionals experiencing burnout may exhibit symptoms such as anxiety, irritability, mood swings, insomnia, depression, and a sense of failure.[4]

The mental health effects of a major disaster have broader and longer-lasting impacts on individuals compared to physical injuries alone.[5]. The mood disorders associated with depression and stress disrupt work life, significantly affecting healthcare professionals' concentration and compromising the quality of healthcare services they deliver.[6]. Stress, anxiety, and depression pose significant challenges for psychologists, psychiatrists, and behavioral scientists worldwide. Depression, anxiety, and stress significantly impact an individual's personal, social, and professional life.[6]. Depression is one of the most pressing yet underappreciated global health challenges. In 2015, it was the leading contributor to years of life lost due to disability.[2]. The mood disorders associated with depression and stress disrupt work life, significantly affecting healthcare professionals' concentration and compromising the quality of healthcare services they deliver.[6]. Depression, as highlighted by the World Health Organization, is a prevalent mental disorder characterized by symptoms such as low mood, loss of interest, feelings of guilt and worthlessness, sleep and appetite disturbances, reduced energy, and difficulties with concentration. Depression and anxiety are among the most common psychiatric disorders, affecting 10 to 20% of the general population.[7]. Depression, along with anxiety and stress, has become a predominant mental health issue and a major public health concern of our time.[6]. This is especially relevant for depression, with its prevalence among HCWs ranging from 21.53% to 32.77% in high-income nations, significantly higher than the global rate of 4.40% in the general population in 2015.[2]. Thus, healthcare workers are not only negatively affected by sustained exposure to high pressure, but the quality of care they provide to patients

and patient safety may also be compromised.[2]. Excessive stress and emotional burden, extended working hours, the risk of contracting the virus and transmitting it to loved ones, separation from family, inadequate protective equipment at work, and ineffective treatments can significantly impact the mental health of healthcare workers (HCWs).[5]. This has placed healthcare professionals under immense pressure, as they navigate numerous challenges including extended work hours, shortages of personal protective equipment, lack of specific medications and treatment protocols, and being separated from their families. Past studies have shown that during the outbreaks of severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS), frontline medical staff experienced significant stress, leading to post-traumatic stress disorder.[8]. Immediate interventions are crucial to bolster psychological resilience and enhance the capacity of healthcare systems.[9]. Stress is indeed a ubiquitous aspect of human existence and is prevalent in modern societies. [7]. Anxiety, characterized by feelings of fear and unease, manifests with symptoms such as fatigue, restlessness, and palpitations. The etiology of anxiety involves a complex interplay of genetic, hereditary, environmental, psychological, social, and biological factors.[7].

According to the World Health Organization (WHO), healthcare workers (HCWs) are at high risk of both physical and mental health issues due to their direct contact with COVID-19 patients.[5], In a previous meta-analysis, researchers identified that mental health issues, including depression, anxiety, and stress, were prevalent among healthcare workers during the COVID-19 pandemic.[10]. Due to the pandemic, healthcare workers (HCWs) are facing significant stressors and emotional challenges, such as heavy workloads, shortages of personal protective equipment (PPE), inadequate access to essential drugs and vaccines, and a sense of insufficient support. These factors can intensify the mental strain on HCWs, potentially leading to long-term psychological implications and a perceived lack of psychological readiness.[11]. According to the World Health Organization, the highest prevalence of depression among Indians is approximately 36%, with a lifetime prevalence of 5.25% in adults according to the National Mental Health Survey. Mental stress and anxiety can combine to create an unpleasant sensation characterized by fear, worry, and uneasiness. This generalized mental condition can occur without any specific trigger or stimulus. Symptoms of depression include feelings of anxiousness, sadness, emptiness, hopelessness, guilt, and a sense of helplessness.[1]

Studies from various countries have documented high prevalence rates of depression and anxiety among healthcare workers during the pandemic. For example, Chen et al. found that the overall prevalence of anxiety and depression among frontline healthcare workers was 43% and 45%, respectively. Additionally, Pappa et al. reported a prevalence of insomnia at 34.32% in 2020.[12]. A study conducted in five major hospitals in Singapore and India reported prevalence rates of depression, anxiety, and stress symptoms as 10.6%, 15.7%, and 5.2%, respectively.[12]

