


BMJ Open Prevalence of anxiety and depressive symptoms among emergency physicians in Libya after civil war: a cross-sectional study

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ABSTRACT

Objectives We aimed to identify the prevalence of depression and anxiety among physicians working in the emergency departments of nine tertiary care centres in Libya.

Design This was a cross-sectional study.

Setting Nine main tertiary centres in Libya

Participants Emergency department doctors were surveyed between December 2018 and February 2019.

Intervention The standardised Hospital Anxiety and Depression Scale (HADS) was selected as a measurement tool for analysing anxiety and depression symptoms; a HADS score of 8 indicated anxiety as well as depression symptoms. The primary outcomes were anxiety and depression, which were tabulated with independent sociodemographic variables. χ^2 tests were conducted to compare the prevalence of anxiety and depression between the groups. Statistical analysis was performed using SPSS V.25.

Results A total of 108 out of 150 (72%) emergency physicians from all levels participated in the study and took the survey. The emergency physicians had a mean \pm SD age of 31.2 \pm 4.5 years, and were predominantly males (74 out of 108, 68.5%). Overall, 49 (45.4%) physicians reached the cut-off score to define both depression and anxiety (ie, a score \geq 8). In terms of violence, 71 (65.7%) reported incidents of verbal violence, while 26 (24.1%) reported physical violence or abuse by militias. In addition, 28 reported being threatened by militias.

Conclusion The high prevalence rate of anxiety and depression is of concern, and the high rate of physical and verbal abuse highlights the range of abuse endured by doctors in Libya. Therefore, screening for anxiety and depression at regular intervals is needed to avoid the deterioration of mental health, which can increase the risk of suicide and dropping out, and decrease the level of healthcare for patients.

INTRODUCTION

Depression and anxiety symptoms are highly prevalent among physicians, especially those working in hospital emergency departments where they operate under stressful conditions

Strengths and limitations of this study

- This is the first study to survey a representative sample of emergency doctors from nine hospitals in Libya after the civil war, and assess their mental health status.
- The study sample excluded participants with possible confounding effects and was based on adequate inclusion criteria.
- The study assessed the prevalence of violence and verbal abuse among physicians who worked in Libya during the civil war.
- Due to the cross-sectional study design, a causal relationship cannot be inferred from the data, which necessitates future prospective studies.
- Stigmatisation for having a mental illness may affect physicians' willingness to declare their mental status.

due to their job circumstances in terms of working hours, number of night shifts and social pressures.^{1 2} In addition, Libyan physicians are at higher risk of being kidnapped, killed, or threatened by militias or armed forces due to the local circumstances of the civil war.³

Despite knowledge about stressors and health hazards, physicians may not be aware of the factors that can affect their mental health. However, identifying the symptoms of anxiety and depression is crucial, so that appropriate interventions can be applied. Burnout and depressive disorders have increased among physicians due to multiple environmental and personal factors, such as lack of social support, significant mental and physical demands, and lack of job satisfaction.⁴

Several studies have identified a link between decreased quality of patient care

associated with distress and increased medical error rates in clinical residents.^{5–7} However, the prevalence of anxiety and depression symptoms varies across studies, with some reporting more than half of all participating physicians as depressed.⁸ Studies also indicate different results depending on the years of training, medical speciality and demographic characteristics.^{9–11}

Although many studies have focussed on physician anxiety and depression symptoms and have identified a substantial association, questions regarding risk factors of physicians' anxiety and depression remain, especially in conflict areas where physicians are at a higher risk of mental illness.^{12–13}

Not enough data are available regarding anxiety and depression rates among doctors or the general population in Libya, following multiple civil wars.¹⁴ In addition, significant issues have arisen around the attrition rate of doctors working in Libyan emergency departments due to conflicts and insecurity since 2011.^{15–16} Circumstances have led to an increased risk of verbal and physical violence against doctors who work in emergency departments to improve the life-threatening conditions imposed by militias that control the cities in Libya.¹⁷

The estimation of depression and anxiety prevalence among emergency physicians is essential for helping health authorities to identify factors contributing to physician distress and promote mitigation in this vulnerable population. Therefore, in this study, we aimed to determine the prevalence of depression and anxiety among emergency department doctors in Libya.

