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Epidemiological Factors Affecting Mental Health Among Medical Faculty Students at Elmergib University, Libya

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العوامل الوبائية المؤثرة على الصحة النفسية بين طلبة كلية الطب بجامعة المرقب، ليبيا

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Abstract:
Medical education and training can directly contribute to the development of mental disorders among students. This study aims to assess the prevalence of mental disorders among medical faculty students at Elmergib university and assess the effect of different epidemiological factors on students' mental health status. A descriptive study targeted 377 students at medical faculty at Elmergib university Alkhoms city Libya, participants were selected randomly for the study, through online questionnaire demographic, socio-economic, academic, health related factors were assessed. DASS 42 scale (Arabic version) was used to assess mental disorders among participants. Among 377 participants 275 were female (72.9%), and 40 of them had low academic grade (10.6%), 338 of them were non married (89.7%), 292 had low income (77.5%), 71 of them had family history of mental disorders (18.8%). Our study found that 1 in every 2 participant students have some degree of mental disorder, and 1in every 4 participants have severe form of mental disorder. Mental disorders were found to be significantly associated with low academic grade (OR=2.05), Non married marital status (OR=2.63) and family history of mental disorders (OR=2.25). Medical education is directly contributing to the development of mental disorders because of the high scholastic workload, stressful clinical training programs and financial burdens. Female students with low academic grades, non married, with low income and positive family history of mental disorders should receive immediate mental health assessment and support.

Keywords: Mental disorders, Medical education, Libya.

الملخص
يمكن أن يساهم التعليم والتدريب الطبي بشكل مباشر في تطور الاضطرابات النفسية بين الطلاب. تهدف هذه الدراسة إلى تقييم انتشار الاضطرابات النفسية بين طلاب كلية الطب بجامعة المرقب وتقييم تأثير العوامل الوبائية المختلفة على الحالة الصحية النفسية للطلاب. استهدفت الدراسة الوصفية 377 طالبًا في كلية الطب بجامعة المرقب مدينة الخمس ليبيا، تم اختيار المشاركين عشوائيًا للدراسة، من خلال استبيان عبر الإنترنت تم تقييم العوامل الديموغرافية والاجتماعية والاقتصادية والأكاديمية والصحية. تم استخدام مقياس DASS 42 (النسخة العربية) لتقييم الاضطرابات النفسية بين المشاركين. من بين 377 مشاركًا، كان هناك 275 من الإناث (72.9٪)، وكان 40 منهم من ذوي الدرجة الأكاديمية المنخفضة (10.6٪)، وكان 338 منهم غير متزوجين (89.7٪)، وكان 292 منهم من ذوي الدخل المنخفض (77.5٪)، وكان لدى 71 منهم تاريخ عائلي من الاضطرابات النفسية (18.8٪). توصلت دراستنا إلى أن 1 من كل 2 من الطلاب المشاركين يعانون من درجة ما من الاضطراب العقلي، و1 من كل 4 من المشاركين يعانون من شكل حاد من الاضطراب العقلي. ووجدنا أن الاضطرابات العقلية ترتبط بشكل كبير بالدرجة الأكاديمية المنخفضة(OR = 2.05) ، والحالة الاجتماعية غير المتزوج (OR = 2.63)

والتاريخ العائلي للاضطرابات العقلية .(OR = 2.25) يساهم التعليم الطبي بشكل مباشر في تطور الاضطرابات العقلية بسبب العبء الدراسي المرتفع وبرامج التدريب السريري المجهدة والأعباء المالية. يجب أن تتلقى الطالبات ذوات الدرجات الأكاديمية المنخفضة وغير المتزوجات والمنخفضات الدخل والتاريخ العائلي الإيجابي للاضطرابات العقلية تقييمًا ودعمًا فوريًا للصحة العقلية.

الكلمات المفتاحية: الاضطرابات العقلية، التعليم الطبي، ليبيا.

Introduction

Mental, behavioural and neurodevelopmental disorders are syndromes characterised by clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes that underlie mental and behavioural functioning. These disturbances are usually associated with distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning [1].