In Pakistan The incidence rate varies among the different occupational categories i.e. nurses are more affected by depression, the increasing stress is mainly due to the overburdened work routine. A study reported high depression rate (18%) among nurses as compared to other HP's (9.4%).[6]. Studies from China, the first country affected by the pandemic, indicate that fear of the outbreak can lead to mental illnesses such as stress disorders, anxiety, depression, somatization, and behaviors like increased alcohol and tobacco consumption.[13]. In a study involving 6,314 Italian participants, approximately one-third reported moderate to extremely severe levels of depression, anxiety, and stress. Another study revealed that over half of the Italian population experienced impaired sleep quality during the COVID-19 lockdown restrictions. Healthcare workers during this period encountered significant challenges including excessive workload, fear of contagion, feeling pressured, shortages of specific drugs, and isolation from their

communities. Additionally, those caring for COVID-19 patients faced added stress due to social stigma associated with the virus.[14]. It is evident that depression, anxiety, and stress are primarily caused by workload, with secondary causes including financial status, job stress, and dissatisfaction, among others. [6]

There is insufficient information on the overall extent of depression among healthcare workers (HCWs) in the Eastern Mediterranean Region (EMR). Countries in this region face numerous challenges that impact mental well-being, such as political instability, conflict, healthcare disparities, shortages of healthcare workers, stigma, and inadequate investment in mental health services. These difficulties can further strain the already limited healthcare workforce and worsen HCW shortages. For example, in Iran, studies conducted between 2017 and 2020 reported depression prevalence rates among HCWs ranging from 22.00% to 45.30%. [2]

Constant exposure to anxiety and worry can diminish a person's self-confidence and lead to feelings of depression and humiliation. These emotional states contribute to increased workplace stress and reduced performance. Heightened anxiety further exacerbates this cycle, ultimately eroding both mental and physical capabilities over time. Prolonged exposure to these stressors can eventually lead to the development of unstable neuropsychiatric disorders.[7]. Consequently, the unemployment situation in Bangladesh has contributed to higher rates of mental instability among its population. Mental health issues related to unemployment and economic crises have also led to instances of self-harm and suicide. Additionally, uncertainties about returning to normal life, fear of infection, social and economic disruptions, increasing social isolation, challenges in accessing adequate healthcare due to overwhelming patient numbers, and other factors have generally exacerbated psychological distress. This includes conditions such as post-traumatic stress disorder (PTSD), insomnia, phobias, fear, anxiety, and depression.[15]

Healthcare professionals face compounded challenges in adopting healthy behaviors in their daily lives due to numerous competing demands on their time, energy, and attention.[1]. Therefore, the establishment of psychological support programs for healthcare workers during infectious disease outbreaks is crucially important.[16]. Among healthcare workers (HCWs), there is an increased prevalence of depressive symptoms and anxiety compared to typical norms. Studies underscore the importance of early detection of these clinical mood symptoms and subthreshold syndromes before they escalate into more complex mental health challenges.[17]

### **Statement Problem**

Managing and mitigating physician burnout is critical for preserving the well-being of healthcare professionals. When they are unable to prioritize their physical and mental health, their capacity to deliver high-quality patient care diminishes. In Mogadishu, Somalia, depression, anxiety, and stress are prevalent among healthcare professionals, posing significant challenges to their personal health and the quality of healthcare delivery. This knowledge gap hinders the development of targeted interventions and support systems needed to alleviate healthcare professionals' burdens and improve overall healthcare outcomes in Mogadishu. Moreover, while previous studies have assessed perceived stress, anxiety, and depression using the DASS21 scale during the COVID-19 pandemic,[18] there is an urgent need to continue this research post-pandemic with a more comprehensive tool like the DASS42. Bridging this gap is crucial for gaining a precise understanding of the evolving mental health challenges faced by healthcare professionals

in Mogadishu and for implementing effective strategies to address these issues, thereby promoting their well-being and enhancing patient care quality.

### Objectives of the Study

**The aim** of this study was to estimate the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia.

### Specific objectives

- To describe the socio-demographic characteristics of healthcare professionals participating in the study.
- To assess depression, anxiety, and stress rates among healthcare professionals in Mogadishu, Somalia, comparing them to during-pandemic levels.
- To stratify sociodemographic factors and investigate their association with the prevalence of depression, anxiety, and stress among healthcare professionals.
- To examine the correlations between anxiety, depression, and stress levels among healthcare professionals in Mogadishu, Somalia.

### Methods

#### 1. Study Design

A cross-sectional survey will be conducted to assess the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia.

#### 2. Study Population

The study population will include healthcare professionals working in various health service provider centre in Mogadishu. This includes Nurse, Nursing technician, Laboratory technician, Pharmacist, Doctor, Physiotherapist, Nutritionist.

