# Psychiatric morbidity among third year medical students at the Ain Shams University, Cairo, Egypt

Nivert Zaki<sup>a</sup> and Jehan Ibrahim<sup>b</sup>

Departments of <sup>a</sup>Neuropsychiatry and <sup>b</sup>Community Medicine, Faculty of Medicine, Ain Shams University, Cairo, Egypt

## Introduction

Correspondence to Nivert Zaki, Institute of Psychiatry, Faculty of Medicine, Ain Shams University, Cairo, Egypt Tel: 0105171881; fax: 26824738; e-mail: nivertzaki@yahoo.com

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Different psychiatric disorders are found to be underrecognized yet common and treatable among medical students. Various studies have shown that medical students are subjected to considerable stress over the last decades. The aim of this study was to determine the presence of clinically significant psychiatric morbidity among third year medical students, to explore the effects of the sociodemographic background for these outcomes, and to analyze sex differences with regard to selected psychiatric morbidities. It was preferable to have our study on this educational year as this year is considered a transition from preclinical to clinical training and it is also considered as a crucial stage of medical school, with regard to student stress, at which medical students begin to grasp an image of their future profession.

## Methods

A cross-sectional study was carried out among third year medical students from the Ain Shams University. They were assessed using the Social Classification Scale and Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders 4th edition to assess psychiatric morbidity.

#### Results

The response rate was 98.9%. Prevalence of psychiatric morbidity among our medical student sample was 59.9%. There was no significant statistical difference between psychological morbidity and any of the sociodemographic variables. The most prevalent psychiatric diagnosis was found to be depression (47.9%), followed by generalized anxiety disorder (44.9%), and obsessive-compulsive disorder (44.4%), the least prevalent of which was anorexia nervosa (0.7%).

## Conclusion

A significantly high proportion of medical students (59.9%) had ongoing psychiatric condition and proactive interventions should be addressed to encourage those medical students to seek help for their psychiatric problems. Counseling and preventive mental health services should be an integral part of the routine clinical facilities caring for medical students.

#### Keywords:

anxiety, depression, medical students, psychiatric morbidity

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### Introduction

Different psychiatric disorders are found to be underrecognized yet common and treatable among medical students. Various studies have shown that medical students are subjected to considerable stress over the last decades. Mental distress during medical schooling predicts problems in physicians later in life, which in addition to the personal suffering of the individual doctor might negatively affect patient care [1].

Commonly, physicians do not seek the kind of professional help for themselves, as they would provide their patients. Medical students seem to adopt a similar behavior. However, little is known about the prevalence of clinically significant mental distress [2].

Prevalence rates for medical students vary; from interview-based studies, 1-year prevalence of 6–8% of depression in an American sample was reported 20 years ago [3]

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and more recently in a UK sample, psychiatric morbidity was found in 16% of medical students [4]. On the basis of self ratings, prevalence rates of depression in the range of 14–24% (Beck Depression Inventory scores) [5] and psychiatric morbidity in the range of 22–36% have been reported (General Health Questionnaire-12) in a long-itudinal sample. In a study of Swedish University students, 14–19% reported as having been depressed during the previous academic year [6].

It is obvious that medical students have rates of depression and suicide that are higher than those of the general population. Earlier studies show that students enter medical school with lowest rates of depression and peak in depressive symptoms at the end of their second year of school [7].

Unfortunately, there have not been much Arab researches on psychiatric morbidity among medical students. Only one limited study conducted at a Riyadh Teaching

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Hospital suggests a prevalence of minor psychiatric morbidity of 25%, which is far lower than the 50% found in Western medical consultant counterparts [8].

Retrieving knowledge about the presence of psychiatric conditions is important in itself and if found, would need attention. In addition, it might indicate a vulnerability that medical school could not be held responsible for. Although stress reactions are conceived of as reactions to a pressing environment, psychiatric disorders, such as bipolar disorder, depression, anxiety are considered inherently multifactorial, with hereditary contributions [9].

The objectives of this study were to (i) determine the presence of clinically significant psychiatric morbidity among third year medical students, (ii) explore the effects of the sociodemographic background for these outcomes, and (iii) analyze sex differences with regard to selected psychiatric morbidities.

