

# PREVALENCE OF DEPRESSION AMONG MEDICAL STUDENTS AT AL-AZHAR UNIVERSITY: A CROSS SECTIONAL STUDY

By

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## ABSTRACT

**Background:** Depression among medical students may promote development of physical and mental problems. Few studies investigated its prevalence among medical students in Egypt .

**Objective:** This study aimed to determine the prevalence of depression and to identify some related risk factors among Al-Azhar University medical students, Cairo, Egypt.

**Subjects and Methods:** A cross-sectional study was conducted at Faculty of Medicine (Boys and Girls), Al-Azhar University, Cairo, Egypt. A cluster sample was taken and included students from all study years. A self-administered questionnaire was completed to 1254 students from January to March 2017. Data concerning socio-demographic and lifestyle and sleeping related factors were collected using a valid self-administered structured questionnaire including PQ-2 instrument for depression screening. The prevalence of depression was estimated, and appropriate statistical analyses were performed to compare the prevalence of depression by the studied students' factors.

**Results:** The overall prevalence of depression was 42.9%. The prevalence was significantly high among females (46.4%), early study years (48.4%), and those living away from family. Students reported frequent fast food intake, watching TV and use social media, not in touch with their friends, and those eating one meal per day also showed significant high prevalence. Sleeping related factors appeared to influence the prevalence of depression among the studied students where prevalence was high among those reported less sleeping hours, use of sleeping medications and those spent > 2 hours in bed before sleeping .

**Conclusion:** A high prevalence of depression among the studied medical students was detected. The study suggested a variety of risk factors and the need of psychiatric counseling and support services available to vulnerable students.

**Key words:** Al-Azhar, Depression, Lifestyle, Medical students, Prevalence.

## INTRODUCTION

Psychological and mental health problems among university students are considered one of the vital and escalating public health problem worldwide, for which epidemiological data is required and should be addressed as a priority problem (*Eisenberg et al., 2013*). Medical education is among the most challenging

and stressful ones. High level of stress may have a negative effect on cognitive functioning and learning of students in the medical school (*Mancevska et al., 2015*).

The studies conducted on medical students in Egypt as well as in different regional countries have shown that medical students have high rates of anxiety and depression during their years

of studying and training. In Egypt, a cross-sectional study was carried out on 164 medical students and 164 pharmacy students at Alexandria University. The study reported the prevalence of anxiety and depression among medical students to be 43.9% and 57.9%.

It is recommended to conduct psychological and mental screening of medical students (*Mancevska et al., 2015*). As anxiety and depression represent the most important health related problems among medical students (*Eisenberg et al., 2013*), and as there are great lack of data about the prevalence of these problems among medical students in Egypt, there would be a need to conduct epidemiological study to assess the magnitude of this fundamental problem among medical students at the Egyptian Universities .

The present study aimed to determine prevalence of depression and some related risk factors among male and female medical students at Al-Azhar University, Cairo, Egypt.

## SUBJECTS AND METHODS

A cross section study was conducted to determine the prevalence of depression among medical students at Al-Azhar University, Cairo, Egypt during the study year 2016/17.

A cluster sampling procedure was used where only group was randomly chosen from each study year in the studied Faculty of Medicine (boys and girls). All students from the chosen group in each study year were invited to complete self-administered, anonymous questionnaire during the period from January through March 2017.

The questionnaire was designed by the research team and it was based on PQ-2 for depression screening questions (*L?we et al., 2010* and *Maurer, 2012*). The questionnaire has also included socio-demographic factors and data related to dietary habit and other lifestyle factors. Sleeping related variables and associated chronic medical problems were also included in the study questionnaire. The PQ-2 is an ultra-short screening instrument, including simple questions inquiring about the frequency of depressed mode over the past two weeks, and include only the first two items from PHQ-9. The questions were as follow: over the past 2 weeks, how often have you bothered by any of the following statements; i) little interest or pleasure in doing things, ii) Feeling down, depressed or hopeless. The PQ-2 score ranges from 0-6 where score 0 indicates "not at all", score 1 "Several days", 2 "more than half the days", 3 "nearly every day". The cutoff score of 3 was used as the optimal cutoff point in this study for screening purpose. It is mentioned that cutoff score of 3 would enhances the sensitivity of PQ-2 questionnaire and improves its specificity (*L?we et al., 2010* and *Maurer, 2012*). The validity of other variables included in the study questionnaire was tested by a psychiatrist and an epidemiologist.