In 2019, 1 in every 8 people, or 970 million people around the world were living with a mental disorder, with anxiety and depressive disorders the most common [2]. While WHO estimates that in Libya at least 1 in 5 people will suffer from mental health conditions such as depression, anxiety and post-traumatic stress disorder in the aftermath of a major emergency [3].

In 2020, the number of people living with anxiety and depressive disorders rose significantly because of the COVID-19 pandemic. Initial estimates show a 26% and 28% increase respectively for anxiety and major depressive disorders in just one year [4].

Medical education and training can directly contribute to the development of psychological distress in medical students. This can lead to catastrophic consequences such as impaired academic performance, impaired competency, medical errors and attrition from medical school [5].

Several factors which act as psychological stressors can be accumulated among medical students, where the age of medical students which lies between 18 and 24 years considered one of the main risk factors for mental disorders, where roughly half of all lifetime mental disorders in most studies start by the mid-teens and three quarters by the mid-20s [6].

Where most medical students were female, Women are more likely to have depression than men [7]. And some mental disorders are more common in women than men, including depression, anxiety disorders, and eating disorders [8].

While WHO estimates that at least 1 in 5 people will suffer from mental health conditions such as depression, anxiety and post-traumatic stress disorder in the aftermath of a major emergency in Libya [3]. International students at medical faculties also faces higher risk for mental disorders, research has shown that international students often report higher levels of loneliness, anxiety, and stress than their domestic counterparts [9].

Medical school environment considered the main psychological stressor among students, researchers found that the sources of stress for medical students vary by year in training. In the first-year medical student human cadaver dissection is a well-recognized stress for many students, adding to other sources of distress, such as increased scholastic workload and concern for academic performance, attempting to master a large volume of information, High-stakes examinations, tests that must be passed before academic advancement, frequently lead to performance anxiety at the end of the preclinical years. Once in the clinical years of training, students often are separated from their peer-support group and frequently rotate to new work environments at different hospitals. Each rotation requires a unique medical knowledge base and skill set, which tends to highlight students' deficiencies rather than their progress. An unstructured learning environment, lack of time for recreation, concerns about financial issues, long on-duty assignments, student abuse, and exposure to human suffering can be additional sources of distress during this period [10].

Maternity adds an additional psychological stressor on female students, where globally about 10% of pregnant women and 13% of women who have just given birth experience a mental disorder, primarily depression, in developing countries the rates are even higher, where 15.6% of pregnant women and 19.8% of women after birth experience mental disorders. In severe cases mothers' suffering might be so severe that they may even commit suicide [11].

Medical faculties in Libya have a relatively long period track might reach 10 years for regular students because of interrupted educational process [12], adding to that some years for less lucky others, wherefore some student's families cannot afford the cost, leading to a lower economic status of medical students, the factor that is correlated with poor mental health [13].

The presence of any chronic disease among students considered as an additional factor that is significantly associated with mental health concerns as the risk for mental disorders is higher among those who suffer from chronic illnesses [14,15].

Medical students with family history of mental illness might be at higher risk of developing mental disorder, as many disorders such as autism, attention deficit hyperactivity disorder (ADHD), bipolar disorder, major

depression and schizophrenia tend to run in the families [16], as some genes may increase the risk of mental disorders in association with psychological stressors [17].
The use of tobacco is highly associated with mental illnesses, where smoking rates are higher in patients who are diagnosed with major depression disorder (59%), bipolar disorder (83%), or schizophrenia and other psychotic disorders (90%)3 compared to 32% among adults with no mental illness [18]. The main website of National Health Service provides simple advice for tobacco cessation which states that smoking cessation boost mental health and wellbeing, and can improve the mood and relieve stress, anxiety and depression [19].
Although it is prohibited to drink alcohol in Libya, Harmful consumption of alcohol should be considered as it is associated with the risk of developing mental and behavioural conditions such as depression, anxiety and alcohol use disorders [20].
Beside alcohol consumption, and since the eruption of Arab spring in 2011, Libya's political instability and armed conflicts have exacerbated drug trafficking and access to illicit drug use [21]. These conditions aggravated the risk for mental disorders especially among young adults age group aging between 18 and 24 years old who are already a high-risk group for mental disorders [5].
The aim of this study is to assess the prevalence of mental disorders among medical faculty students at Elmergib university, and to assess the effect of demographic, academic, socioeconomic and health related factors on students mental health status.