## Methods

This was a cross-sectional study and the study population consisted of third year medical students from the Ain Shams University; both male and female students were interviewed. It was preferable to have our study on this educational year as this year is considered a transition from preclinical to clinical training and it is also considered as a crucial stage of medical school, with regard to student stress, at which medical students begin to grasp an image of their future profession.

The student sample was asked to complete our assessment tools as: Fahmy and El-Sherbini's Social Classification Scale [10] that measures socioeconomic standards. It consists of a self-administered scale. Students were classified into social classes 1, 2, 3, and 4 based on the following parameters: education of the father, education and work of the mother, income crowding index, and sanitation. Self-reported questionnaire assessing demographic data and clinical psychiatric assessment using Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, 4th edition [11] were used. It is used to diagnose an axis I diagnosis. It is a semistructured diagnostic interview that has been updated for Diagnostic and Statistical Manual of Mental Disorders, 4th edition. It begins with a section on demographic information and clinical background. Then there are seven diagnostic modules, focused on different diagnostic groups: mood, psychotic, substance abuse, anxiety, somatoform, eating, and adjustment disorders. However, we did not include the modules of psychotic disorders as it is not expected to find such a significant prevalence of psychotic disorders among medical students and also the module of drug abuse as it is considered to be a significant category that has to be studied in detail among university students. Psychiatric morbidity (caseness) was defined as having a diagnosis of major depression, dysthymia, hypomania and/or mania, obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), panic disorder, phobic disorders, somatoform disorders, anorexia nervosa, or bulimia

nervosa. Both required and optional probes are provided. It is considered that the standard interview to verify diagnosis in clinical trials is extensively used in other forms of psychiatric research. The Arabic version used in this study was translated and validated in an earlier Egyptian research study [12].

All third year students, male and female, encountered on campus and at their classrooms who were willing to participate in the study were interviewed by a welltrained research assistant after giving informed consent. The sample size was calculated using the total number of students registered in the third academic year (1530 student) at 95% confidence interval and 5% significance level, which were estimated using Epi-Info [EPi info 2002 database and statistics software for public health professionals center of disease control and prevention (CDC) (version 6.4 d)]. The size was found to be 400 students (adjusting for dropout of 10%). The calculated sample size based on the prevalence of depressive symptoms among medical students in Stockholm, Sweden was 12.9.

The participation was entirely on voluntary basis. All students were guaranteed the confidentiality. The study was approved by Research Ethics Committee.

#### Statistics

Data were entered in Microsoft Excel (Microsoft office excel standard edition 2003 Microsoft Corporation) and analyzed using SPSS [(Statistical Package for Social Sciences) release 13.0.2004] version 13.0 statistical software. Prevalence of outcome variables along with 95% confidence interval was calculated. Pearson's  $\chi^2$ -test and odds ratio were used to observe and quantify an association between the categorical outcome and different study variables. Student's *t*-test for

Table	1	Characteristics	of	respondents
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Variables	N (401) (%)	
Sex		
Male	241 (60.1)	
Female	160 (39.9)	
Number of siblings		
None	14 (3.5)	
One	66 (16.4)	
Two	157 (39.2)	
More than two	164 (40.9)	
Birth order		
Oldest	183 (45.6)	
Middle	110 (27.4)	
Youngest	94 (23.4)	
Lone	14 (3.5)	
Family problems		
None	251 (62.6)	
Divorce	11 (2.7)	
Death	33 (8.2)	
Others	106 (26.4)	
Family history of psychiatric illness		
Positive	19 (4.7)	
Negative	382 (95.3)	
Social class		
High	340 (84.8)	
Middle	28 (7)	
Low	20 (5)	
Very low	13 (3.2)	

No significant statistical difference was found between psychological morbidity and any of the sociodemographic variables.

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Table 3 Relation between depression and other psychological



Distribution of psychiatric morbidities among third year medical students. GAD, generalized anxiety disorder; OCD, obsessive-compulsive disorder; PTSD, posttraumatic stress disorder.

independent samples was used to compare the mean values of study variables in relation to depression. A P value of less than 0.05 was considered to be statistically significant. The outcome variables (different categories of psychiatric morbidities) were categorized into dichotomous as positive/negative.

## Results

Of the 420 medical students eligible to participate in the study, the response rate was 98.9%. Nineteen students refused to participate or their questionnaires were incomplete. Prevalence of psychiatric morbidity among our medical student sample was 59.9%. Demographic characteristics of participants are shown in Table 1.