The calculated sample size of this study was 1230 students based on the average estimated depression prevalence among medical students in the previous Egyptian studies (54%) done in the Faculty of Medicine, Alexandria University (*Ibrahim and Abdelreheem, 2015*), an assumed precision of 3% and a confidence interval of 95% .

All students at the Faculty of Medicine (boys and girls) were eligible to participate in this study during the study year 2016/17. The questionnaires were

completed and returned back by 1254 students (623 male students and 631 female students). The background and purpose of the study were explained at the beginning of the questionnaire .

The participation of students was voluntary, and ethical considerations were also considered to ensure confidentiality and privacy of the collected data. Finally, approval was taken from the ethics committee at Al-Azhar Faculty of Medicine.

Statistical analysis: The collected data were entered and analyzed using SPSS

package (version 22.0). Data were presented using frequencies and percentages. The prevalence of depression among the studied students was assessed. The prevalence of depression was then compared by all studied students' characteristics using chi square test. The analysis for the last year academic grades were done for only 1056 students as students of the first year were not included. P values  $\leq 0.05$  were used as indicators of statistical significance differences between students according to their characteristics.

## RESULTS

The overall prevalence rate of depression among the studied 1254 medical students at Al-Azhar University was 42.9%. The depression was significantly more prevalent among female students (46.4% among females vs. 39.5% among males). The prevalence of depression was significantly higher among basic sciences level students (2nd and 3rd study years) compared to clinical

sciences level students (4th, 5th and 6th study years) where the prevalence was 48.4% and 36.8%, respectively. A significant low level of depression, however, was found among students who were living with their family (30.3%) compared to those living in University residence (44.2%) and outside residence but without their families (44.8%) (table 1).

**Table (1): Prevalence of depression by socio-demographic data of the studied medical students**

Depression	Yes (n= 539)	No (n= 715)	P value
<b>Socio-demographic factors</b>			
<b>Sex</b>			
Male	246 (39.5)	377 (59.5)	0.01
Female	293 (46.4)	338 (53.6)	
<b>Study year</b>			
Basic sciences study years	323 (48.4)	344 (51.6)	<.0001
Clinical sciences study year	216 (36.8)	371 (63.2)	
<b>Residence</b>			
University residence	332 (44.2)	420 (55.8)	0.01
Outside university residence	162 (44.8)	200 (55.2)	
With the family	37 (30.3)	85 (69.7)	

Data were presented as number and % (in between brackets)

There were no statistically significant differences between depressed and non-depressed students in matters of smoking

status and physical activity practice, although the prevalence of depression was slightly higher among smokers and those

with no or less physical activity practice. On the other hand, however, there were statistically significant differences regarding the number of weekly and daily number of meals where the higher proportion of the depressed students was among those reported eating more than 5 fast food per week (52.9%) and to eat only one food meal per day (57.6%). No keeping in touch with friends outside medical school showed a significant high prevalence of depression among the

studied students (53.3%). Frequent time spent in watching TV and social media showed significantly high prevalence of depression among the studied students. The prevalence of depression among the studied students showed non significant variations by their body mass index. The prevalence of depression was 42.6% and 42.5% among normal weight and overweight students respectively, while it was slightly higher (48.9%) among obese students (table 2).

