



Prevalence and Risk Factors Associated with Depressive Symptoms Among Healthcare Professionals at a Tertiary Care Hospital in Mogadishu, Somalia: A Cross-Sectional Study

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Background: Depression, a prevalent mental health issue, can significantly impact healthcare workers (HCWs), leading to decreased productivity, increased turnover, and high medical errors. However, there is a dearth of information regarding depression among healthcare professionals in Somalia. Therefore, this study aimed to assess the magnitude and risk factors associated with depressive symptoms among healthcare professionals in Mogadishu, Somalia.

Methods: A hospital-based cross-sectional study was conducted among HCWs at Erdogan Hospital, in the capital city of Somalia. Data was collected using questionnaires on socio demographic, work-related characteristics and Patient Health Questionnaire-9 (PHQ-9). Bivariate and multivariate logistic regression analyses were conducted to identify variables associated with depressive symptoms. A p-values of 0.05 as a cutoff for a significant association.

Results: The prevalence of depressive symptoms among healthcare professionals was 48.9% (95% CI: 45.4–56.9%). In multivariable analysis, being female (AOR = 2.05; 95% CI: 1.17–3.60), being a nurse (AOR = 3.11; 95% CI: 1.14–8.48), unmarried (AOR = 1.83; 95% CI: 1.04–3.21), having insufficient sleep (AOR = 2.61; 95% CI: 1.45–4.70), a family history of mental illness (AOR = 3.31; 95% CI: 1.49–7.36), lack of physical activity (AOR = 2.59; 95% CI: 1.19–5.62), and having low social support (AOR = 3.06; 95% CI: 1.17–7.98) were all associated with increased odds of experiencing depressive symptoms.

Conclusion: The study showed that nearly half of healthcare professionals experienced depressive symptoms. The study underscores the importance of efficient screening methods for identifying psychological symptoms in healthcare professionals, which is essential for enhancing their mental health and patient care. Therefore, we recommend that healthcare institutions and policymakers develop and implement screening measures to identify and improve the mental health well-being of HCWs, as well as provide high-quality patient care.

Keywords: mental health, depressive symptoms, associated factors, healthcare professionals, PHQ-9, Mogadishu, Somalia

Introduction

Depression is one of the most prevalent mental health disorders worldwide, affecting around 350 million people and accounting for 5% of disability-adjusted life years (DALYs).¹ Prior to 2020, depressive disorders were one of the major contributors to the global burden of disease in terms of years lived with disability (YLD) and DALYs.² However, the World Health Organization (WHO) predicts that by 2030, depressive disorders will become the leading cause of disability worldwide.³ Depressive disorders are linked to negative life events, including poor health outcomes, a higher risk of self-harm, impaired relationships, poor work productivity, substance abuse, a sedentary lifestyle, and a reduced life expectancy.⁴



HCWs worldwide face high-risk mental health consequences due to work-related factors like excessive workloads, long shifts, fast-paced environments, inadequate safety measures, the ongoing nature of patient care, ethical dilemmas, job security concerns, workplace bullying, and poor social support. These factors contribute to increased stress levels and potential negative health outcomes.⁵ The outcome of this psychological distress can lead to burnout, anxiety, depression, insomnia, and other mental health issues.^{6,7} The healthcare system in Somalia faces significant challenges due to conflict, political instability, and underfunding. The country has high maternal and child mortality rates and communicable diseases. Despite these, efforts are being made to improve access and quality through community health programs and mobile clinics. However, healthcare workers face unique challenges like inadequate resources, overwhelming patient loads, and trauma from conflict, leading to burnout and depression.⁸