#### Study setting and period :

Mogadishu, the largest city and the capital of Somalia. Located on the coast of the Indian Ocean, Mogadishu is known for its rich history, cultural diversity, and strategic importance in the region.

Regarding the timeline period, as a researcher, the study is scheduled to be conducted during April, May, and June of 2024. Conducting the study during these months allows for a comprehensive examination of the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia, and providing insights that are timely and reflective of current conditions healthcare professionals in the city.

#### 3. Sample Size Calculation

Using a prevalence estimate from similar studies and the population size of healthcare professionals in Mogadishu, the sample size will be calculated to ensure statistical significance and generalizability. Assuming a 50% prevalence rate for conservative estimates, a 95% confidence interval, and a 5% margin of error, the required sample size can be calculated using the formula:

$$n = Z^2 \cdot p \cdot (1-p) / E^2$$

Where:

- $n$  = sample size
- $Z$  = Z-value (1.96 for 95% confidence)
- $p$  = estimated prevalence (0.50)

- $e$  = margin of error (0.05).

For the study examining the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, a sample size of 385 participants has been calculated

#### 4. Sampling Method

In assessing the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia, a convenience sampling approach was utilized.

#### 5. Inclusion and Exclusion Criteria

- **Inclusion Criteria:** All healthcare professionals currently employed in Mogadishu who consent to participate.
- **Exclusion Criteria:** Healthcare professionals on extended leave or those who decline to participate.

#### 6. Data Collection Tools

Investigating the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia, a self-administered questionnaire was employed for data collection. This questionnaire was meticulously designed to gather comprehensive demographic information and mental health indicators using validated scales. The demographic variables included gender, age, marital status, education level, professional categories (e.g., doctors, nurses, pharmacists), work experience in years, weekly overtime hours, and hours of sleep per night. These factors were crucial for analysing how socio-demographic characteristics may influence mental health outcomes among healthcare professionals in Mogadishu.

The questionnaire utilized the Depression, Anxiety, and Stress Scale 42 (DASS 42), a well-established instrument for measuring psychological distress. This scale consists of three subscales—Depression, Anxiety, and Stress—each comprising 14 items. Participants rated their responses on a Likert scale to indicate the severity of symptoms experienced over the past week. The questionnaire was developed and administered using KoBoToolbox to ensure consistency and accuracy in data collection for this study on mental health among healthcare professionals in Mogadishu.

#### 7. Data Collection Procedure

Participants will be provided with clear instructions for completing the questionnaire in a confidential and anonymous manner. The questionnaire will be distributed electronically, with links provided to participants individually and through group channels by using KoBoToolbox. This approach allows healthcare professionals to complete the survey at their convenience, ensuring optimal response rates. All questions in the questionnaire are mandatory to ensure comprehensive data collection. After submission, participants' responses will be securely managed and analysed to gain insights into the mental health challenges faced by healthcare professionals in Mogadishu. This method ensures efficient data gathering while respecting participants' schedules and privacy concerns.

#### 8. Data Analysis

In our study on the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu, data was analysed using SPSS software. Descriptive statistics, including frequencies and percentages, were used to characterize the socio-demographic profiles of study participants and determine the prevalence rates of depression, anxiety, and stress within the sample. Inferential statistics, such as chi-square tests, were employed to explore associations between socio-demographic factors and mental health outcomes. Additionally, correlation analysis was conducted to examine relationships between anxiety, depression, and stress levels. Furthermore, reliability statistics, specifically Cronbach's Alpha, were calculated to assess the internal consistency of the measurement scales used in the study. These statistical

analyses provided comprehensive insights into the mental health challenges faced by healthcare professionals in Mogadishu, guiding targeted interventions and support strategies to enhance their well-being.

### 9. Ethical Considerations

Ethical considerations are paramount in our study on the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu. Approval for this research has been obtained from the Abrar University Ethical Committee, ensuring adherence to ethical standards and guidelines for conducting research involving human participants. The approval process involved a thorough review of the study protocol to safeguard the welfare, confidentiality, and rights of all participants involved. As researchers, we are committed to upholding these ethical principles throughout the study. This ethical oversight is crucial in maintaining the integrity and trustworthiness of our findings, ultimately contributing to the advancement of knowledge in mental health among healthcare professionals in Mogadishu, Somalia.