**Table (2): Comparison between depressed and non-depressed students according to life-style factors**

<b>Lifestyle factors</b>	<b>Depression</b>	<b>Yes (n= 539)</b>	<b>No (n= 715)</b>	<b>P value</b>
<b>Smoking</b>				
Non smokers		527 (42.9)	700 (57.1)	0.87
Smokers		12 (44.4)	15 (55.6)	
<b>Physical activity per week</b>				
No		301 (43.3)	393 (56.7)	0.75
< 3 sessions		144 (44.2)	182 (55.8)	
3-5 sessions		68 (39.3)	105 (60.7)	
> 5 sessions		26 (42.6)	35 (57.4)	
<b>Fast food per week</b>				
No		182 (37.7)	300 (62.3)	0.01
1-3		253 (44.8)	312 (55.2)	
3-5		68 (48.9)	71 (51.1)	
> 5		36 (52.9)	32 (47.1)	
<b>Number of meals per day</b>				
<b>1</b>		15 (57.6)	11 (42.4)	0.01
<b>2</b>		245 (46.1)	28 (53.9)	
<b>3</b>		231 (38.4)	370 (61.6)	
<b>&gt; 3</b>		48 (50.0)	48 (50.0)	
<b>T.V. watching and/or Social media time per day</b>				
No		130 (45.8)	154 (54.2)	0.01
< 2 hours		160 (37.7)	264 (62.3)	
2-4 hours		140 (42.3)	191 (57.7)	
> 4 hours		109 (50.7)	106 (49.3)	
<b>Keeping in touch with friends outside medical school</b>				
Never		41 (53.3)	36 (46.7)	0.0003
Rarely		223 (47.6)	245 (52.4)	
Often		186 (35.9)	331 (64.1)	
Most of time		89 (46.3)	103 (53.7)	
<b>BMI (kg/m<sup>2</sup>)</b>				
<b>&lt; 25</b>		348 (42.6)	468 (57.4)	0.54
<b>25 -&lt; 30</b>		154 (42.5)	208 (57.5)	
<b>≥ 30</b>		37 (48.9)	39 (51.1)	

Data were presented as number and % (in between brackets)

The prevalence of depression showed statistically significant difference by sleeping duration a day where the prevalence was 47.1% and 48.2% among students reported to sleep < 6 hours and > 8 hours a day, respectively. Time spent in bed before sleeping was also showed

significant high depression prevalence among report to spend more than 2 hours (52.2%). Students reported to often taking sleeping medications showed a non significant high depression prevalence of depression of 52.2% (Table 3).

**Table (3): Comparison between depressed and non-depressed students according to sleep related factors**

<b>Depression</b>	<b>Yes (n= 539)</b>	<b>No (n= 715)</b>	<b>P value</b>
<b>Sleep related factors</b>			
<b>Sleeping duration per day</b>			
< 6 hours	97 (47.1)	105 (52.9)	0.02
6-8 hours	312 (39.9)	470 (60.1)	
> 8 hours	130 (48.2)	140 (51.8)	
<b>Time spent in bed before sleeping</b>			
< 1 hour	328 (38.7)	519 (61.3)	<.0001
1-2 hours	13 (31.8)	152 (68.2)	
> 2 hours	48 (52.2)	44 (47.8)	
<b>Taking sleeping medication</b>			
Never	486 (43.2)	40 (56.8)	0.47
Rarely	41 (39.1)	64 (60.9)	
Often	12 (52.2)	11 (47.8)	

Data were presented as number and % (in between brackets)

The study hours per day and study state did not show significant differences in the prevalence of depression among the studied students, although the depression prevalence was lower among those reported to study less than two hours a day (39.1%) and those studying all the time in a group (28.5%). The students reported that study limits social life activity showed significantly higher depression prevalence (48.3%) than those reported

that medical study does not affect social life (34.1%). The academic grades showed none significant variation in the prevalence of depression among the studied students where the prevalence of depression was found to be high among students with high (very good and excellent) and low (acceptable), and to be slightly low among students with good academic grade (36.5%) (table 4).

