

Prevalence of Depression, Anxiety and their associated factors among medical students in Karachi, Pakistan

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Abstract

Objective: To estimate the prevalence of anxiety, depression and their associated risk factors among students of a public medical college in Karachi, Pakistan.

Methods: A cross sectional study was done on the students of a public sector, who had spent more than six months in the medical college and had no physical or mental illness other than anxiety and depression. A self administered questionnaire was given out to students who were randomly selected from the list of names obtained from the college administration. Primary outcome was anxiety and depression which was defined as a cut of score 19 or above on AKUADS. Multivariable models were built and logistic regression analysis was performed to determine the factors independently associated with the primary.

Results: The mean (SD) age of the students was 21.3 (1.88) years. Majority of the students were females. A very high prevalence of anxiety and depression (70%) was found among students. Students using substance abuse, having family history of depression and anxiety and those who had lost a relative in last 1 year were 2.66, 2.35, 3.4 times more likely to be depressed and suffered from anxiety, respectively.

Conclusion: This study suggests that there are certain risk factors other than academic stressors which predispose a medical student to psychological morbidity such as anxiety and depression (JPMA 56:583;2006).

Introduction

A depressive disorder is an illness that involves the body, mood, and thoughts. It affects the way a person eats and sleeps, the way one feels about oneself, and the way one thinks about things.¹ Without treatment, symptoms can last for weeks, months, or years. Appropriate treatment, however, can help most people who suffer from depression.²

Medical Schools and colleges are recognized as a stressful environment that often exert a negative effect on the academic performance, physical health, and psychological well being of the students. Medical education is perceived as being stressful, although it is doubtful whether it differs in that respect from other higher education.³ High rates of psychological morbidity among medical students, such as anxiety and depressive symptoms, have been reported in several studies from different western countries⁴⁻⁶, as well as from other parts of the world.^{7,8} A wide range of different measures have been used to address these phenomena. Depressive symptomatology in medical students has been assessed with, for example, Beck's Depression Inventory (BDI), the 12-item General Health Questionnaire (GHQ-12) and different versions of the Symptom Checklist (SCL) as well as less common instruments.^{9,10} Studies have also indicated that the first year medical students experience the highest degree of pressure from studies. A gender difference regarding stress levels has also been reported,

where women reported higher levels of stress than men.¹¹

Stress during education can lead to mental distress and have a negative impact on cognitive functioning and learning. Hence, there is a need to quantify the anxiety, depression and its associated factors among medical students for their counseling and rehabilitation. The purpose of this study was to estimate the prevalence of anxiety, depression and their associated risk factors among medical students of public sector, Karachi, Pakistan by using a self-administered anxiety and depression questionnaire.

Subjects and Methods

A cross sectional study was done at a Medical College, which is one of the premiere public medical colleges in Pakistan with 1500 enrolled students from all over the country and abroad. Those eligible to participate in the study included all medical students who had spent more than six months in the institution and did not have any physical illness. A self administered questionnaire was given out to students who were randomly selected from the list of names obtained from college administration. The study was done with the perusal of the head of the institution and then verbal consent was taken from those selected to participate. Random sampling was used to include those students who were not coming to college due to supplementary exams or due to any other reason.

Standardized questionnaires for anxiety and depression were used to assess the anxiety and depression level using the Aga Khan University Anxiety and Depression Scale (AKUADS).^{12,13} Students who would score 19 or greater would be considered as suffering from anxiety and depression. At a cut off score of 19 points AKUADS has specificity of 81%, sensitivity of 74%, a positive predictive value of 63%, and negative predictive value of 88%¹², which is higher than other available scales like the self-reporting questionnaire (SRQ).¹³

To determine the relationship between socioeconomic variables and prevalence of anxiety and depression, additional questions were also included in the survey, such as student's birth order, father's occupation and number of brothers and sisters. The respondents were asked not to put names or other identifying notation on the questionnaire to conceal their identity, and full confidentiality of information was ensured. There were no potential risks to the subjects in this study as there were no interventions involved. Data entry was done on Epi Info. Double entry was done to reduce entry errors.