METHODS

Study design and interventions

Participants

The study participants were emergency doctors serving in Libyan hospitals for at least 3 months. Written consent was obtained before the completion of the survey. Participants with a history of mental health disorders and comorbidities, such as chronic pain, hypertension and diabetes, were excluded. One hundred and fifty emergency department staff who met the criteria were asked to complete an anonymous three-page survey. The participants were approached by the authors by visiting the emergency departments of the hospitals during their shifts. The authors undertook a paper-based questionnaire that contained a participant information sheet along with a study measurement tool, and they asked the participants questions related to the inclusion and exclusion criteria before participating in the study to ensure that they met the criteria of the study. Those who did not return the questionnaire or declined to fill in and respond to the questionnaire were not included in the analysis.

Protocol

This cross-sectional survey was conducted between December 2018 and February 2019, in nine main tertiary hospitals with emergency departments in Libya. It is

estimated that approximately 300 physicians work in the emergency departments of these Libyan hospitals.

Measurements

Information regarding years of experience, exercise regimen and smoking history was recorded. In addition, data on verbal and physical abuse were documented. The standardised Hospital Anxiety and Depression Score (HADS) inventory was selected as a measurement tool for analysing the symptoms of anxiety and depression.^{18–19} HADS is a screening tool with seven items to evaluate each condition. Each item is scored on a 4-point Likert scale of 0 to 3, resulting in a total range of 0 to 21 points. A score of ≤ 7 is considered as 'normal', 8 to 10 as 'mild', 11 to 14 as 'moderate', and 15 to 21 as 'severe' for both the anxiety and depression screenings. A score of ≥ 8 is considered a 'case' for either condition.^{20–21} The HADS scale has a high level of internal consistency, as designated by a Cronbach's alpha of 0.83 for the anxiety subscale and 0.82 for the depression subscale.¹⁹ All participants provided consent prior to participating in the study.

Statistical analysis

Anxiety and depression were the main parameters observed in this study, which were tabulated with independent variables. χ^2 tests were conducted to compare the prevalence of anxiety and depression between the groups. Logistic regression analysis was used to analyse the risk factors for anxiety and depression symptoms. Adjusted ORs and 95% CIs were calculated for variables. Results with p values less than 0.05 were considered statistically significant. The data were analysed using IBM SPSS Statistics V.25 software.

Participants and public involvement

No participants were involved in establishing the research question, planning or performing the statistical analyses. No participants were invited to offer guidance on presenting the findings or writing the results. There are no proposals or plans to disseminate the study findings to the study participants.

Ethical considerations

All participants provided consent prior to participating in the study without identified data.

RESULTS

During the study period, between December 2018 and February 2019, 108 out of 150 (72%) emergency physicians from all levels answered the survey and participated in the study. They had a mean \pm SD age of 31.2 \pm 4.5 years, and were predominantly male (74 out of 108 (68.5%)). In addition, 73 (67.6%) of the physicians were from Tripoli, and the remaining 35 (32.4%) were from other cities. Almost half of them were married (52 out of 108 (48.1%)) and 56 (51.9%) were single (table 1).

The participants had a mean experience of 3.32 \pm 3.1 years in emergency departments; 62 (63%) worked one

24 hours shift per week, while the other 38 (35%) worked one 12 hours night or day shift per week.

Overall, 49 (45.4%) physicians reached the cut-off score, indicating a high likelihood of clinically significant depressive symptoms (≥ 8), and 49 (45.4%) achieved a cut-off score, indicating symptoms of anxiety. The mean anxiety score was 7.2 ± 3.03 , with a maximum of 16, while the mean score for depression was 7.3 ± 2.75 , with a maximum of 14. **Table 2** indicates the grade of anxiety and depression among the study participants.