Several studies have shown varying prevalence of depressive symptoms among healthcare professionals. For instance, Ethiopia reported that 27.8% of HCWs were experiencing symptoms of depression;⁹ Egypt found that over 50% of HCWs were exhibiting these symptoms;¹⁰ and Saudi Arabia reported that 43.9% of HCWs were experiencing these symptoms.¹¹ A previous study conducted in Mogadishu, Somalia, amid the COVID-19 epidemic indicated prevalence rates of 46.5% for depression, 69.3% for anxiety, and 15.2% for stress among HCWs.¹² Similarly, several recent meta-analysis studies have found a depression prevalence ranging from 24% to 33%.^{13–15} HCWs encounter significant physical and mental challenges, requiring them to make critical decisions in limited time and resources, especially during medical emergencies. Mental health problems impair their performance, leading to increased medical errors, higher turnover rates, reduced clinical competency, and decreased quality of treatment they provide, ultimately affecting patient care and safety.^{5,13}

Several risk factors, including low socioeconomic status, single status, personal and family history of mental disorders, gender, substance use, working night shifts, and long working hours, are linked to the development of depressive symptoms among HCWs.^{9,10} The topic is rarely discussed in the region, and there is a scarcity of research on the prevalence of depressive symptoms among HCWs in Africa as a whole.¹⁶ To the best of our knowledge, there is only one published study available in Somalia that has investigated the prevalence of depressive symptoms and the associated risk factors that contribute to it among healthcare personnel. Determining the magnitude and contributing factors of depressive symptoms among HCWs may serve as the foundation for developing and implementing intervention strategies for policymakers and healthcare institutions to prevent, manage, and decrease the burden of these symptoms. Therefore, the objective of this study was to determine the prevalence of depressive symptoms as well as identify the associated risk factors among healthcare professionals at a tertiary care hospital in Mogadishu, Somalia.

Methods

Study Design and Setting

An institution-based cross-sectional study was conducted among healthcare personnel at the Mogadishu Somali Turkiye Recep Tayyip Erdogan Training and Research Hospital in Mogadishu, Somalia, between April 1, 2024, and May 31, 2024. The study was carried out at Erdogan Hospital, a public, training, and tertiary referral hospital built in the 1960s in Mogadishu, Somalia. The hospital remained operational until the beginning of the civil war in the early 1990s, at which point it ceased functioning as a result of the central government's collapse. In January 2015, officials from the Somali and Turkish governments established an agreement to improve and restore the hospital, leading to its formal reopening.

Sample Size and Sampling Procedure

To determine the required sample size, we used a single population proportion formula: $n = (z)^2 * p * (1-p) / d^2$, where n is the smallest sample size needed, p is the estimated prevalence rate, z is the standard value for a 95% confidence level, and d is the margin of error (0.05). In this study, we used a depression prevalence rate of 46.5%, which is derived from prior research examining the prevalence of depressive symptoms among healthcare professionals in Mogadishu, Somalia.¹² To account for a 10% non-response rate, a sample size of 246 hCWs was required. The human resources office reported a total of 536 healthcare personnel at the hospital. Therefore, we invited all healthcare personnel who met the eligibility criteria and were physically present at the hospital during the data collection period.

Inclusion and Exclusion Criteria

The study comprised healthcare professionals who had been working at the hospital for a duration of six months prior to data collection. The exclusion criteria encompassed interns and students, healthcare professionals on yearly leave, and personnel who were very ill. Furthermore, people with less than six months of employment were also excluded.

Variables of Study

Dependent Variable

Status of depressive symptoms (absent or present).

In this study, we used the PHQ-9 to assess depressive symptoms, with scores of 5 or higher indicating the presence of depressive symptoms and scores below 5 indicating the absence of depressive symptoms.

Independent Variables

Socio-demographic and behavioral variables (age, gender, marital status, having kids, education status, profession, monthly income in US dollars, average nighttime sleep during the work days, having chronic medical illness, family history of mental illness, life time substance use, current substance use, smoking cigarettes, physical activity, and BMI) and work-related and clinical characteristics (work shift, working hours per day, service duration in years, social support, and level resilience).