Material and methods

Our study is designed as a descriptive cross-sectional study, that aims to identify the prevalence of mental disorders and epidemiological factors affecting mental status among students of faculty of medicine at Elmergib university Alkhoms city Libya in 2024. An online questionnaire prepared of two parts; the first part enquired epidemiological factors including demographic, social, economic, academic and health related factors of the subjects. The second part of the questionnaire aimed to measure distinct negative emotional syndrome among subjects using the Arabic version of DASS 42 scale which was developed by Miriam Taouk Moussa and Peter F. Lovibond at School of Psychology, University of New South Wales, Sydney, Australia [22].
Among 1895 students of the faculty 377 students were selected randomly using students registration numbers list. An online questionnaire link on google forms webpage was sent to the student's Telegram accounts through the faculty Telegram group in November 2024. Data received on Microsoft Excel Sheet then transferred to SPSS data sheet, where data was cleared and categorized properly preparing for data analysis. Descriptive statistics were used to present participants demographic, social, economic, academic, and health related factors.
Descriptive statistics also used to present the overall DASS42 score for all participants, and the prevalence of mental disorders including depression, anxiety and stress among participants. The chi square test was used to assess association between all epidemiological factors included in the questionnaire and the overall mental status of participants and the different mental disorders included.

Results

Bivariate analysis

Among all 377 participants 275 (72.9%) were females while 102 (27.1%) were males. The mean age of the participants was 23.21±2.35 categorized into two groups; the younger age group (aging between 18 and 24 years old) who are at the expected range of faculty study years for graduation, and the older age group (aging between 25 and 30 years old) who had an extra exceptional years for their faculty program because of delay related to the COVID19 pandemic closure or their failure to thrive the faculty program years (repeaters). Majority of the participants 368 (97.6%) were of a Libyan nationality, and only 9 (2.4%) of them were international students. Participants city of origin included 17 Libyan cities classified into two groups; Khoms city residents 245 (65.0%) and Non Khoms residents 132 (35.0%) who had to stay at rented student residency at Khoms city where the faculty of the study is located.

Table (1): Total DASS scores of all participants.

	Total DASS score						Total
	Normal		Mild/Moderate		Severe		
	n	%	n	%	n	%	
All participants	201	53.3	77	20.4	99	26.3	377

Total DASS score was calculated for all participants where participants with a normal DASS score were 201 (53.3%) and participants with any degree of mental disorder (including; Mild, Moderate, severe and Extremely severe) considered as diseased and they were 176 (46.7%). Thus, we can conclude that the prevalence of mental disorders of any degree among our participants was 46.7%. Among all participants our results showed that 26.3% of them had a severe form of mental disorder.

Table (2): Demographic characteristics of participants with total DASS score.

			Total DASS score				
	Frequency		Normal		Diseased		p*
	n	%	n	%	n	%	
Sex							**0.045**
Male	102	27.1	63	61.8	39	38.2	
Female	275	72.9	138	50.2	137	49.8	
Age group							0.861
18-24	263	69.76	141	53.6	122	46.4	
25-30	114	30.24	60	52.6	54	47.4	
Nationality							0.416
Libyan	368	97.6	195	53.0	173	47.0	
International	9	2.4	6	66.7	3	33.3	
City							0.570
Khoms	245	65.0	128	52.2	117	47.8	
Non Khoms	132	35.0	73	55.3	59	44.7	

*Pearson Chi-Square

Only sex factor was significantly associated with mental disorders among all four demographic factors presented in table 2 Where 38.2% of male participants had some degree of mental disorder and 49.8% of female participants had some degree of mental disorder (p= 0.045).

Table (3): Academic factors of participants with total DASS score.