### Result

This chapter presents the findings from the study, focusing on the severity of depression, anxiety, and stress as measured by the DASS 42 scale. It includes an analysis of socio-demographic characteristics, the prevalence rates of depression, anxiety, and stress among participants, and the stratification of these mental health issues by various socio-demographic factors. Additionally, the chapter examines the correlations between depression, anxiety, and stress, and provides an assessment of the reliability of the measurement scale used.[19]

**Table 1 Interpretation guide for scores for severity ratings of DASS 42 severity scale:**

| Grades  | Depression | Anxiety | Stress  |
|---|------------|---------|---------|
| <b>Normal</b>   | 0 – 9      | 0 – 7   | 0 – 14  |
| <b>Mild</b>   | 10 – 13    | 8 – 9   | 15 – 18 |
| <b>Moderate</b>   | 14 – 20    | 10 – 14 | 19 – 25 |
| <b>Severe</b>   | 21 – 27    | 15 – 19 | 26 – 33 |
| <b>Extreme severe</b>   | 28 +       | 20 +    | 34 +    |
| <b>* Depression, Anxiety &amp; Stress subscales of DASS42</b> |            |         |         |

The DASS-42 is a 42-item (with 14 items dedicated to each of these three domains.) self-report scale intended to measure the emotional states of depression, anxiety, and stress. In a clinical setting, the primary value of the DASS is to help clarify the source of emotional disturbance as part of a broader clinical assessment. The main purpose of the DASS is to evaluate the severity of core symptoms related to Depression, Anxiety, and Stress. This tool not only measures the severity of a patient’s symptoms but also tracks the patient’s response to treatment. As a screening instrument, practitioners must use clinical judgment to determine whether an individual requires further assessment for anxiety and depression. High scores on the DASS would indicate a significant level of distress in the patient, necessitating further exploration during the interview process. Conversely, low scores should not replace a comprehensive clinical interview. Each of the 42 questions is rated on a 4-point scale from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much, or most of the time”). The scores for Depression, Anxiety, and Stress are obtained by summing the scores of the corresponding items. **TABLE 1.**

**Table 2 : Socio-demographic characteristics of study participants:**

| Variables   | Sub-categories         | Frequency n=305 | Percentage % |
|---|------------------------|-----------------|--------------|
| <b>Gender</b>   | Male                   | 202             | 66.2 %       |
|   | Female                 | 103             | 33.8 %       |
|   | Total                  | 305             | 100 %        |
| <b>Age</b>  | 20 - 30 years.         | 203             | 66.6 %       |
|   | 31 - 40 years.         | 90              | 29.5 %       |
|   | 40 - 50 years          | 10              | 3.3 %        |
|   | Above 50 years         | 2               | 0.7 %        |
|   | Total                  | 305             | 100 %        |
| <b>Marital Status</b>   | Single                 | 164             | 53.8 %       |
|   | Married                | 137             | 44.9 %       |
|   | Separated              | 2               | 0.7 %        |
|   | Widow                  | 2               | 0.7 %        |
|   | Total                  | 305             | 100 %        |
| <b>Education</b>  | Undergraduate.         | 102             | 33.4 %       |
|   | Postgraduate.          | 203             | 66.6 %       |
|   | Total                  | 305             | 100 %        |
| <b>Professional Categories</b>                                  | Nurse.                 | 48              | 15.7 %       |
|   | Nursing technician.    | 11              | 3.6 %        |
|   | Laboratory technician. | 12              | 3.9 %        |
|   | Pharmacist.            | 8               | 2.6 %        |
|   | Doctor.                | 193             | 63.3 %       |
|   | Physiotherapist.       | 4               | 1.3 %        |
|   | Nutritionist.          | 29              | 9.5 %        |
|   | Total                  | 305             | 100 %        |
| <b>Work Experience</b>  | 1-5 years              | 208             | 68.2 %       |
|   | 6-10 years             | 66              | 21.6 %       |
|   | Above 10 years.        | 31              | 10.2 %       |
|   | Total                  | 305             | 100 %        |
| <b>Working overtime</b>   | Working overtime.      | 159             | 52.1 %       |
|   | Not Working overtime.  | 146             | 47.9 %       |
|   | Total                  | 305             | 100 %        |
| <b>Hours of sleep</b>   | sleep less 8 hours     | 236             | 77.4 %       |
|   | sleep more 8 hours     | 69              | 22.6 %       |
|   | Total                  | 305             | 100 %        |
| <b>*Socio-demographic characteristics of study participants</b> |                        |                 |              |

The gender distribution indicated a predominance of male participants, comprising 202 individuals (66.2%), compared to 103 females (33.8%). Age distribution revealed that the largest cohort fell within the 20-30 years bracket, encompassing 203 participants (66.6%), followed by 90 individuals (29.5%) aged



31-40 years. A smaller proportion included participants aged 40-50 years (10, 3.3%) and above 50 years (2, 0.7%).

