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Mental health and wellbeing among Egyptian medical students: a cross-sectional study

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Abstract

Background: Medical students are prone to experience high levels of stress during their studies, which can lead to burnout and mental health disorders such as anxiety and depression, that can affect their academic performance and ability to practice. We therefore conducted an online survey to collect data on demographics, sources of stress, mental health problems, burnout, and substance use in 547 medical students from two universities in Cairo. We used the Oldenburg Burnout Inventory (OLBI), the General Health Questionnaire 12 (GHQ-12), and the CAGE questionnaire.

Results: Our results indicated that 16% of participants were diagnosed with a mental illness while in medical school, with 88% screening positive for burnout on the OLBI, 63% reaching the threshold as cases on the GHQ-12 and 9% screening positive on the CAGE questionnaire. There was a statistically significant positive correlation between scores on the OLBI and the GHQ-12.

Conclusions: Our study indicated that there were very high levels of psychological distress (burnout, mental illness) among medical students, with high rates of disengagement and exhaustion.

Keywords: Medical students, Mental health, Wellbeing, Burnout, Substance abuse, Egypt

Background

The mental health of medical students is currently under a global spotlight, especially due to their importance as the backbone of any future healthcare system [1, 2]. Studies from around the world have shown that medical students are prone to develop high levels of stress, anxiety, and depression during their study years, ultimately leading to a detrimental effect on their mental health [2–20] and the quality of patient care and professionalism, which has sounded the alarm for mental health policy makers [8, 21–24]. It is important to remember that in many countries, medical students are aged between 17 and 24

and thus at high risk already of developing psychiatric disorders.

The reasons for this are likely to be related to the numerous stressors that medical students are subjected to during medical school, that can affect their well-being. Students not only have to cope with the “normal” stressors of everyday life, but also adapt to a new environment with its own demands both socially and academically, a rapid transition from didactic educational schedules to higher levels of patient-focused responsibilities, information and input overload, financial indebtedness, lack of leisure time, pressures of work, accommodation difficulties, and/or relationships and career choices [1, 25, 26]. Medical students themselves tend toward certain characteristics that place them at an increased risk of stress, such as having high personal standards. This can give them an advantage on entry to a highly competitive

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profession, but can be associated with maladaptive perfectionism and excessive concerns about academic performance. These characteristics are significantly correlated with baseline symptoms of neuroticism and are predictive of depression and feelings of hopelessness [27].

Burnout has been defined as a psychological syndrome that is characterized by overwhelming exhaustion, depersonalization, and reduced personal efficiency [28]. Chronic exposure to emotional stress which is especially exasperated in highly demanding environments could eventually lead to burnout, which then triggers symptoms such as low mood, insomnia, feelings of detachment and/or fatigue, and excessive anxiety over future concerns [29–33]. Symptoms of stress and burnout among students include emotional depletion, depersonalization, and a decreased sense of accomplishment [25]. High rates of stress and burnout have been linked to negative educational performance [32] and ineffective coping techniques, such as substance abuse issues [34]. At its worst, excessive stress could lead to suicidal ideation or even suicidal attempts [35].

Egypt is the most populous country in the Middle East and North Africa and the third-most populous on the African continent. It has one of the oldest establishments of medical education in Africa and the Arab world [36], with 31 governmental and private medical schools recognized by the world directory of Medical Schools [37]. To date, Egyptian medical schools have followed the French model, comprising a 6-year program of undergraduate medical education. This system features a clear preclinical–clinical dichotomy and takes English as the language of instruction. A Bachelor of Medicine and Surgery (MBBCh) is awarded upon graduation, but graduates must attend a full-year internship program before obtaining their license to practice as general practitioners [38] with the final grade at graduation calculated based on the cumulative scores of the exams over each of the 6 years of education. Before 2009, the majority of medical schools in Egypt adopted *discipline-based curricula*, in which didactic large-group lectures and apprenticeship approaches to clinical teaching were the main methods of instruction. However, recently, an integrated modular-based program has been applied in several Egyptian medical schools such as Ain Shams University, Cairo University, and Mansoura University [36].