Figure 1 shows percentages of different psychiatric disorders among the student sample, the most prevalent of which was depression (47.9%), followed by GAD (44.9%) and OCD (44.4%). The least prevalent psychiatric disorder was found to be anorexia nervosa (0.7%).

morbidities among medical students, adjusted by sex (N=401)				
	Depres	Depression $(n=192)$		
	Total (%)	OR (95% CI)		
Hypomania				
Positive $(n=75)$	37 (49.3)	1.1 (0.6-1.7)		
Negative $(n=326)$	155 (47.5)			
Dysthymia				
Positive $(n=137)$	89 (65)	2.9 (1.4-4.5)*		
Negative $(n=39)$	103 (39)			
Panic disorder				
Positive $(n=61)$	34 (55.7)	1.2 (0.9–1.6)		
Negative $(n=340)$	158 (46.5)			
OCD				
Positive $(n=178)$	94 (52.8)	1.2 (1.0–1.4)*		
Negative $(n=223)$	98 (43.9)			
PTSD				
Positive $(n=43)$	22 (51.2)	1.1 (0.8–1.5)		
Negative (n=358)	170 (47.5)			
GAD				
Positive $(n=180)$	114 (63.3)	3.2 (2.1–4.8)*		
Negative $(n=221)$	78 (35.3)			
Somatization				
Positive $(n=15)$	7 (46.7)	0.95 (0.3–2.7)		
Negative (n=386)	185 (47.9)			
Hypochondriasis				
Positive $(n=13)$	8 (61.5)	0.8 (0.6–5.5)		
Negative $(n=388)$	184 (47.4)			
Body dysmorphia				
Positive $(n=55)$	35 (63.6)	1.5 (1.0-2.2)*		
Negative $(n=346)$	157 (45.4)			
Anorexia nervosa	4 (00 0)			
Positive $(n=3)$	1 (33.3)	0.8 (0.3–1.7)		
Negative ( $n=398$ )	191 (48)			
Bulimia nervosa		10(00,10)		
Positive $(n=33)$	19 (57.6)	1.2 (0.8-1.9)		
Negative $(n=368)$	173 (47)			
Social phobla	67 (E A)	10(00 15)		
Positive $(n = 124)$		1.2 (0.9-1.5)		
regative (n=217)	125 (45.1)			
Positivo (n – 92)	19 (579)	12 (10_17)*		
Nogative $(n = 218)$	40 (07.0)	1.3 (1.0-1.7)*		
(n=3.18)	144 (40.3)			

Cl, confidence interval; GAD, generalized anxiety disorder; OCD, obsessive-compulsive disorder; OR, odds ratio; PTSD, posttraumatic stress disorder. \*P<0.05.

Male students were significantly more likely to suffer from depression than female students. In contrast, female students were significantly more likely to suffer

Table 2 Psychological morbidity among medical students, stratified by sex (N=401)

	Female $(n=160)$	Male (n=241)	
	Total (%)	Total (%)	OR (95% CI)
Depression $(n=192)$	67 (41.9)	125 (51.9)	0.83 (0.7-1.0)*
Hypomania $(n = 75)$	34 (21.3)	41 (17)	1.32 (0.8-2.2)
Dysthymia $(n = 137)$	63 (39.4)	74 (30.7)	1.51 (1.0-2.2)*
Panic disorder $(n=61)$	29 (18.1)	32 (13.3)	1.4 (0.8-2.5)
OCD (n=178)	73 (45.6)	105 (43.6)	1.1 (0.7-1.6)
PTSD(n=43)	14 (8.8)	29 (12)	0.7 (0.4-1.4)
GAD (n=180)	77 (48.1)	103 (42.7)	1.2 (0.8–1.9)
Somatization $(n=15)$	5 (3.1)	10 (4.1)	0.7 (0.2-2.2)
Hypochondriasis $(n=13)$	10 (6.3)	3 (1.2)	5.3 (1.4-19.5)*
Body dysmorphia ( $n=55$ )	24 (15)	31 (12.9)	1.2 (0.7-2.1)
Anorexia nervosa $(n=3)$	3 (1.9)	0	1.02 (1.0-1.04)*
Bulimia nervosa $(n=33)$	17 (10.6)	16 (6.6)	1.7 (0.8–3.4)
Social phobia $(n=124)$	47 (29.4)	77 (32)	0.9 (0.6-1.4)
Specific phobia $(n=83)$	45 (28.1)	38 (15.8)	2.1 (1.3–3.4)*

Cl, confidence interval; GAD, generalized anxiety disorder; OCD, obsessive-compulsive disorder; OR, odds ratio; PTSD, posttraumatic stress disorder. \*P<0.05.