Marital status diversity among participants showed that 164 individuals (53.8%) were single, while 137 (44.9%) were married. Separated and widowed individuals each constituted a minor percentage of the sample, each comprising 2 participants (0.7%). In terms of educational attainment, a significant majority of participants held postgraduate degrees, totaling 203 individuals (66.6%), while 102 participants (33.4%) reported undergraduate qualifications.

Professionally, the sample encompassed diverse healthcare roles, with doctors comprising the largest group at 193 participants (63.3%). Other professions included nurses (48, 15.7%), nutritionists (29, 9.5%), nursing technicians (11, 3.6%), laboratory technicians (12, 3.9%), pharmacists (8, 2.6%), and physiotherapists (4, 1.3%). Regarding work experience, the majority of participants reported 1-5 years of experience (208, 68.2%), followed by 66 individuals (21.6%) with 6-10 years, and 31 participants (10.2%) with more than 10 years of experience. A slight majority reported working overtime (159, 52.1%), while 146 participants (47.9%) did not. Sleep patterns indicated that a significant proportion of participants reported sleeping less than 8 hours per night (236, 77.4%), whereas 69 individuals (22.6%) reported sleeping more than 8 hours. **TABLE 2.**

**Table 3 : Prevalence of depression, anxiety and stress in study participants**

| Score Severity Ratings   | Depression   | Anxiety      | Stress       |
|--|--------------|--------------|--------------|
| Normal   | 212 (69.5 %) | 174 (57.0 %) | 215 (70.5 %) |
| Mild   | 23 (7.5 %)   | 28 (9.2 %)   | 25 (8.2 %)   |
| Moderate   | 36 (11.8 %)  | 34 (11.1 %)  | 40 (13.1 %)  |
| Severe   | 28 (9.2 %)   | 28 (9.2 %)   | 22 (7.2 %)   |
| Extremely severe   | 6 (2.0 %)    | 41 (13.4 %)  | 3 (1.0 %)    |
| Total  | 305 (100 %)  | 305 (100 %)  | 305 (100 %)  |
| <b>*Prevalence of depression, anxiety and stress in study participants</b> |              |              |              |

Out of 305 participants, the majority (69.5%) exhibited normal depression levels, indicating stable moods. Mild depression was seen in 7.5%, moderate in 11.8%, severe in 9.2%, and extremely severe in 2.0%. This shows that while most participants are not significantly affected, a notable minority experience varying degrees of depressive symptoms. For anxiety, 57.0% of participants fell within the normal range. Mild anxiety affected 9.2%, moderate 11.1%, severe 9.2%, and extremely severe 13.4%. This distribution highlights a higher prevalence of extreme anxiety symptoms compared to depression, indicating a substantial need for anxiety interventions. In terms of stress, 70.5% of participants were in the normal range. Mild stress was reported by 8.2%, moderate by 13.1%, severe by 7.2%, and extremely severe by 1.0%. The data suggests most participants manage stress well, but there is still a significant portion experiencing moderate to severe stress levels. **TABLE 3.**

**Table 4 : Stratification of sociodemographic factors with depression, anxiety and stress.**

| Associated Factors |        | depression | P value | Anxiety | P value | Stress | P value |
|--------------------|--------|------------|---------|---------|---------|--------|---------|
| Gender             | Male   | 58         | 0.207   | 82      | 0.149   | 59     | 0.486   |
|                    | Female | 35         |         | 49      |         | 31     |         |