			Total DASS score				
	Frequency		Normal		Diseased		p*
	n	%	n	%	n	%	
Stage							0.756
Basic	243	64.5	131	53.9	112	46.1	
Clinic	134	35.5	70	52.2	64	47.8	
Grade							**0.034**
Low	40	10.6	15	37.5	25	62.5	
Good	337	89.4	186	55.2	151	44.8	
Failure							0.685
No	343	91.0	184	53.6	159	46.6	
Yes	34	9.0	17	50.0	17	50.0	

*Pearson Chi-Square

Table 3 showed total DASS score for our participant with their academic factors, only students' grade was significantly associated with the total DASS score (p= 0.034), which emphasize the impact of academic performance on mental health of medical students.

Table (4): Socioeconomic factors of participants with total DASS score.

			Total DASS score				
	Frequency		Normal		Diseased		p*
	n	%	n	%	n	%	
Marital status							**0.015**
Married	39	10.3	28	71.8	11	28.2	
Non-married	338	89.7	173	51.2	165	48.8	
Family size							0.458
2-5	164	43.5	91	55.5	73	44.5	
>5	213	56.5	110	51.6	103	48.8	
Sponsorship							**0.045**
Family	312	82.8	159	51.0	153	49.0	
Self	65	17.2	42	64.6	23	35.4	
Income							**0.032**
Low<900	292	77.5	147	50.3	145	49.7	
High>900	85	22.5	54	63.5	31	36.5	

*Pearson Chi-Square

Table 4 showed total DASS score for our study participants with their socioeconomic factors, where marital status was significantly associated with total DASS score (p=0.015), the financial sponsorship also was significantly associated with total DASS score (p=0.045), and the monthly income also was significantly associated with total DASS score (p=0.032).

Table (5): Health factors of participants with total DASS score.

			Total DASS score				
	Frequency		Normal		Diseased		p*
	n	%	n	%	n	%	
Chronic disease							0.764
Yes	43	11.4	22	51.2	21	48.8	
No	334	88.6	179	53.6	155	46.4	
Family history							**0.004**
Yes	71	18.8	27	38.0	44	62.0	
No	306	81.2	174	56.9	132	43.1	
Tobacco use							0.773
Yes	18	4.8	9	50.0	9	50.0	
No	359	95.2	192	53.5	167	46.5	
Alcohol use							0.349
Yes	1	0.3	1	100.0	0	0.0	
No	376	99.7	200	53.2	176	46.8	
Drug abuse							0.349
Yes	1	0.3	1	100.0	0	0.0	
No	376	99.7	200	53.2	176	46.8	

*Pearson Chi-Square

Table 5 showed total DASS score for our study participants with their health factors. Among all health factors studied only family history of mental disorders factor was significantly associated with participants total DASS score (p=0.004).

Table (6): Mental disorders (depression, anxiety and stress) prevalence among all participants.

	Frequency	
	n	**%**
Depression		
Yes	189	50.1
No	188	49.9
Anxiety		
Yes	176	46.7
No	201	53.3
Stress		
Yes	148	39.3
No	229	60.7

Table 6 showed the differential DASS scores for any degree of mental disorders (mild, moderate, severe and extremely severe) including depression anxiety and stress for all participants, where it showed that 50.1% of our participants had some degree of depression, and 46.7% of our participants had some degree of anxiety, and 39.3% of participants had some degree of stress.

Multivariate analysis

The logistic regression model was used to assess the association between different factors which were significantly associated with the total DASS score of participants at the bivariate analysis model. These factors are; Sex, Student grade, Marital status, Sponsorship, Income and family history of mental disorders. The multivariate analysis results shown at table 7.

Table (7): Multivariate analysis results.