Descriptive analyses were performed to investigate the distribution of our data. Univariate analysis was run to determine the relationship of each independent variable with the outcomes variable. Multiple logistic regression analysis technique was applied to select the group of variables independently associated with anxiety and depression. Odds ratio and 95% confidence intervals were reported to interpret our final model. Adjustment of confounders and interactions were done. Goodness of fit of model was checked by Hosmer and Lemeshow Test.

Results

We interviewed 142 students of Medical College. The response rate was over 90%. Using the anxiety and depression scale, it was found that approximately 70% of the students suffered from anxiety and depression. Table 1a, and 1b show that mean age of students was 21.3 years with standard deviation of 1.88 years. Most of the students (59%) were females. Almost half of our students (43%) were Urdu speaking. Around 22% of the students were using substance abuse. Twenty nine percent students had family history of depression and anxiety. Most of the students were from middle socio-economic class.

In univariate analysis age, gender, education status, substance abuse, family history of depression and anxiety, got supplementary in exam, loss of close friends or close relatives were selected for multiple logistic regression on the cut off p value of 0.25 and biological importance. (Table 2)

Table 3 shows the adjusted OR and 95% CI of factors associated with anxiety and depression among medical

Table 1a. Descriptive characteristics of students of a medical College Karachi (n = 142).

Variable	n	%
Age mean (SD)	21.3	1.88
Sex		
Male	59	41.5
Female	83	58.5
Marital Status		
Married	9.0	6.3
Unmarried	133	93.7
Year of study		
1st year	21	14.8
2nd year	21	14.8
3 rd year	19	13.4
4th year	36	25.4
5th year	45	31.7
Hours self study	3.77	1.3
Fathers Occupation		
Govt Job	33	23.2
Private Job	50	35.2
Skilled Labor	2	1.4
Unskilled Labor	3	2.1
Business	54	38
Siblings		
Less than 5	63	58.5
More than 5	79	41.5
Mother tongue		
Urdu	60	42.3
Punjabi	31	21.8
Sindhi	11	7.7
Hindko	16	11.3
Pashto	14	9.9
Others	10	7.0
Substance abuse		
Cigarette	31	21.8
Pan	01	0.7
Naswar	02	1.4
Chaalia	22	15.5
Guthka	01	0.7
None	85	59.9
Type of family		
Nuclear	103	73
Combined	38	27
Home		
Own	123	72.5
Rented	19	27.5
Verbal violence		
Yes	60	42.3
No	82	57.7

*SD standard deviation

students of Karachi Pakistan. After adjusting for the other variable in the model, students who were using substance abuse were more likely to be depressed and anxious compared to those who did not use substance abuse (2.66; 95%CI 0.89, 7.95). Students having family history of depression and anxiety were 2.35 (0.91, 6.04) times more likely to be depressed than those who did not have history of depression and anxiety. Loss of relative was also one of the predictors of depression and anxiety among students. Students who had lost a close relative in last 1 year were 3.4

Table 1b. Descriptive characteristics of students of a medical College Karachi (n = 142).

Variable	n	%
Depressed Family Members		
Yes	41	28.9
No	101	71.1
Relationship		
Father	14	20.6
Mother	30	44.1
Brother	01	1.5
Sister	03	4.4
Grand Parents	20	29.4
Got supplementary in exam		
Yes	63	44.4
No	79	55.6
Examination criteria satisfaction		
Yes	41	28.9
No	101	71.1
Worried about examination criteria		
Yes	98	69.0
No	44	31.0
Overburdened with test schedule		
Yes	106	74.6
No	36	35.4
Loss of close friends		
Yes	45	31.7
No	97	68.3
Loss of relatives		
Yes	43	30.3
No	99	69.7
Relationship with the deceased		
Parents	08	10.7
Brother	05	6.7
Sister	09	12.0
Friend	43	57.3
Distant relatives	10	13.3

Table 2. Crude OR and 95% CI of factors associated with anxiety and depression among medical students, Karachi (n = 142).