|  |                                |    |        |     |        |    |       |
|--|--------------------------------|----|--------|-----|--------|----|-------|
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Age</b>   | 20 - 30 years.                 | 67 | 0.453  | 92  | 0.203  | 64 | 0.412 |
|  | 31 - 40 years.                 | 24 |        | 33  |        | 22 |       |
|  | 40 - 50 years                  | 2  |        | 6   |        | 4  |       |
|  | Above 50 years                 | 0  |        | 0   |        | 0  |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Marital status</b>  | Single                         | 51 | 0.134  | 79  | 0.014  | 52 | 0.010 |
|  | Married                        | 40 |        | 48  |        | 34 |       |
|  | Separated                      | 2  |        | 2   |        | 2  |       |
|  | Widow                          | 0  |        | 2   |        | 2  |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Education</b>   | Undergraduate.                 | 39 | 0.026  | 51  | 0.051  | 35 | 0.121 |
|  | Postgraduate.                  | 54 |        | 80  |        | 55 |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Professional Categories</b>   | Nurse.                         | 24 | <0.000 | 34  | <0.000 | 22 | 0.006 |
|  | Nursing technician.            | 7  |        | 7   |        | 7  |       |
|  | Laboratory technician.         | 2  |        | 4   |        | 2  |       |
|  | Pharmacist.                    | 2  |        | 2   |        | 2  |       |
|  | Doctor.                        | 42 |        | 66  |        | 45 |       |
|  | Physiotherapist.               | 2  |        | 2   |        | 2  |       |
|  | Nutritionist.                  | 14 |        | 16  |        | 10 |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Work Experience</b>   | 1-5 years                      | 69 | 0.073  | 94  | 0.019  | 64 | 0.008 |
|  | 6-10 years                     | 20 |        | 31  |        | 24 |       |
|  | Above 10 years.                | 4  |        | 6   |        | 2  |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Working overtime</b>  | Yes, I am Working overtime.    | 52 | 0.226  | 70  | 0.390  | 51 | 0.184 |
|  | No, I am not Working overtime. | 41 |        | 61  |        | 39 |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>Hours of sleep</b>  | sleep less 8 hours             | 76 | 0.146  | 99  | 0.302  | 67 | 0.258 |
|  | sleep more 8 hours             | 17 |        | 32  |        | 23 |       |
|  | Total                          | 93 |        | 131 |        | 90 |       |
| <b>*Stratification of sociodemographic factors with depression, anxiety and stress</b> |                                |    |        |     |        |    |       |

Depression is significantly related to professional categories ( $p < 0.000$ ) and education ( $p = 0.026$ ), indicating that both an individual's profession and educational background influence depression levels. Anxiety shows significant associations with marital status ( $p = 0.014$ ), professional categories ( $p < 0.000$ ),

and work experience ( $p = 0.019$ ), suggesting that these factors play a crucial role in affecting anxiety levels. Similarly, stress has significant relationships with marital status ( $p = 0.010$ ) and professional categories ( $p = 0.006$ ), highlighting the impact of these variables on stress levels. **TABLE 4.**

**Table 5 : Correlation: anxiety depression and stress.**

| Correlations   |                     | depression2 | Anxiety2 | Stress2 |
|--|---------------------|-------------|----------|---------|
| Depression2  | Pearson Correlation | 1           | .861**   | .656**  |
|  | Sig. (2-tailed)     |             | .000     | .000    |
|  | N                   | 305         | 305      | 305     |
| Anxiety2   | Pearson Correlation | .861**      | 1        | .763**  |
|  | Sig. (2-tailed)     | .000        |          | .000    |
|  | N                   | 305         | 305      | 305     |
| Stress2  | Pearson Correlation | .656**      | .763**   | 1       |
|  | Sig. (2-tailed)     | .000        | .000     |         |
|  | N                   | 305         | 305      | 305     |
| **. Correlation is significant at the 0.01 level (2-tailed). |                     |             |          |         |

The Pearson correlation analysis reveals significant relationships between depression, anxiety, and stress among the 305 participants, all with  $p$ -values  $< 0.000$ , indicating strong statistical significance.

**Depression and Anxiety:** The Pearson correlation coefficient between depression and anxiety is 0.861, signifying a very strong positive relationship. This implies that as depressive symptoms increase, anxiety symptoms also tend to increase significantly, and vice versa. **TABLE 5.**

**Depression and Stress:** The correlation between depression and stress is 0.656, indicating a strong positive relationship. This suggests that higher levels of depressive symptoms are associated with higher levels of stress. **TABLE 5.**

**Anxiety and Stress:** The correlation coefficient between anxiety and stress is 0.763, which also indicates a strong positive relationship. This demonstrates that individuals with higher anxiety levels tend to experience higher stress levels. **TABLE 5.**

**Reliability Statistics**

With a Cronbach's Alpha of 0.971, the scale demonstrates excellent internal consistency, suggesting that the items on the scale are highly correlated and measure the same underlying construct. This high level of reliability means that the scale produces consistent and stable results across different administrations, enhancing the confidence in the validity and accuracy of the measured data. Consequently, the scale is deemed highly reliable for assessing the constructs of interest in this study, whether they pertain to depression, anxiety, stress, or another psychological dimension. **TABLE 6.**