To the best of our knowledge, there has been no national survey regarding mental wellbeing among medical students. However, a number of individual investigations have been carried out in different cities across Egypt [21, 39, 40]. None have been completed in medical schools in Egypt's largest city, Cairo. Therefore, we aimed at assessing the sources of stress, mental health problems, burnout, and substance use among medical

students in two medical schools in Cairo (one public, one private), as a part of a larger international collaboration involving several countries worldwide aimed at investigating levels of mental stress among medical students in a different part of the world.

Methods

Participants and tools

We conducted a quantitative, cross-sectional descriptive study involving 547 male and female medical students of second and fourth years recruited from two sites. One site was the governmental medical school at Ain Shams University, and the other was a private medical school at Misr University for Science and Technology. Data collection was carried out using an online survey in the form of a link to a Google platform, through the modular platform of the assigned year groups. Ethical approval for the study was granted by the Ain Shams University Faculty of Medicine Ethical Committee. A message accompanied the link that included the aim of the survey, encouraging participation in the study and assuring anonymity. The module access for each student was password protected. Students were not required to provide any personal identifiers. The survey included questions regarding demographic information, including year and medical school of study, gender, educational level of parents, and previous history of mental health difficulties prior to medical school. The short version of the general health questionnaire (GHQ-12) was used to identify minor psychiatric disorders. The General Health Questionnaire is a screening tool for current mental health problems, used widely in research with a cut-off score of >2 [41]. Burnout was identified by the Oldenburg Burnout Inventory (OLBI) was used to assess the level of burnout among students. The Oldenburg Burnout Inventory was used to assess for disengagement and exhaustion using cut-offs of >2.1 and >2.25 , respectively [42]. Finally, in addition to other questions about substance use, the CAGE questionnaire was used to screen for alcohol misuse among this population. The CAGE is a reliable and valid screening tool with a cut-off of 2 or more indicating subjects positive for alcohol misuse [43].

Statistical analysis

Data was recorded and analyzed using the statistical package of social sciences SPSS for Windows, Version 28.0 (2021). All calculations were performed at 95% confidence intervals, 0.80 power of the study, and alpha error of 0.05. The results were tabulated, grouped, and statistically analyzed using the following tests: mean and standard deviation (SD) for parametric numerical (quantitative) data, frequency and percentage for non-numerical (qualitative) data, and Pearson correlation test (r)

for studying the direction and power of relationships of quantitative variables. A *p* value of < 0.05 was considered statistically significant.

Results

A total of 547 students completed the survey. Their characteristics are summarized in Table 1.

The highest education level achieved by parents was obtained from each student, with 51 (9%) achieving a high school education or below, 120 (22%) achieving an undergraduate university degree, and 376 (69%) achieving a postgraduate university degree. Three hundred and eighty-two students (70%) did not currently work in part- or full-time work, 63 (12%) worked less than 8 h per week, 58 (11%) worked between 8 and 20 h per week, and 44 (8%) worked more than 20 h per week. Prior to medical school, 66 students (12%) had visited a general practitioner, psychologist, or psychiatrist for mental health problems, with 38 students (6.9%) diagnosed with a mental health condition. Ten students (2%) had previously been diagnosed with attention deficit hyperactivity disorder (ADHD) or autistic spectrum disorder. Fifty-five students (10%) had been prescribed medication in the past for a mental health condition (depression, anxiety, psychosis, ADHD). Eighty-seven (16%) students were diagnosed with a mental health condition while at medical school, with 45 (8%) currently seeing a general practitioner, psychologist, or psychiatrist for mental health problems and 34 (6%) currently receiving medication for their mental health. In terms of significant sources of stress in their life, 320 students (59%) reported study, 127 (23%) reported

intimate relationships and family (e.g., missing them), 40 (7%) reported money, 7 (1%) reported housing, and 53 (9%) reported no significant stressor.