Variable	OR	95% CI	P value
Age	0.72	0.58, 0.90	0.003
Sex			0.032
Male	1.00	-	
Female	0.42	0.20, 0.93	
Year of study			0.012
5th year	1.00	-	
4th year	1.12	0.46, 2.72	
3rd year	4.27	1.09, 16.72	
2nd year	16.00	2.0, 129.70	
1st year	3.40	0.99, 11.72	
Substance abuse			<0.001
No	1.00	-	
Yes	5.25	2.13, 12.91	
Depressed family members			0.001
No	1.00	-	
Yes	3.79	1.72, 8.36	
Got supplementary in exam			0.053
No	1.00	-	
Yes	0.49	0.24, 1.01	
Loss of close friends			0.073
No	1.00	-	
Yes	2.16	0.93, 5.01	
Loss of relatives			< 0.001
No	1.00	-	
Yes	5.56	2.50, 12.39	

Table 3. Adjusted OR and 95% CI of factors associated with anxiety and depression among medical students of Karachi, Pakistan (n= 142)

Variable	OR	95% CI
Substance abuse		
No	1.00	-
Yes	2.66	0.89, 7.95
Depressed family members		
No	1.00	-
Yes	2.35	0.91, 6.04
Loss of relatives		
No	1.00	-
Yes	3.40	1.23, 9.74

Adjusted for age, sex, year of study, got supply in exam, loss of close friend and income

(1.23, 9.74) times more likely to be depressed and suffer from anxiety as compared to those who did not experience such a loss.

Discussion

Medical school has long been recognized as involving numerous stressors that can affect the well-being of students.^{7,14} In our study approximately 70% of the students had anxiety and depression and it is consistent with another study conducted on medical students of a private university of Karachi.¹⁵ The prevalence was high because in addition to coping with the normal stressors of everyday life, medical students have to deal with stressors specific to medical school, which include information and input overload, financial indebtedness, lack of leisure time, and pressures of work, work relationships and career choices.^{16,17} A major stressor for first-year medical students is the amount and complexity of material to be learned. Students also feel academic pressure due to frequent academic examinations in a competitive environment. Fatigue is often cited as a stressor at the end of first year and during second year.^{18,19}

In our cross-sectional study we correlated certain risk factors such as age, gender, year of study, substance abuse, depression in family, supplementary exams, death of close friends, or death of a relative with the prevalence of anxiety and depression amongst the medical students of a public medical college in Pakistan. Anxiety and depression, widely accepted²⁰, were used as indicators, for assessment of mental illness in the population.

The response rate of over 90% meant that we had an adequate sample of the population studied. We did not find any significant gender differences for anxiety and depression. However, contrary to western data^{5,14}, we discovered that female medical students experience lower levels of stress as compared to males, i.e. being a female

was actually a protective factor. Some possible reasons for this disparity could be: i) higher proportion of female students in the medical college (approximately 60%); ii) females might be less forthcoming about their feelings of anxiety or depression; iii) they probably utilize more effective coping mechanisms to deal with anxiety and depression.

As expected, the prevalence of anxiety and depression was high among newly entered students (1st and 2nd year) as compared to the senior students. This finding correlates with study conducted by Inam et al.¹⁵ This could be due to stress of new study environment. However, in the absence of baseline difference we cannot support this finding.

The results also suggested that those students using substance abuse were more likely to be depressed and anxious compared to those who did not use substance abuse. Students having family history of depression and anxiety were more likely to be depressed than those who did not have history of depression and anxiety. Loss of a relative was also one of the predictors of depression and anxiety among students. Students who had lost a close relative in the past year were more likely to be depressed and anxious. These are definitely some non-academic risk factors for developing anxiety and depression.

The generalizability of the study results is limited by the characteristic of the sample, which was recruited from a single public medical college. Cause-effect association between the studied factors and depression cannot be determined from the study. Other limitations include lack of baseline information concerning mental status of medical students at the time of entrance in the medical college and lack of population-based data to support our results and to compare our findings with general population.

Any type of mental illness can have a negative impact on the cognitive development and learning, and has a very high cost to individual and society, including medical school dropout^{21,22}, suicide²³, deterioration in relationships²⁴, marital problems and impaired ability to work effectively.²⁵ Hence, the challenges to all medical colleges are to promote student well-being and provide students with the coping tools to deal with stress throughout their medical education. They should incorporate more leisure activities in their curriculum, promote better interaction between the students and the faculty, have advisory services and peer group counseling at the campus and instigate rehabilitation programs for victims of anxiety and depression. Students on their part should address and maintain their mental health and well-being, making it a lifelong focus.

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