**Table 6 : Reliability Statistics**

| Reliability Statistics |            |
|------------------------|------------|
| Cronbach's Alpha       | N of Items |
| <b>0.971</b>           | 42         |

|                          |
|--------------------------|
| *Reliability Statistics. |
|--------------------------|

**Discussion:****Socio-demographic characteristics of study participants:**

The study sample comprised 305 healthcare professionals in Mogadishu, Somalia, with a majority being male (66.2%) compared to females (33.8%). In addition, during the pandemic study done Mogadishu shows that **Males constitute 58.6%, while females make up 41.4% of the population.** [18] Also Another study done in Pakistan female predominance 134 vs 126 males. [6]. The age distribution showed that a significant proportion of participants were between 20 to 30 years old (66.6%), followed by those aged 31 to 40 years (29.5%). A small percentage fell into the 40 to 50 years age group (3.3%), and even fewer were above 50 years old (0.7%). While during the pandemic study done Mogadishu shows 35.5% are aged 18 to 30, 27.9% are between >30 to 45 years, 21.0% are >45 to 55 years, and 15.6% are over 55 years old. [18]. In terms of marital status, the majority were single (53.8%), while 44.9% were married. Separated individuals and widows each constituted 0.7% of the sample. Another side during the pandemic study done Mogadishu shows Marital status shows 47.9% are married, 35.5% are single, 15% are divorced, and 1.6% are widowed. [18].

Educational qualifications varied, with 33.4% having undergraduate degrees and 66.6% holding postgraduate qualifications. While during the pandemic study done Mogadishu shows educated population, with 56% having undergraduate degrees and 43% holding postgraduate qualifications. [18]. Professionally, the largest group consisted of doctors (63.3%), followed by nurses (15.7%) and nutritionists (9.5%). Nursing technicians, laboratory technicians, pharmacists, and physiotherapists represented smaller proportions of the sample. While during the pandemic study done Mogadishu shows nurses dominate at 151%, followed by doctors at 47% and physiotherapists at 24%. Nursing technicians, laboratory technicians, and pharmacists contribute with 25%, 7%, and 6% respectively.[18]. Regarding work experience, a significant majority had 1 to 5 years of experience (68.2%), while 21.6% had 6 to 10 years, and 10.2% had over 10 years of experience. *Comparing study done in Pakistan* 94.6% had a work experience of <15 years. [6].

**Prevalence of depression, anxiety and stress in study participants**

The severity ratings for depression, anxiety, and stress among healthcare professionals in Mogadishu, Somalia, reveal varying levels of psychological distress within the sample. The **post-pandemic** study shows higher normal levels for depression (69.5%), anxiety (57.0%), and stress (70.5%) compared to during the pandemic, where normal levels were 53.5% for depression, 30.7% for anxiety, and 84.8% for stress [18]. The improvement in normal depression and anxiety levels post-pandemic likely reflects the reduction of acute stressors such as high patient mortality rates, fear of infection, and increased workloads that were prevalent during the pandemic. The stabilization of healthcare systems and availability of vaccines may have contributed to reducing anxiety. Interestingly, normal stress levels were higher during the pandemic. This could be because healthcare workers were in crisis mode, potentially masking perceived stress levels due to high adrenaline and focus on immediate tasks. Post-pandemic, the cumulative effects of prolonged stress and burnout became more apparent, resulting in a more realistic assessment of stress. While Pakistan a substantial number reported normal mental health scores: 51.5% showed minimal depressive symptoms, 39.6% experienced low levels of anxiety, and 58.1% reported manageable stress levels.[6].

Comparing mental health symptoms during and post-COVID-19 pandemic among Mogadishu's healthcare professionals reveals shifts in their well-being. During the pandemic, high percentages experienced mild depression (24.9%), anxiety (36.2%), and stress (6.9%), with moderate symptoms also prevalent [18]. Post-pandemic, there was a decrease in mild symptoms but persistent moderate levels of depression (11.8%), anxiety (11.1%), and stress (13.1%). This suggests initial recovery from acute stressors but highlights ongoing mental health challenges requiring sustained support and intervention strategies tailored to healthcare professionals' evolving needs. In a previous study in Pakistan, findings indicated that 22.7% of healthcare professionals (HPs) reported mild depression, while 16.9% experienced mild stress. Moderate mental health symptoms were observed among 12.7% of HPs for depression, 25.8% for anxiety, and 17.3% for stress. [6]