Data Collection Procedures and Tools

Four sets of self-administered questionnaires were distributed to collect data. These questionnaires contained information on socio demographic and work-related factors, as well as the Patient Health Questionnaire-9 (PHQ-9), the Oslo Social Support Scale (OSSS-3), and the Brief Resilience Scale (BRS). A structured questionnaire was used to gather the socio demographic and work-related information of the participants. The questionnaire was developed based on a thorough review of relevant literature.^{8,11,17} All variables, except for age, were categorical and collected through closed-ended questionnaires.

The PHQ-9 was used to evaluate depressive symptoms, which is a 9-item instrument developed by Kroenke et al¹⁸ to evaluate depressive symptoms in the past two weeks. The PHQ-9 is widely used as a screening tool for assessing the severity of depression in both clinical and research settings.^{19,20} Participants rate their experiences using a rating scale from 0 to 3, with scores ranging from 0 to 27. Mild depression is defined as having scores ranging from 5 to 9, while moderate depression is defined as having a score ranging from 10 to 14. Moderate-to-severe depression is defined as having scores of 15 or more. The PHQ-9 was validated among Somali people by Nallusamy et al,²¹ who reported a Cronbach's alpha coefficient of 0.79.

The OSSS-3, which consists of three items, was used to assess social support. The scale's sum score ranges from 3 to 14, with a higher score indicating strong social support and a lower score indicating low social support. The instrument was categorized as scoring 12–14, considered “strong social support”, a score of 9–11, “moderate social support”, and a score of 3–8, “poor social support”.²² The OSSS is frequently utilized in research to investigate the correlation between social support and health outcomes, emphasizing the significance of social networks in fostering mental and physical well-being.²³

The BRS, which is a concise self-evaluation instrument, was used to assess resilience among HCWs. It consists of six items that are intended to measure an individual's ability to overcome stress and hardship. The items are scored using a five-point Likert scale, which ranges from strongly disagree (1) to strongly agree (5). Items with negative words were reverse-coded before scoring. The scoring process involved adding the responses for all six items, resulting in a total sum ranging from 6 to 30. This total sum was then divided by the total number of questions answered. Resilience was categorized based on total scale scores ranging from 4.31 to 5.0 for high resilience, 3.0–4.30 for normal resilience, and 1.0–2.99 for low resilience.²⁴ The BRS is frequently used in research and clinical settings to assess resilience as a factor influencing mental health outcomes, aiding in the identification of individuals requiring interventions designed to improve resilience skills.²⁵

To enhance the reliability of the questionnaire and ensure that respondents fully understood its content, a pilot study was conducted involving 30 participants at the study hospital, which we did not include in the final analysis.

Data Management and Statistical Analysis

The data were entered manually into an Excel spreadsheet, thoroughly examined for errors and discrepancies, and subsequently imported into the Statistical Package for the Social Sciences (SPSS) (Armonk, NY: IBM Corp.), version 26, software to perform data analysis. All cases with incomplete answers were excluded before transferring the data to SPSS to promote transparency and enhance the robustness of the findings. This strategy effectively minimizes potential biases related to missing data, thereby strengthening the overall validity of the results. The frequencies with percentages were presented for all categorical variables, while means with standard deviations (SD) were displayed for continuous variables. Statistical studies were performed using bivariate and multivariable logistic regression to identify factors that were correlated with the outcome variable. In bivariate logistic regression, variables with a p-value below 0.20 were selected as candidates and included in the multivariate logistic regression analysis. According to Bursac et al,^{26,27} a p-value below 0.20 in univariate logistic regression may indicate a potential relationship with the outcome variable in the final model, possibly due to the presence of confounding variables. The Hosmer-Lemeshow goodness-of-fit test was employed in the multivariate logistic regression model to assess the goodness of fit of the final model.^{28,29} Variables with a p-value below 0.05 were deemed statistically significant in the multivariate logistic regression analysis. These variables were then reported as the adjusted odds ratio (AOR) along with a 95% confidence interval (CI).