Among all participants, 49 (45.4%) had both anxiety and depression. There was only one case of severe anxiety, and no cases of severe depression were recorded. **Tables 3 and 4** illustrate the associations between demographic and personal characteristics, and the occurrence of anxiety and/or depression.

In terms of violence, 71 (65.7%) physicians reported verbal violence, while 26 (24.1%) reported physical violence or abuse by militias. There was a significant relationship between anxiety and depression scores ($p < 0.001$) and violence.

There were no significant impact of gender ($p = 0.553$), physical exercise ($p = 0.713$) or age ($p = 0.089$) on symptoms of depression. The impact of service years on depression score was significant ($p < 0.05$), with fewer years of experience resulting in a higher prevalence of depression. In addition, smoking was associated with a lower rate of depression ($p < 0.05$). Being threatened, and verbally and physically abused were all associated with a higher

Table 1 Baseline characteristics across the study population

Characteristics	All participants (n=108)
Age, median (IQR) (years)	30.0 (28.0 to 33.0)
Male n(%)	74 (68.5)
Marital status n (%)	
Single	56 (51.9)
Married	52 (48.1)
Working in other hospitals n (%)	44 (40.7)
Years of experience, mean \pm SD	3.32 \pm 3.1
Physical exercise n (%)	29 (26.9)
Intent to continue in EM	41 (38.0)
Work shift per week n (%)	
12 hours day shift	25 (23.1)
12 hours night shift	13 (12)
24 hours	68 (63)
None	2 (1.9)
Smoking n (%)	31 (28.7)
Verbal abuse n (%)	71 (65.7)
Physical abuse n (%)	26 (24.1)
Threatening n (%)	28 (25.9)

EM, emergency medicine.

Table 2 Grade of anxiety and depression in study participants based on the HADS inventory (n=108)

Category	Grade	Frequency	Per cent
Anxiety	Normal	59	54.6
	Mild	33	30.6
	Moderate	15	13.9
	Severe	1	0.9
Depression	Normal	59	54.6
	Mild	36	33.3
	Moderate	13	12
	Severe	0	0

HADS, Hospital Anxiety and Depression Scale.

prevalence of depression. However, the impact of these characteristics was not significant ($p > 0.05$).

Regarding anxiety, there were no significant impact of gender ($p = 0.553$), age ($p = 0.093$), physical exercise

Table 3 Baseline characteristics and their associations with anxiety score ≥ 8

Characteristics	HADS-A score <8	HADS-A score ≥ 8	P value
n (%)	59 (54.6)	49 (45.4)	
Age, mean \pm SD	31.54 \pm 4.76	30.62 \pm 4	0.093
Gender			0.553
Male	39	35	
Female	20	40	
Marital status			0.538
Single	29	27	
Married	30	22	
Working in other hospitals	27	17	0.244
Years of experience			0.780
≤ 3 years	37	32	
> 3 years	22	17	
Physical exercise	16	13	0.945
Intent to continue in EM	23	18	0.811
Work shift per week			0.569
12 hours day shift	15	10	
12 hours night shift	9	4	
24 hours	34	34	
None	1	1	
Smoking	14	17	0.210
Verbal abuse	35	36	0.231
Physical abuse	11	15	0.194
Threatening	11	17	0.092

EM, emergency medicine; HADS, Hospital Anxiety and Depression Scale.

Table 4 Baseline characteristics and their associations with depression

Characteristics	HADS-D score <8	HADS-D score ≥8	P value
n (%)	59 (54.4)	49 (45.4)	
Age, mean±SD	31.04±5.784	31.41±3.2	0.089
Gender			0.553
Male	39	35	
Female	20	14	
Marital status			0.165
Single	27	29	
Married	32	20	
Working in other hospitals	26	18	0.440
Years of experience			0.007
≤3 years	31	38	
>3 years	28	11	
Physical exercise	15	14	0.713
Intent to continue in EM	28	13	0.026
Work shift per week			0.953
12 hours day shift	13	12	
12 hours night shift	8	5	
24 hours	37	31	
None	1	1	
Smoking	12	19	0.035
Verbal abuse	36	35	0.435
Physical abuse	14	12	0.952
Threatening	11	17	0.092

EM, emergency medicine; HADS, Hospital Anxiety and Depression Scale.