Table 4 Stepwise	regression ana	alysis for the	significant
predictors of depr	ression among	the study sa	ample

Model	R <sup>2</sup>	β	t	Significance
GAD	0.23	0.24	5.430	< 0.001
Dysthymic disorder	0.26	0.17	3.793	<0.001
Body dysmorphia	0.27	0.09	2.185	< 0.05

GAD, generalized anxiety disorder.

from dysthymic disorder, hypochondriasis, anorexia nervosa, and specific phobia, than male students as shown in Table 2.

Table 3 shows the significant comorbidities between depression and other psychiatric disorders, such as dysthymia, OCD, GAD, body dysmorphic disorder, and specific phobia.

When the significant variables associated with depression (dysthymia, OCD, GAD, body dysmorphia, and specific phobia) were included in the model of stepwise regression analysis, Table 4 GAD, dysthymia, and body dysmorphia were the most significant predictors of depression among the studied population.

## Discussion

Prevalence of psychiatric morbidity among our medical students was 59.9%, which was found to be similar to several previous studies that reported approximately 59% for minor psychiatric morbidity among medical trainees [8] and approximately 48% among medical practitioners and health administrators [13]. However, it remained to be higher than other studies such as that carried out by Firth [14], who found the prevalence of emotional disturbances among medical students to be 31.2% and a study carried out on new medical graduates, which reported the prevalence of psychiatric morbidity to reach 26% in the final year of medical school [15]. In a study carried out by Dahlin and Runeson [16], 27% of third year medical students had a psychiatric diagnosis. A similar study carried out by Facundes and Ludermir [17] showed the overall prevalence of common mental disorders among medical students to be 34.1%.

The reasons for our relatively high levels of psychiatric morbidity are likely to be complex and cannot be attributed to single issues or to be rationalized by the perceived medical school stress and our highly stressful educational environment in which our medical students are. Personal characteristics of our students themselves and earlier mental health problems could also be considered as important predictors of mental health problems in need of treatment among our medical students. Another plausible explanation of the existed high levels of psychiatric illness is the fact that our study was conducted during midyear exams, which indeed might be accompanied with overloaded stress that might add to the already existing levels of tension.

The basic demographic characteristics of our sample did not significantly influence the risk of having psychiatric disorders. Neither sex nor any of the other sociodemographic variables in our study was found to have a significant relationship with psychiatric morbidity. This finding was in accord with other studies [16-18]. The lack of a sex difference in our study may reflect the contemporary changes in medical schools in Arab countries [19]. There are more female students entering medical schools. Mule and Barthel [20] described the social changes in Egypt, where there has been an increase in women's participation in the work force and, to some extent, in political life. Furthermore, globalization and exposure to the Western culture have steered this traditionally Islamic country with alternative ideologies with respect to sex. In addition, lack of difference between the sexes may be due to the highly selective and homogenous nature of the student population with unique personal characteristics desirable for the competitive environment of medical school [21], and the fact that nowadays, both male and female individuals occupy equal positions with the social sphere of universities.

Only a few studies similar to that carried out by Al Bedaiwi *et al.* [8] showed significant sex difference and psychiatric illness and this was explained by the high prevalence of stress of Saudi female medical trainees by exposure to more conflicts between career and home than their male medical counterparts.

Prevalence of depressive disorders among our students reached 47.9%, which was found to be higher than reported in earlier studies as that carried out by Benbassat *et al.* [7], which stated that 24% of the medical students in California were depressed by Beck Depression Inventory criteria. An Egyptian study carried out by Amr *et al.* [18] found the prevalence depression among medical students in Mansoura University to be 18.3%. Dahlin *et al.* [22] found the percentage of depressive symptoms to be 12.9%.

Male students were significantly more likely to suffer from depression than female students in our study and this was not in accord with other studies, such as that carried out by Dahlin *et al.* [22], which stated that the prevalence of depressive symptomatology was 16.1% among female medical students versus 8.1% among male students and that carried out by Amr *et al.* [23], which stated that female students had higher depression and neuroticism scores than male students. The most likely explanation of sex differences is multifactorial, including biological, sociocultural, or variable combinations of each.