Ethical Approval

The study obtained ethical approval from the Mogadishu Somali Turkiye Recep Tayyip Erdogan Training and Research Hospital's ethics review board, with the following reference number: MSTH/17420. The researchers presented the study objectives to the healthcare personnel and requested their participation. After being fully informed, every participant in the study gave written informed consent, and only those who volunteered were included. After giving their informed consent, the participants received the questionnaires to complete independently. The participants were instructed to confidentially submit the fully filled-out questionnaires to the primary investigator. Furthermore, we provided participants with relevant information about their right to withdraw from the study at any time. In addition, we provided a guarantee of anonymity for the surveys, maintained strict confidentiality, and avoided disclosing any personally identifiable information. There were no incentives offered to participants for their involvement in the study.

Results

Socio-Demographic and Behavioral Characteristics Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia

A total of 305 hCWs participated in the study, with a response rate of 66.2%. The majority of participants were male (170; 55.7%), younger than 30 years old (167; 54.8%), with a mean age of 28.9 years and a standard deviation of 3.9 years. More than half of the participants were unmarried (160; 52.5%) and slept less than 6 hours per night (200; 65.6%). A small portion of the participants were current substance users (46; 15.1%), and the majority were physically active (256; 83.9%) (Table 1).

Work-Related and Psychological Characteristics of Healthcare Workers

The majority of participants were nurses (161; 52.8%) and had less than five years of work experience (159; 52.1%). A total of 183 participants, accounting for 60.0% of the sample, reported poor social support, while 95 participants (31.1%) reported lower resilience scores (Table 2).

Table 1 Socio-Demographic and Behavioral Characteristics Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia, 2024 (n = 305)

Variable	Category	Frequency	Percentage
Age	<30	167	54.8
	≥30	138	45.2
Gender	Male	170	55.7
	Female	135	44.3
Marital status	Unmarried	160	52.5
	Married	145	47.5
Number of children	≤2	238	78.0
	3–4	42	13.8
	>4	25	8.2
Education status	Diploma	12	3.9
	Undergraduate	140	45.9
	Postgraduate and above	153	50.2
Average sleep duration per night	≤6 hours	200	65.6
	>6 hours	105	34.4
Family history of mental illness	Yes	48	15.7
	No	257	84.3
Presence of chronic medical condition	Yes	44	14.4
	No	261	85.6
Regular physical exercise	Yes	256	83.9
	No	49	16.1
Lifetime substance use	Yes	38	12.5
	No	267	87.5
Current substance use	Yes	46	15.1
	No	259	84.9

Prevalence of Depressive Symptoms Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia

The study findings indicate that 48.9% (95% CI: 45.4–56.9%) of HCWs at a tertiary care hospital in Mogadishu, Somalia, suffer from symptoms of depression. Regarding the severity of depressive symptoms, the study revealed that 27.9% of subjects had mild depressive symptoms, whereas 1.0% experienced severe depression symptoms (Table 3).

Factors Associated with Depressive Symptoms Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia

Bivariate and multivariate logistic regression analyses were conducted to determine the variables that predicted depression symptoms among healthcare professionals. The bivariate logistic regression analysis found that age, gender, marital

Table 2 Work-Related and Psychological Characteristics Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia, 2024 (n = 305)

Variable	Category	Frequency	Percentage
Profession	Specialist doctor	47	15.4
	Resident doctor	72	23.6
	Nurse	161	52.8
	Others	25	8.2
Monthly income	<1000 USD	193	63.3
	1000–2000 USD	67	22.0
	>2000 USD	45	14.8
Work shift	Regular day shift	85	27.9
	Regular night shift	38	12.5
	Mixed shifts	182	59.7
Working hours per day	<10 hours	196	64.3
	≥10 hours	109	35.7
Service duration	<5 years	159	52.1
	5–10 years	131	43.0
	>10 years	15	4.9
Social support	Low support	183	60.0
	Moderate support	92	30.2
	High support	30	9.8
Resilience	Low resilience	95	31.1
	Normal resilience	201	65.9
	Strong resilience	9	3.0