($p=0.945$), service years ($p=0.78$) or smoking ($p=0.21$). Furthermore, being threatened, and verbally and physically abused were not significantly associated with anxiety ($p>0.05$). Working the night shift was not statistically associated with symptoms of depression or anxiety ($p>0.05$).

Logistic regression was performed to ascertain the effects of age, gender, verbal and physical abuse, and threatening, and the likelihood that participants had depression and/or anxiety due to these factors. For depression, the model disclosed the following variables: age (OR=0.968, 95% CI: 0.884 to 1.061, $p>0.05$), female gender (OR=0.861, 95% CI: 0.339 to 2.184, $p>0.05$), verbal abuse (OR=1.105, 95% CI: 0.447 to 2.734, $p>0.05$), physical abuse (OR=0.413, 95% CI: 0.118 to 1.452, $p>0.05$) and threatening (OR=4.126, 95% CI: 1.117 to 15.235, $p<0.05$). For anxiety, the model disclosed the following variables: age (OR=1.104, 95% CI: 0.987 to 1.236, $p>0.05$), female gender (OR=0.886, 95% CI: 0.350 to 2.239, $p>0.05$), verbal abuse (OR=1.423, 95% CI: 0.562 to 3.602, $p<0.05$), physical abuse (OR=1.065, 95% CI:

0.339 to 3.348, $p>0.05$) and threatening (OR=1.532, 95% CI: 0.473 to 4.957, $p<0.05$).

DISCUSSION

We believe that civil war played a major role in increasing the rate of depression and anxiety among emergency medicine doctors working in Libya. This study, surveyed 108 emergency physicians from different hospitals in Libya for a specific period of their careers. We demonstrated that 45.4% of participants had a high likelihood of depression and anxiety. Higher scores on the respective anxiety and depression scales were associated with several risk factors, but they did not reflect statistically significant results. Moreover, this study unveils a very concerning issue regarding threatening, and verbal and physical abuse rates against doctors. The prevalence of such behaviour is an alarming sign for authorities and the broader society in Libya. Multiple civil wars have damaged central power systems and have increased militia control.

This is the first study on physician mental status during the Libya civil war. We enrolled 72% of potentially impacted emergency physicians to provide a snapshot of the current state of depression and anxiety disorders. Furthermore, we sought to highlight the physical and verbal abuses endured by doctors in Libya, who put their lives in danger during the local conflict. Although we excluded participants with any psychiatric illness or drug regimen for such disorders, the persistently higher rates of anxiety and depression among physicians working in emergency departments is an alarming sign. This signifies that early intervention in this area is required by the Libyan health authorities. However, a limitation of this study is its cross-sectional design; thus, we cannot establish causality with the risk factors that we studied. Due to the small sample size, there were some difficulties in assessing the direction of influence. In addition, we think that participants were afraid of being stigmatised for having a mental illness; thus, there was a high risk of interviewer bias, because some physicians may not have been willing to declare their mental status due to fear of potential professional discrimination and consequence on both short-term and long-term medical careers,²² previous studies have indicated that physicians fear such consequences. In one study, only 6% of physicians with mental illness had declared their condition to the licensing state.²³ This reluctance to disclose mental illnesses and seek help may have negative consequences on the physicians' ability to work. The reluctance is mainly due to the fear of stigmatisation and the fear of losing license in future, and medical licensure application questions regarding mental health may be a barrier to disclosing the mental status of physicians. Therefore, there is a need for improved strategies to identify mental health issues and address physicians' concerns.²⁴