The CAGE questionnaire was used to identify students who had problematic drinking, with 49 students (9%) scoring CAGE positive (Table 2). Forty-two students (8%) reported taking a non-prescription substance or prescription medication outside its intended use (to feel better or uplift their mood). Seventy-six students (14%) described using medication to enhance concentration, study, or academic performance (not including caffeinated or other energy drinks). Cannabis was used by 12 students (2%), opiates by 2 students (0.4%), cocaine by 2 students (0.4%), ketamine by 2 students (0.4%), amphetamines by one student (0.2%), and other substances (Khat, LSD) by 2 students (0.4%). Twelve students (2%) used more than one illicit substance. Thirty students (7%) indicated that someone was worried about their substance use and 42 (8%) were concerned over their own substance use.

The GHQ12 was used to quantify the degree of symptoms indicative of mental health problems, with 345 students (63%) identified as cases. For burnout using the OLBI, 483 students (88%) students were identified as having burnout (high disengagement and high exhaustion). Table 2 summarizes the results for the CAGE questionnaire, GHQ12, and OLBI.

A statistically significant positive correlation was found between the OLBI and the GHQ12 (*r*= 0.591, *p* <0.001). No significant correlation was found between the OLBI and the CAGE, or between the GHQ12 and the CAGE (Table 3).

Table 1 Sample characteristics

	Number	Percent
Total number	547	100
Gender		
Male	261	47.7
Female	286	52.3
Year of study		
First	3	0.5
Second	36	6.6
Third	1	0.2
Fourth	149	27.2
Fifth	352	64.4
Sixth	6	1.1
Participating universities		
Ain Shams University	195	35.6
Misr University for Science and Technology	352	64.4

Table 2 Summary of results obtained from the CAGE, GHQ12, and OLBI

Tool	Mean	SD
Total OLBI score	42.62	5.693
Total disengagement score	20.48	2.997
Total exhaustion score	22.14	3.402
Mean disengagement score	2.56	0.375
Mean exhaustion score	2.77	0.425
Total CAGE score	0.31	0.766
Total GHQ-12 score	4.28	3.172
	Cases (N=547)	%
CAGE +ve	49	9.0
GHQ-12 +ve	345	63.1%
OLBI +ve (high disengagement+ high exhaustion)	483	88.3%

CAGE +ve if score 2 or more, GHQ-12 +ve if score more than 2, and OLBI +ve if mean disengagement score > 2.10 and mean exhaustion score > 2.25

Table 3 Correlation of OLBI total scores with CAGE and GHQ-12

	Total CAGE score		Total GHQ-12 score	
	<i>r</i>	<i>p</i> value	<i>r</i>	<i>p</i> value
Total OLBI score	−0.039	0.362	0.591	<0.001*
Total CAGE score				
Total GHQ-12 score	0.011	0.801		

r Pearson correlation coefficient; **p* statistically significant

Discussion

In our study, 16% of the medical students were diagnosed with mental illness while in medical school in comparison to 6.9% that had been diagnosed prior to starting medical school. This rate is similar to other studies from Italy (9%), Morocco (16%), and Brazil (16%) [2, 8, 14]. More than half of our sample reported that their studies were the leading source of stress. This is in line with other data worldwide from Canada, Brazil, Hong Kong, Morocco, and South Africa which indicates that the activities and demands of medical education are the leading cause of stress [8, 9, 14, 17, 44]. This might be due to the nature of medical education, which is costly and difficult, from its earliest stages of the pre-med admission, going through a competitive selection process until its completion, then the medical school itself with its huge demands and prerequisites. In addition, there is a competitive environment and contact with patients who have severe diseases and exposure to death. Students may have limited opportunities for leisure [45]. In Egypt, most undergraduate programs use didactic large-group lectures and apprenticeship approaches to clinical teaching as the main methods of instruction. Only recently, Ain Shams University has started using a modular parallel track since 2014 [36].