Table 3 Prevalence of Depressive Symptoms Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia, 2024 (n = 305)

Depressive symptom category	n=305	Percentage	95% CI
Having depression			
No	156	51.1	45.4–56.9
Yes	149	48.9	43.1–54.6
Severity of depressive symptoms			
Mild	85	27.9	22.9–33.3
Moderate	45	14.8	11.0–19.2
Moderately severe	16	5.2	3.0–8.4
Severe	3	1	0.2–2.8

status, profession, average sleep duration per night, family history of mental illness, having a chronic medical illness, service duration, lifetime and current substance use, regular physical exercise, and social support were all significantly associated with depression symptoms among HCWs. However, in the multivariate logistic regression analysis, variables such as gender, marital status, profession, average sleep duration per night, family history of mental illness, current substance use, regular physical exercise, and social support were significantly associated with depression symptoms among HCWs, at a p value of 0.05.

The study found that female HCWs had a significantly higher likelihood of experiencing depressive symptoms compared to their male counterparts, with odds around twice greater (AOR = 2.05; 95% CI: 1.17–3.60). Unmarried healthcare professionals had a 1.83-fold higher chance of experiencing depressive symptoms compared to married healthcare staff (AOR = 1.83; 95% CI: 1.04–3.21). The nursing profession had a threefold increase in the likelihood of experiencing depressive symptoms compared to other professions (AOR = 3.11; 95% CI: 1.14–8.48). Furthermore, HCWs who have insufficient sleep (AOR = 2.61; 95% CI: 1.45–4.70), a family history of mental illness (AOR = 3.31; 95% CI: 1.49–7.36), lack physical activity (AOR = 2.59; 95% CI: 1.19–5.62), engage in substance use (AOR = 2.60; 95% CI: 1.13–5.98), or have low social support (AOR = 3.06; 95% CI: 1.17–7.98) are significantly more likely to experience depressive symptoms (Table 4).

Table 4 Factors Associated with Depressive Symptoms Among HCWs at a Tertiary Care Hospital in Mogadishu, Somalia, 2024 (n = 305)

Variable	Category	Depressive symptoms		COR (95% CI)	AOR (95% CI)	p-value
		No (%)	Yes (%)			
Gender	Male	105 (61.8)	65 (38.2)	1	1	
	Female	51 (37.8)	84 (62.2)	2.66 (1.67–4.24)	2.05 (1.17–3.60)	0.012*
Marital status	Unmarried	66 (41.3)	94 (58.7)	2.33 (1.47–3.69)	1.83 (1.04–3.21)	0.035*
	Married	90 (62.1)	55 (37.9)	1	1	
Profession	Attending physician	28 (59.6)	19 (40.4)	1.21 (0.442–3.29)	1.78 (0.552–5.75)	0.334
	Resident physician	49 (68.1)	23 (31.9)	0.834 (0.321–2.17)	0.674 (0.218–2.08)	0.492
	Nurse	63 (39.1)	98 (60.9)	2.77 (1.15–6.64)	3.11 (1.14–8.48)	0.026*
	Others	16 (64.0)	9 (36.0)	1	1	
Average sleep per night	≤6 hours	89 (44.5)	111 (55.5)	2.20 (1.35–3.58)	2.61 (1.45–4.70)	0.001*
	>6 hours	67 (63.8)	38 (36.2)	1	1	
Service duration	<5 years	63 (39.6)	96 (60.4)	1.74 (0.602–5.04)	1.39 (0.394–4.88)	0.610
	5–10 years	85 (64.9)	46 (35.1)	0.618 (0.211–1.81)	0.493 (0.141–1.72)	0.267
	>10 years	8 (53.3)	7 (46.7)	1	1	
Family history of mental illness	Yes	14 (29.2)	34 (70.8)	3.09 (1.54–5.86)	3.31 (1.49–7.36)	0.003*
	No	142 (55.3)	115 (44.7)	1	1	
Regular physical exercise	Yes	140 (54.7)	116 (45.3)	1	1	
	No	16 (32.7)	33 (67.3)	2.49 (1.31–4.75)	2.59 (1.19–5.62)	0.017*
Current substance use	Yes	12 (26.1)	34 (73.9)	3.55 (1.76–7.16)	2.60 (1.13–5.98)	0.024*
	No	144 (55.6)	115 (44.4)	1	1	