	Total DASS score		
	Odd Ratio	**95% CI**	**p value***
Sex			
Male		Ref.	
Female	1.630	0.952-2.789	0.075
Student grade			
Good		Ref.	
Low	2.055	1.022-4.133	**0.043**
Marital status			
Married		Ref.	
Non married	2.633	1.214-5.713	**0.014**
Sponsorship			
Self		Ref.	
Family	1.285	0.671-2.459	0.449
Income			
High		Ref.	
Low	1.340	0.775-2.318	0.295
Family history			
No		Ref.	
Yes	2.256	1.302-3.908	**0.004**

* Nagelkerke R Square

Discussion

The aim of this study was to assess the prevalence of mental disorders among medical faculty students at Elmergib university, and to assess the effect of demographic, academic, socioeconomic and health related factors on students' mental health status. Nearly half of the students have some degree of mental disorders (46.7%), specifically there were 189 (50.1%) students suffering from Depression, and 176 (46.7%) students suffering from Anxiety, and 148 (39.3%) students suffering from Stress. Among all participants, our results showed that 26.3% of them had a severe form of mental disorder, those who need urgent support and mental health service to restore their normal mental status. The prevalence of mental disorders among our participants was higher than any of those mentioned in previous literature, as 1 in every 2 study participants suffered of some degree of mental disorder, the rate exceeds that of the average of the Libyan society where 1 in every 5 people suffer from mental health condition. Our results show two times higher rate of mental disorders among medical students than the rate among general population. That can be attributed to the additional psychological stressors among medical students [3,5,6].

The main risk factors among our participants is the age, as all of participants ages lie between 18 and 30 years old, the age group that carry a high risk for mental disorders as it is mentioned in literature review that roughly half of all lifetime mental disorders in most studies start by the mid-teens and three quarters by the mid-20s [6]. Adding to age; sex, where majority of our participants were female (72.9%), and that adds an additional explanation for the high prevalence of mental disorders among our participants as the previous studies concluded that some mental disorders are more common in women than men [7,8].

Although previous literature emphasizes that international students at medical faculties faces higher risk for mental disorders, the few numbers of international students at our study results and the high prevalence of mental disorders among the Libyan citizens did not yield significant differences between Libyan and international students in matter of mental health status.

Our study results showed an average impact of academic factors of participants on their mental health status, there was no significant differences between academic stages of the students in basic and clinical academic stage, neither the number of failure years showed significant differences, But a significant difference seen at the effect of student grade on the mental health status ($p=0.034$) where students with good academic grades had less prevalence of mental disorders (44.8%) than those with low academic grades (62.5%). Those results are compatible with previous literature that considered academic performance as the main stressor among medical students, explaining that with the multiple psychological stressors that face the medical students including human cadaver dissection, scholastic workload, mastering a large volume of information and high stakes examinations in the preclinical years, and separation from peers, new work environments, lack of recreational time, financial issues, long duties, student abuse and exposure to human suffering in the clinical years [10].

In our literature review we expected to see higher rates of mental disorders among married students, as maternity adds an additional psychological stressor on female students (11), but our results showed a inverse significant differences ($p=0.015$) in favor of married students, where 48.8% of non-married participants had some degree of mental disorders only 28.2% of married participants had. Those results are in line with some other researches who found that unmarried individuals may be at greater risk of depression, and marriage was associated with reduced risk of the first onset of most mental disorders [23, 24].

Our study did not show a significant impact of failure years on the mental status of the participant students, but economic factors showed an important result. Where self-sponsored students had a lower rate of mental disorders (35.4%) than those sponsored by their families (49.0%) ($p=0.045$). On the other hand, students with high income also had less rate of mental disorders (36.5%) than those with low income (49.7%) ($p=0.032$). These results come in line with different studies that emphasize that lower economic status of medical students is correlated with poor mental health, and Low levels of household income are associated with several lifetime mental disorders, and others stated that people with mental health problems are also more likely to be in problem debt [13,25,26].

The presence of any chronic disease at our participants did not show any significant impact on their mental status, although previous studies emphasize that the presence of chronic disease is an important risk factor for mental disorders [14,15]. This can be considered as one of the limitations of our study, where participants with chronic diseases should be given an additional analysis and concern.

The family history of mental disorders of participants showed significant differences ($p=0.004$), where 62.0% of students with positive family history of mental disorders had some degree of mental disorders, but 43.1% of those without family history had some degree of mental disorders. The last result is in line of previous studies that concluded family history of mental illness might be at higher risk of developing mental disorder [16], and other said that some genes may increase the risk of mental disorders in association with psychological stressors [17].