Our study highlights very high levels of psychological distress among medical students in our sample, with 88% screening positive for burnout using the OLBI and 64% reached the threshold as cases on the GHQ-12. The high prevalence of burnout in our study is consistent with a previous study done in Egypt which reported a burnout prevalence of 79.9% [39], and other African countries such as Uganda [4], but is lower than rates in Hong Kong where 95% were positive on the OLBI and 87% were positive on the GHQ-12 [9]. However, it is unfortunately higher than results for medical students' burnout in other parts of the Arab world [14, 15, 46–52]. The different results might be attributed to methodological differences, such as the use of different scales for burnout or alternatively to the effect

of different cultural and educational systems across the Middle East. The results are not surprising given the chronic stress that medical students in Egypt face which leads to their mental and psychological exhaustion that ultimately can lead to feelings of incapacity, symptoms of mental illness, and manifestations of depression and burnout.

Although some initiatives have taken place in Ain Shams Medical School, such as designing a new project for psychological support for students, our results indicate that there is still a huge gap between the service provided and the needs of those students. This indicates the importance of having systemic and comprehensive assessments and documentations for medical students who suffer from mental illnesses. Unfortunately, this higher percentage might even underestimate the real problem as it is very common that some of our students might seek medical help in an informal way through private clinics. This problem has been also noted in the study by Ashrafi et al. [53] in Iran. Another proposed factor is the stigma attached to acknowledging and seeking help when experiencing difficulties with mental health, which is still very deeply rooted in various cultures especially in Arab and middle eastern one.

Burnout has implications ranging from mental illness symptoms to drug misuse [34]. In this study, 9% of students were CAGE positive, indicating a problematic level of alcohol consumption. This is higher than the prevalence of alcohol use disorders in other studies carried out in the Arab world as in Jordan (8%) [15] and 5% in Morocco [14]. The British Medical Association observed that this is a worldwide problem, where drug use is at least equal to the population level in each country and in many cases much higher (Bhugra et al., 2019). Forty-two students (8%) in our sample reported taking non-prescription substances or prescription medication outside its intended use (to feel better or uplift their mood), and 76 students (14%) described using medication to enhance concentration, study, or academic performance. This indicates that probably most of the students use it either as a form of self-medication or it might be caused by the drug itself or a mixture of both. This is in spite of the fact that students are best placed to understand the physical, mental, and societal consequences of such use in others [54].

Limitations

There were several limitations to our study including the cross-sectional nature of the study (which cannot determine any causal relationship), the use of convenience rather than random sampling, and the fact that respondents who may have potentially been positive did not participate in the survey and hence there might

actually be higher levels of burnout problems that were not detected. The study took place in only two universities representing the public and private sector, which is not representative of all the medical universities in Egypt.

Conclusions

Our study highlighted a high level of burnout and mental illness in a population who will be the future backbone of the health care system. Therefore, it should be a priority for policymakers and academics in Egypt should look carefully at the mental health needs of this population as it is very important to have doctors who have the resilience to deal with their future challenges.

Abbreviations

CAGE: Cut down, Annoyed, Guilty, and Eye-opener; GHQ-12: General Health Questionnaire-12; OLB: Oldenburg Burnout Inventory; SD: Standard deviation; SPSS: Statistical Package for the Social Sciences.

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Authors' contributions

All authors contributed to the concept and design of the study. TO and NS contributed to coordinating and facilitating investigators' roles and revising the article. DE, MY, and HE were involved in the acquisition of the data and revising the article. NS and KAA contributed to the statistical analysis. DAE and KAA wrote the first draft of the article. DB and AM revised the write-up and contributed to the proofreading of the article. The authors approved the final version of the paper.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was granted by the Ain Shams University Faculty of Medicine Ethical Committee. Informed consent for taking part in the study was obtained from each participant.

Consent for publication

Not required.

Competing interests

The authors declare that they have no competing interests.

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