(Continued)

Table 4 (Continued).

Variable	Category	Depressive symptoms		COR (95% CI)	AOR (95% CI)	p-value
		No (%)	Yes (%)			
Social support	Low support	79 (43.2)	104 (56.8)	3.62 (1.53–9.56)	3.06 (1.17–7.98)	0.023*
	Moderate support	55 (59.8)	37 (40.2)	1.85 (0.745–4.60)	2.15 (0.770–5.98)	0.144
	High support	22 (73.3)	8 (26.7)	I	I	

Notes: *indicates significance at 5% level. I: reference categories.

Abbreviations: COR, Crude odd ratio; AOR, Adjusted odd ratio; CI, Confidence interval.

Discussion

The objective of this study was to determine the prevalence of depressive symptoms and identify the associated risk factors among healthcare professionals working at a tertiary care hospital in Mogadishu, Somalia. The study revealed that 48.9% of healthcare professionals experienced depressive symptoms. The associated risk factors were female gender, unmarried status, occupation as a nurse, insufficient sleep, family history of mental illness, lack of regular physical activity, current substance use, and poor social support.

The study's findings on the prevalence of depressive symptoms were in line with previous research conducted in China (50.4%),³⁰ Saudi Arabia (43.9%),¹¹ and India (47%).³¹ However, the prevalence of depressive symptoms in our study was comparatively lower than that reported in several studies conducted in Egypt (71%),¹⁰ Afghanistan (73.6%),³² and Sudan (75.7%).³³ On the other hand, this study's findings were higher when compared to studies carried out in India (31.4%),³⁴ Ethiopia (27.8%),⁹ Botswana (21%),³⁵ and China (34.7%).³⁶ The variations in prevalence rates seen in these studies can be attributed to the use of diverse approaches, including variations in sample size, study design, screening instruments, cut-off scores, and study subjects' socio demographic statuses. For example, the study conducted in Afghanistan³² employed the Center for Epidemiologic Studies Depression Scale to evaluate depressive symptoms, while the Indian study³⁴ utilized the Hospital Anxiety and Depression Scale. Additionally, the study from Botswana implemented the Depression, Anxiety, and Stress Scale.³⁵ In contrast, the current study utilized the Patient Health Questionnaire-9 to assess depressive symptoms. Another factor to consider is the variation in sample sizes. For example, two studies from India exhibited substantial differences, with one study³⁴ including 1124 participants and the other³¹ only 197 participants. In contrast, a study conducted in Egypt¹⁰ involved a sample size of 1,646 participants. In the present study, we recruited a sample of 305 healthcare professionals.