**Table (4): Comparison between depressed and non-depressed students according to study related factors**

Depression	Yes (n= 539)	No (n= 715)	P value
<b>Study related factors</b>			
<b>Study hours/day</b>			
< 2	71 (39.1)	111 (60.9)	0.23
2-4	255 (45.8)	301 (54.2)	
> 4	213 (41.3)	303 (58.7)	
<b>Study state</b>			
Self study all the time	241 (44.7)	298 (55.3)	0.21
Mostly self study	263 (41.9)	365 (59.1)	
In a group all the time	10 (28.5)	25 (71.5)	
Mostly in a group study	25 (48.1)	27 (51.9)	
<b>Study limits social life</b>			
Yes	380 (48.3)	407 (51.7)	<.0001
No	159 (34.1)	308 (65.9)	
<b>Last year academic grades**</b>			
Acceptable	27 (43.5)	35 (56.5)	0.24
Good	78 (36.5)	136 (63.5)	
Very good	183 (44.8)	225 (54.2)	
Excellent	160 (43.1)	212 (56.9)	

Data were presented as number and % (in between brackets)

\*The analyses were done for only 1056 students as students of the 1st year were not included

## DISCUSSION

The present study revealed a high prevalence of depression among medical students at Al-Azhar University in Cairo, Egypt. The estimated prevalence was 42.9% (95% CI= 40.3%-45.7%). The higher prevalence of depression among medical students has been explained by several theories in many researches, e.g. some have contributed these findings to that medical students pass through continuous examinations throughout their academic years. Studying medicine is competitive. Several academic stressors were reported in many previous researches (*Abdulghani et al., 2011; Abdel Rahman et al., 2013 and Ibrahim and Abdelreheem, 2015*).

Regarding the prevalence of depression among medical students in this study

showed significant variations by sex, study years and residence of the students. The prevalence was significantly high among female students (46.4%), basic sciences study year students (48.4%), among students who reported living in university residence (44.2%), outside the university residence (44.8%), and away from their families (30.3%). This result agreed with studies by *Ibrahim and Abdelreheem, (2015)* in Alexandria who found that the prevalence of depression and stress was higher among the female students. Also, in a cross-sectional study conducted on 450 female medical students in King Abdulaziz University, Jeddah, Saudi Arabia, the prevalence of depression was 36.5%; while 21.8% and 14.7% had a border-line and morbid depression, respectively (*Ibrahim et al., 2013*).

The study results revealed that students away from their family (in and outside the University residence) were found to have had a significant high prevalence of depression. These findings appeared consistent with the results of South Korean study reported high depression prevalence among students living alone at a lodging house or a rented room, unmarried students, and among students with financial difficulty (*Myoung-Sun and Sung, 2010*).

The level of depression in this study was found to increase among students in the second and third years of the medical course (basic sciences course). Among these students the prevalence was 48.4% compared to only 36.8% among clinical sciences study years students. These findings agree with a study conducted by (*Maurer, 2012*).

The comparison of depression prevalence among medical students in this study by their lifestyle characteristics showed significant variations for some studied factors. The prevalence was significantly high among students reported frequent weekly intake of fast food for > 5 times (52.9%), eating only one meal per day where the (50.0%), among those watching TV and/or on social media for > 4 hours a day (50.7%), and among those never kept in touch with friends outside medical school (53.3%). Consistent with these findings, bad dietary habits, were found in many studies to be associated with increased risk of mental and psychological disturbance, particularly among adolescents (*Guilbeau, 2012* and *Sepkowitz, 2013*). Also, the prevalence of depression in this study was higher among smokers (44.4%) and obese students

(48.9%), although not significant. These findings contributed to the evidence suggesting that individuals with increased anxiety are more likely to be obese and smoke (*Fluharty, 2017*).

The prevalence of depression among the studied students was significantly higher among those reported sleeping disorders. Students reported sleeping < 6 hours and > 8 hours a day, those spent for > 2 hours in bed before sleeping and those taking sleeping medication showed a significant high level of depression compared to other students where the prevalence was 47.1% and 48.2%, 52.2%, respectively. Sleep disturbances commonly are associated with many psychological disorders including anxiety disorders, and depression, and sleep loss may exacerbate and contribute to relapse of these conditions (*Schlarb et al., 2017*).