Previous international studies have shown that medical doctors, regardless of their speciality, are at increased risk of depression compared with the general population.²⁵ According to recent reports, this increase is associated with a higher risk of suicide, dropout and burnout

among physicians.^{26 27} Despite the utilisation of different methods to assess depression and anxiety, the estimated prevalence of depression among emergency physicians ranges from 10.7% to 47% based on several previous studies, which is in line with the findings of the present study.^{12 13 28 29} Another prospective study conducted using the HADS inventory in Tunisian physicians from different specialities disclosed an anxiety prevalence of 43.6% and a depression prevalence of 30.5%.³⁰ These findings are similar to our results, particularly given that Tunisia has a socioeconomic status similar to that of Libya. In addition, a study conducted in Saudi Arabia revealed mild-to-moderate depression in 43.3% and 15.2% of resident physicians, respectively.³¹ Similar findings are present in other studies, such as from Malaysia, where 28.7% of emergency physicians had anxiety and 10.7% had depression.¹² Likewise, Erdur *et al* found that 15.1% of Turkish doctors had depression and 14.6% had anxiety disorders.¹³ Another study conducted among physicians-in-training in Nigeria revealed a depression prevalence of 17.3%.³² Interestingly, emergency physicians in Libya did not report substance use, although the literature supports the notion that emergency physicians usually have higher rates of substance misuse as a mechanism for coping stress or depression.^{33–35} Consistent with previous reports, the duration of work experience was not linked with the onset of depression or anxiety.³⁶

Emergency doctors in Libya share the same risk factors for depression as doctors in other specialities. However, emergency physicians are at higher risk due to their job circumstances, patient population, working hours and the different types of stressors they face.^{26 37} Among all medical specialities in the USA, emergency medicine has the highest burnout rate (~65%).^{38 39} In addition to the aforementioned concerns, Libyan physicians experience specific constraints and difficulties due to the ongoing conflicts that have increased the risk of verbal and physical abuse by local militias.¹⁴ Civil war settings have increased the likelihood of verbal abuse and physical assaults, and emergency physicians risk being kidnapped or killed if they do not provide adequate care for militias' patients or their relatives. In addition, there have been several cases where doctors were threatened by weapons to treat patients or their friends, which therefore increased the stress endured by physicians working in the frontline of the civil war. These added factors correspond to higher levels of anxiety and depression in the emergency departments in Libya. The stressful conditions and financial crisis that occurred as a consequence of the civil wars may also contribute to these findings.⁴⁰

Therefore, there is a need to address these concerns by local authorities by implementing strategies to support and protect physicians who are working in emergency departments, such as increasing legal enforcement and increasing security measures for the hospitals. Another protection strategy implies the policy of zero-tolerance toward violence in emergency departments. In addition, the local authorities should start mental health support programmes aiming

to provide social and mental support, especially for those working during the civil war or near conflict zones. Although, these risk factors have been reported in previous studies, the risk of abuse was not reported in recent literature in conflict areas such as Libya. The heightened prevalence of depression and anxiety in Libyan emergency physicians should raise the alarm for relevant authorities and the Ministry of Health. This high prevalence can play a significant role in increasing the rate of medical errors, consequently affecting the quality of care provided to patients.^{27 41–43} The effects of anxiety and depression may persist for long periods of time, which can have negative effects on an individual's personal and social life.^{44–46} Moreover, high rates of depression and anxiety impair sleep quality, increase dropout rates, and contribute to suicide among physicians, all of which further exacerbate the problems faced when serving the Libyan population.^{5 7 47 48} Additional research with more complex designs would help to determine the factors that lead to depression and anxiety. Furthermore, studies that focus on behaviour and reported abuse by militias are warranted, because their influence in the emergency departments are of major concern for doctors and staff that work in these stressful environments.

Libyan emergency physicians are at an increased risk of depression and anxiety due to the current civil war and financial crisis. In addition, they are at risk of physical and verbal abuse by militias. Therefore, there is an urgent need for action by authorities to provide mental health support, increase security measures to provide a safer working environment, and provide financial and social support for physicians during their work at the emergency department to ensure that physicians can provide adequate medical services for their patients, and to prevent the potentially catastrophic consequences of their mental health deterioration.

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