In terms of risk factors linked to depressive symptoms, our study revealed a significant association between gender and depression symptoms among HCWs. Specifically, females exhibited a twofold higher likelihood of experiencing depressive symptoms compared to males. This is corroborated by studies conducted in Ethiopia,^{9,17} South Africa,³⁷ and Bangladesh.³⁸ A study revealed a gender difference in stress and coping styles, with women experiencing stressful situations more frequently than men and their coping style being more emotion-focused, and that gender disparities exist in the use of psychological coping strategies among healthcare professionals, which are crucial in reducing depressive symptoms.³⁹ Additionally, women experience higher depressive symptoms than men due to hormonal changes during reproductive cycles like puberty, pregnancy, menstruation, and menopause.⁴⁰ Furthermore, within Muslim countries, women bear social and cultural responsibilities alongside their professional commitments, which may potentially result in feelings of stress and depressive symptoms.⁴¹

Unmarried people are more likely to experience depressive symptoms due to the absence of a partner to share and alleviate daily pressures, resulting in a lack of social support and a protective social barrier.⁴² Furthermore, there is a widespread belief that marriage might provide individuals with improved mental well-being and, thus, a reduced prevalence of mental illness.⁴³ The present study found that non-married HCWs have a 1.83-fold higher likelihood of experiencing depressive symptoms compared to married HCWs. This finding was consistent with previous studies conducted in Ethiopia⁹ and Egypt.¹⁰

Nurses are at a higher risk of experiencing mental distress due to factors such as heavy workloads, night shifts, and exposure to hazardous patients in healthcare settings.⁴⁴ Compared to other professionals, nursing staff members interact with patients more frequently and closely, providing the continuous care that hospitalized patients require. Our study revealed that nursing personnel had a greater likelihood of having depression symptoms compared to healthcare staff in other occupations, which is supported by studies conducted in Ethiopia¹⁷ and Japan.⁴⁵ As a result, these findings underscore the importance of directing attention towards nursing personnel in order to detect, address, and, preferably, prevent depressive symptoms through monitoring and screening.⁴⁶

A hereditary predisposition to mental illness is indicative of the likelihood of developing psychological disorders.⁴⁷ The present study found that healthcare staff who have a familial history of mental illness are more likely to have symptoms of depression, which aligns with a study conducted in Ethiopia.⁹ In addition, family members of mentally ill patients face other challenges, such as social shame, financial hardships, and the responsibility of providing care for their loved ones. Furthermore, children may experience distress and concern as a result of their parents' health conditions, thereby increasing their susceptibility to developing depressive symptoms.⁴⁷

According to the present study, healthcare professionals who engage in substance use are more likely to experience symptoms of depression, which is consistent with previous studies.^{9,48} This finding can be explained by the idea that depressed healthcare professionals are more likely to turn to substance use as a way to relieve their depression. Alternatively, engaging in harmful substance use can have a significant impact on their mood, leading to the development of depressive symptoms.⁴⁷ Substance abuse, misuse, or addiction can worsen depressive symptoms and hinder recovery from a depressive disorder, causing feelings of isolation, sadness, and hopelessness, which are frequently linked to depressive symptoms.⁴⁹

The relationship between regular physical exercise and mental illness, particularly depression, is widely recognized in the general population. As a result, it is considered an essential component of treatment regimens for individuals with these conditions, as well as a preventive measure against their onset.⁵⁰⁻⁵² In this study, we found that healthcare professionals who regularly participated in physical activity had a considerably lower likelihood of experiencing depressive symptoms, which is comparable with the study conducted in Jordan.⁵³ Moreover, a recent systematic review and meta-analysis of the correlation between physical activity and depression revealed that engaging in physical activity, even at levels below the recommended public health guidelines, promotes mental health well-being.⁵⁴ Regular physical activity can help lower depression in a variety of ways, including releasing endorphins, starting thermogenesis, turning on the mTOR axis in some brain areas, and releasing neurotransmitters such as serotonin and dopamine.⁵⁵

Research indicates that individuals suffering from depression often experience sleep disturbances. On the other hand, insufficient sleep can result in increased stress levels, which can lead to a decline in mental well-being and contribute to the appearance of psychiatric diseases. Therefore, it is probable that the relationship between depression and sleep is reciprocal, with the onset of depression potentially leading to sleep disruptions and vice versa,⁵⁶ and enhancing sleep quality leading to improved mental well-being.⁵⁷ However, acute sleep deprivation can unexpectedly improve symptoms of depression, which makes this connection intricate.^{56,58} In the current study, we discovered that shorter sleep durations were associated with higher levels of depressive symptoms among healthcare professionals.