Medical students have rates of depression that are higher than those of the general population. Earlier studies show that students enter medical school with lowest rates of depression and peak in depressive symptoms at the end of their second year of school. Although counseling is known to be an effective treatment for depression, depressed medical students have low rates of using mental health counseling services and may not have access to such services at all. Undertreatment of depression can have significant immediate and delayed consequences because depression is a recurrent disease for many who suffer from it [7]. Moreover, levels of anxiety reported among our medical student sample are found to be higher than those in most of the earlier studies and greater than for the general community as well. Amr *et al.* [18] found the prevalence of anxiety to be 26%, whereas Bunevicius *et al.* [24] reported 43% of anxiety symptoms among medical students in Lithuania.

The causes of such high levels of depression and anxiety disorders in our sample are clearly complex. Generally speaking, medical field workers and students are described to have personality traits of obsession, self doubt, high self criticism, guilt, extreme fear of failure and making mistakes, and also may experience an exaggerated sense of responsibility and strive to achieve [25]. All of these previously mentioned factors might make the medical students more vulnerable to develop depression and anxiety when being exposed to emotional distress during the medical school that has been described especially in our country to be chronic and persistent rather than episodic distress.

Moreover, the Arabic version of Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, 4th edition [12] has been shown to be slightly overinclusive for anxiety disorders and might give falsepositive results of depression, which might have affected our results.

Our finding of the most significant psychiatric comorbidity between depression and GAD was in accord with other studies [26,27], which stated that in the National Comorbidity Survey, 90% of those with lifetime GAD had another lifetime psychiatric diagnosis, most commonly major depression and dysthymia. In addition, Stein *et al.* [28] stated that in primary care, comorbidity rates of current anxiety cases with depression as high as 19.2% have been reported. This comorbidity would have its important negative impact on the students' level of functioning as pure GAD causes marked social and functional impairment, which is similar in magnitude to that caused by major depression. However, the highest levels of impairments were seen when GAD was comorbid with major depression [26].

#### **Clinical implications**

The reluctance among medical students and physicians to seek help is well acknowledged and is an important target for actions. Therefore, besides active teaching on the subject of help seeking in medical school, the social norms among medical students on this subject should be more openly debated. It is also important to lower thresholds for seeking help, specific treatment programs, and organizational interventions for medical students that may be beneficial. In addition, further research is needed to confirm our findings.

It is recommended that if education authorities could establish proactive programs to support doctors in their undergraduate and postgraduate training, the components of which should include; (i) promotion of helpseeking behavior by expecting all medical students to have their own personal doctor from whom they would seek confidential advice early when 'in trouble' or ill, (ii) further develop postgraduate training programs that promote individual skills in stress management, collegiate problem-solving, accepting constructive criticism, improved communication, and management for medical students, and (iii) establish an individual mentoring program for students within each discipline, aimed at maximizing not only professional learning but also professional growth for the doctor.

#### Study limitations

The study takes place at the Ain Shams University that may affect the generalizability to other institutions. Consequently, the results will only be applicable to similar institutions in similar settings. The findings of this study are based on self-reported information provided by medical students and some potential or reporting bias may have occurred because of respondents' interpretation of the questions or desire to report their emotions in a certain way or simply because of inaccuracies of responses. The study takes place at one point in time, which was just before the midyear exams, which will limit the ability to generalize the findings to other time periods; this is referred to as a threat to temporal validity. The study does not take into account faculty characteristics or teaching styles, which could have an effect on the student's perceived stress levels.

## Conclusion

The major strength of the study is the interview-based, diagnostic procedure, showing that a significantly high proportion of medical students had ongoing psychiatric condition and that proactive interventions should be addressed to encourage those medical students to seek help for their psychiatric problems and to provide the most available and adequate facilities to them.

The authors have no conflict of interest.

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# الملخص العربى

## الاضطرابات النفسية بين طلبة السنة الثالثة بكلية الطب – جامعة عين شمس

# نيفرت زكى\*، جيهان ابراهيم\*\* \*قسم الطب النفسى- كلية الطب \_جامعة عين شمس \*\*قسم طب المجتمع- كلية الطب \_جامعة عين شمس