During the pandemic, severe anxiety was prevalent at 10.7%, with lower rates of severe depression (1.8%) and stress (1.1%) [18]. **Post-pandemic**, severe depression rose sharply to 9.2%, while anxiety levels remained stable at 9.2%. Stress levels increased notably to 7.2%. also A smaller yet concerning group experienced extremely severe level anxiety (13.4%), while extremely severe depression and stress were reported by 2.0% and 1.0% of participants, respectively. These shifts highlight the evolving mental health challenges post-pandemic, influenced by prolonged stressors like economic uncertainty and social adjustments. Addressing these trends requires continued support for mental health services and community resilience efforts. A previous study in Pakistan showed that a smaller proportion of healthcare professionals (HPs) exhibited severe mental health symptoms: 2.3% showed extreme depression scores, 8.1% reported extreme anxiety, and 2.7% experienced extreme stress levels. [6]

### **Stratification of sociodemographic factors with depression, anxiety and stress.**

The study revealed significant associations between mental health indicators and various socio-demographic factors among healthcare professionals in Mogadishu, Somalia. Depression levels were notably influenced by both professional categories ( $p < 0.000$ ) and educational background ( $p = 0.026$ ), indicating that the type of healthcare role and level of education impact the likelihood of experiencing depression. Comparing to another in Mogadishu during pandemic for depression the chi square test showed that it's significantly associated with working departments of nurses and doctors since the P value less than 0.05 (0.04). Stress is also significantly associated with working department of nurse and doctors since the P value is less than 0.05 (0.02). [18] Anxiety levels showed significant relationships with marital status ( $p = 0.014$ ), professional categories ( $p < 0.000$ ), and work experience ( $p = 0.019$ ), suggesting that marital status, occupational role, and years of professional experience are critical factors influencing anxiety among healthcare providers. Comparing to another in Mogadishu during pandemic female is 3.174 times more likely to perceive anxiety than male with statically significant association between gender of respondents and anxiety since the P value is less than 0.05 (0.013). Stress levels were significantly associated with marital status ( $p = 0.010$ ) and professional categories ( $p = 0.006$ ), underscoring the influence of relationship status and occupational roles on stress experienced by healthcare professionals. Comparing to another in Mogadishu during pandemic Respondents **age groups and perceived stress a chi square test showed that there is statically significant association since the P value is less than 0.05 (0.041) respondents** A previous study in Pakistan showed that No significant relationship observed between the observed variables and the prevalence of depression, anxiety and stress. [6]

## Conclusion

The study assessing the prevalence of depression, anxiety, and stress among healthcare professionals in Mogadishu highlighted significant psychological distress within this population. The data revealed that while a majority of participants scored within the normal range for depression (69.5%), anxiety (57.0%), and stress (70.5%), there were notable percentages experiencing mild to extremely severe symptoms. Post-pandemic, severe depression rates rose to 9.2%, and severe stress levels increased to 7.2%, indicating a worsening mental health landscape compared to during the pandemic. Extremely severe anxiety remained a major concern, affecting 13.4% of the participants.

These findings underscore the persistent mental health challenges healthcare professionals face, exacerbated by the high demands of their profession and the ongoing impacts of the COVID-19 pandemic. The study also suggests that while there has been some recovery in terms of normal levels of depression and anxiety, the increase in severe and extremely severe cases points to the need for targeted mental health interventions.

Factors contributing to these mental health challenges include high workload, exposure to trauma and death, fear of infection, resource shortages, social isolation, and ethical dilemmas. Addressing these issues is crucial to improving the mental well-being of healthcare workers and ensuring a resilient healthcare system.

## Recommendation

**Mental Health Support Programs:** Implement comprehensive mental health support programs tailored for healthcare professionals. These should include regular screenings, counselling services, and stress management workshops to address and mitigate the effects of psychological distress.

**Work Environment Improvements:** Enhance the working conditions for healthcare professionals by reducing workload, ensuring adequate rest periods, and providing a supportive work environment. This can help alleviate stress and prevent burnout.

**Training and Education:** Offer training programs focused on mental health awareness and resilience-building strategies. Educating healthcare professionals about recognizing early signs of depression, anxiety, and stress can facilitate timely intervention and support.

**Policy Development:** Advocate for the development of policies that prioritize the mental well-being of healthcare workers. This includes mandating mental health resources and support systems within healthcare institutions.

**Further Research:** Conduct longitudinal studies to monitor the mental health trends among healthcare professionals over time. This will provide deeper insights into the long-term impacts of the pandemic and other stressors on their mental health.

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