The literature provides compelling evidence that there is a correlation between poor social support and an increased susceptibility to mental illnesses, such as depression, and that enhancing the social support received by the individual prevents the onset of such illnesses.^{59,60} A lack of social support was another risk factor that was found to be significantly linked to depression among HCWs in the present study. Healthcare personnel with poor social support were three times more susceptible to depressive symptoms compared to those with strong social support. Similar findings were documented in Ethiopia,⁶¹ and another study conducted in Brazil found that the presence of social support was associated with a 50% decrease in depressive symptoms.⁶²

Limitations

There are certain limitations in this study that need to be taken into account. Firstly, this investigation employed a cross-sectional study design, which precluded the evaluation of the causal relationship between the observed findings. Secondly, the study used a screening questionnaire for depression symptoms, which was not a diagnostic tool, limiting

the investigation to symptoms rather than the actual condition. Thirdly, the study's small sample size constituted an additional limitation, potentially hindering the ability to generalize the findings to broader populations. Fourthly, the study questionnaire failed to consider potential factors influencing depressive symptoms in HCWs, such as workplace violence, burnout and job satisfaction.⁶³ Finally, another limitation is the potential for self-report bias associated with the use of self-administered questionnaires, as participants may respond in socially desirable ways or underreport symptoms due to stigma. Future studies could benefit from incorporating objective measures alongside self-report instruments to provide a more comprehensive understanding of mental health in this population, as self-reported questionnaires may not fully capture respondents' true psychological states. Given the limitations of the study, we recommend conducting longitudinal studies to investigate the cause-and-effect relationship between depressive symptoms and predictor variables. Despite these limitations, this study successfully achieved its aims and, as far as we know, is the first study to examine the prevalence of depressive symptoms and their related variables among HCWs in Somalia.

Conclusion and Recommendations

This study found that nearly half of healthcare professionals (48.9%) experienced depressive symptoms with the majority presenting mild depressive symptoms. Female gender, unmarried status, occupation as a nurse, insufficient sleep, family history of mental illness, lack of regular physical activity, current substance use, and poor social support were all significantly associated with an increased odds of depressive symptoms among participants. The findings of the present study highlight the importance of developing and implementing screening methods that can easily identify and provide appropriate interventions for psychological symptoms among healthcare practitioners. Implementing these screening measures is essential for addressing healthcare personnel's mental health well-being and providing a higher standard of patient care. Additionally, we recommend that the Ministry of Health develop rules and regulations aimed at improving healthcare professionals' working conditions by increasing mental health resources, promoting self-care support programs, and minimizing barriers to obtaining mental health treatment. Future research should focus on developing screening methods for identifying psychological symptoms in HCWs and conducting longitudinal studies to evaluate the long-term effects of mental health interventions on healthcare professionals' ability to provide quality patient care.

Abbreviations

HCWs, Healthcare Workers; AOR, Adjusted Odds Ratio; CI, Confidence Interval; DALYs, Disability-Adjusted Life Years; YLD, Years Lived with Disability; WHO, World Health Organization; PHQ-9, Patient Health Questionnaire-9; OSSS-3, Oslo Social Support Scale; BRS, Brief Resilience Scale; SPSS, Statistical Package for the Social Sciences; SD, Standard Deviations; COR, Crude odd ratio.

Data Sharing Statement

All data generated or analyzed during this study are included in this published article or are available from the corresponding author upon reasonable request.

Ethics Approval and Consent to Participate

This study was approved by the Mogadishu Somali Turkiye Recep Tayyip Erdogan Training and Research Hospital's ethics review board (MSTH/17420). All methods were carried out in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no conflicts of interest.

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