All previous literature mentioned at our literature review concluded that health related behaviours specifically tobacco use, alcohol intake and substance abuse are risk factors of mental disorders [19,20,5]. Our study results showed no significant differences and association between these factors and mental disorders among our study participants. Such results usually insignificant in Libyan society, that can be explained by the high social stigma associated with tobacco, alcohol and substance abuse where most of the Libyans consider such behaviours against

religious Islamic dictations calling these behaviours “Haram” or sins, this makes most of study participants to deny their behavioural status even when confidentiality is highly guaranteed.
At our multivariate analysis model, only factors were significant at the bivariate model were included. These factors were: Sex, Student Grade, Marital Status, Financial Sponsorship, Income and Family History of mental disorders. At this model odd ratio and confidence interval could be calculated for the significant relationships. We concluded that female participants have 1.6 times higher risk of mental disorders than male participants, the result which is in line of previous literature. We concluded that students with low academic grades have two times higher risk of mental disorders than those with good grades, where students with low academic grades are under higher scholastic workload and their academic capabilities are less than those with good grades.
We also concluded that non-married students have 2.6 times higher risk of mental disorders than those who are married. We also concluded that family sponsored students have 1.2 times higher risk of mental disorders than those who are self-sponsored, where family sponsored students have low income where self-sponsored students have high income at our results. Students with low income have 1.3 times higher risk of mental disorders than those with high income and students with family history of mental disorders have 2.2 times higher risk of mental disorders than those without family history of mental disorders.
In our study we faced some obstacles which can be considered as study limitations, the first limitation of our study is the low number of international students included randomly in the study sample who faces higher risk of mental disorders than local students and they should be investigated deeply. Other limitation is the academic workload factors were less informing, where different aspects of academic performance should be investigated. Although the sample size was quite enough for our study, but many factors showed no significant differences and associations where further larger sample size should be considered.
Our study focuses on a very sensitive area of research which is the mental health among a high-risk group of the Libyan society. WHO report estimates that the risk of mental disorders in Libya is two times higher than that of the global average [3], and different literature concluded that students of medical faculties are at higher risk of mental disorders [5-13], thus our target population is a high a double burden high risk group which is summarized at our results of 1 in every two participants suffer from some degree of mental disorders, and 1 in every 4 participants suffer from severe mental disorder, and these results considered a point of strength and value of our study.
Based on our study results we recommend decision makers to take extra efforts and attention regarding medical faculty students mental health, by focusing on mental health support programs and involving mental health service department at ministry of health and educational advisors into the core setting of the medical faculty programs, in order to design mental health friendly design of faculty program to avoid additional psychological stressors arising from the nature of the faculty program. Mental health support services should be provided to all students of medical faculty with special attention to female students and those who have low academic performance with low income and positive family history of mental disorders.
We recommend Further detailed research targeting the scholastic workload impact on mental health among medical faculty students in order to identify the weak points of the medical faculty program that makes it negatively affecting the mental health of the students. Although the exacerbation of drug trafficking and abuse in Libya in the last decade [21], our study results did not show any significance regarding tobacco, alcohol and substance use, for many reasons discussed in our discussion section, thus we recommend a specific researches to be conducted targeting the prevalence of tobacco, alcohol and substance use and their impact on mental health among the Libyan youths.

Conclusion

Globally, there is 1 in every 8 people living with a mental disorder, in Libya there is 1 in every 5 people suffering from mental health condition such as depression, anxiety and stress. Medical education is directly contributing to the development of mental disorders because of the high scholastic workload, stressful clinical training programs and financial burdens. Our study found that 1 in every 2 participant students have some degree of mental disorder, and 1in every 4 participants have severe form of mental disorder. Significant association was found for factors including; female sex, low academic grade, non-married status, family sponsorship, low income and positive family history of mental disorders. Medical education programs design should be modified considering its impact on mental health of the students. Mental health support services should be involved in medical education programs. Further detailed research should be conducted studying tobacco, alcohol and substance use among students.

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