The study findings revealed varying level of depression among the studied students according to their study related factors. The prevalence was relatively low among students studying in a group all the time (28.5%), those reported that studying does not limit their social activity (34.1%), and among those studying less than 2 hours per day (39.1%). Unexpectedly, the depression level was high among students with high grade scores (44.8%) and 43.1% among those with very good and excellent grades, respectively. In contrast to this finding, *Maurer, (2012)* and *Sarokhani, (2013)* reported a low prevalence rate of depression among students with moderate and high performance in examination. However, the finding of the present study could be attributed to the possibility that students

with high academic grades are always in stress to keep their high performance and academic achievement and to engage into a specific speciality after their graduation.

## CONCLUSION AND RECOMMENDATION

The prevalence of depression was high among the studied medical students, particularly among females, living away from families and early study years students. Residence, social status and dietary habits play great role in the prevalence of depression among the studied sample. Also, the study and sleeping related factors appeared to influence the prevalence in the studied students. Addressing these results at faculty level may help to increase awareness of students and faculty administrators about this health problem. Also, the findings of study may encourage more researchers to take this important topic into their consideration studying it on large scale in well-designed longitudinal study with the aim to develop effective preventive and counseling services for the students. Future research will need to include students from other health related faculties such as faculty of pharmacy; dentistry and nursing to assess the extent of the problem in students affiliated to different health related faculties.

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## تقييم الإكتئاب بين طلاب الطب بجامعة الأزهر: دراسة مقطعية

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**خلفية البحث:** الإكتئاب بين طلاب الطب قد يؤدي الى مشاكل جسدية وعقلية. و هناك عدد قليل من الدراسات التي بحثت في إنتشار الإكتئاب بين طلاب الطب في مصر.

**هدف البحث:** تهدف هذه الدراسة إلى تحديد مدى إنتشار الإكتئاب وتحديد بعض عوامل الخطورة ذات الصلة بين طلاب و طالبات الطب بجامعة الأزهر بالقاهرة.

**الأشخاص و طرق البحث:** أجريت دراسة مقطعية في كليتي الطب للبنين والبنات ، جامعة الأزهر بالقاهرة. و قد تم أخذ عينة عنقودية شملت طلابًا من جميع سنوات الدراسة. و قد أجرى إستبيان ذاتي الإدارة من قبل 1254 طالبا و طالبة من يناير حتى مارس 2017. و قد تم جمع البيانات الاجتماعية والديموغرافية ونمط الحياة والعوامل ذات الصلة بالإكتئاب باستخدام إستبيان منظم ذاتيا بما في ذلك أداة -PQ 2 لفحص الإكتئاب. و قد تم تقدير معدل إنتشار الإكتئاب ، وتم إجراء تحليلات إحصائية مناسبة لمقارنة إنتشار الإكتئاب بين الطلاب طبقا لعوامل الخطورة.

**النتائج:** كان معدل إنتشار الإكتئاب بين طلاب الطب بالدراسة 42.9%. كان معدل الانتشار مرتفعًا بشكل ملحوظ بين الإناث (46.4%)، و فى سنوات الدراسة المبكرة (48.4%) ، و فى الإناث اللاتي يعشن بعيدًا عن الأسرة. وكان الإنتشار كبيراً بين الطلاب الذين يتناولون الوجبات السريعة بشكل متكرر، ومشاهدة التلفزيون، وإستخدام وسائل التواصل الاجتماعي ، والذين ليسوا على إتصال مع أصدقائهم ، وأظهرت النتائج أيضاً إنتشاراً كبيراً بين الطلاب الذين يتناولون وجبة واحدة يوميًا. كما بدا أن العوامل المرتبطة بالنوم تؤثر على إنتشار الإكتئاب بين الطلاب الذين تمت دراستهم ، حيث كان معدل إنتشاره مرتفعاً بين أولئك الذين أبلغوا عن ساعات نوم أقل ، واستخدموا أدوية النوم، والذين قضوا أكثر من ساعتين في السرير قبل النوم.

**الاستنتاج:** كشفت الدراسة إرتفاع معدل إنتشار الإكتئاب بين طلاب الطب بجامعة الأزهر. و اقترحت الدراسة مجموعة متنوعة من عوامل الخطورة المؤثرة على حدوث الإكتئاب بين الطلاب، مع الحاجة إلى إتاحة خدمات المشورة والدعم النفسى للطلاب.