ORIGINAL ARTICLE

FREQUENCY OF ANXIETY AND DEPRESSION IN MEDICAL STUDENTS OF A PRIVATE MEDICAL COLLEGE

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Background: Depression and anxiety are the common mental disorders with a prevalence of 10–44% in developing countries and is the fourth leading cause of morbidity. Undergraduate medical studies are generally perceived to be more stressful for the students as compared to other undergraduate programs as students have to undergo strenuous curriculum and evaluation which may lead to many emotional stresses that may end with psychiatric disorders like depression and anxiety. This study aimed to determine the frequency of anxiety and depression in medical students of Foundation University Medical College (FUMC), Islamabad. **Methods:** In this cross-sectional study, Beck Depressive Inventory and Beck Anxiety Scales were used to assess anxiety and depression at three different times of the Academic year. All five-year students were included in the study. **Results:** Out of a sample of 150 students, mild depression was seen in 37.46% and moderate to severe depression was observed in 14% students. About 19% of the students had moderate to severe anxiety. In Second year students time of assessment was significantly related to depression and anxiety (*p*-0.000). Females had higher association with depression in final year (*p*-0.037). **Conclusion:** High Psychiatric morbidity found needs to be identified and treated at the earliest; otherwise it can lead to serious consequences such as suicidal ideation and burnout.

Keywords: Anxiety, depression, medical students

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INTRODUCTION

Depression and anxiety are the common mental disorders which present with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration often accompanied with symptoms of anxiety including physical symptoms e.g., palpitations, sweating, tremors and psychological symptoms fear, apprehension etc.[1] Prevalence of depression and anxiety in developing countries is said to be 10–44%. Depression is the fourth leading cause of morbidity and is predicted to be the second leading cause of morbidity by the year 2020.[2] Females are twice as likely to suffer from anxiety and depression. Prevalence of depression and anxiety in Pakistan is 34% (range 29–66% in women and 10–33% in men).[3]

Undergraduate medical studies are generally perceived to be more stressful for the students as compared to other undergraduate programs.[4–6] Students have to undergo strenuous curriculum and evaluation which may lead to many emotional stresses that may end with psychiatric disorders like depression and anxiety. Having a psychiatric disorder can impair the learning capability of these future physicians.[7] In Pakistan, few studies have been conducted on medical students which have shown high prevalence of depression and anxiety. These studies have been conducted in private medical colleges. Up to 70% prevalence of anxiety and depression has been recorded.[8] No data is available on students in private medical colleges in Punjab. This study was aimed to identify the prevalence of anxiety and depression in Foundation University Medical College (FUMC), students. This would help us to establish a baseline data for our students, that can later be used to take measures to reduce the level of stress and psychiatric morbidity in future, and better mental health is likely to improve the academic performance of these students.

MATERIAL AND METHODS

This cross-sectional survey was conducted at Foundation University Medical College, which is a private medical college in Rawalpindi, with a total strength of 500 students. Students of all five years were included in the study. These students were tested in three non-consecutive surveys conducted at the start, middle, and at the end of the session (before their professional examination).

A semi-structured *pro forma* was designed to collect the demographic information from the students. It included variables like age, gender, year of study, marital status, both parents' occupation, area of residence (local-expatriates), accommodation of the students (boarders- nonboarders).

For evaluation of depression, Beck Depressive inventory (BDI)[9] was used. This is a structured self-administered questionnaire, which has 21 items, each scored from 0-3. The cut off scores indicate no depression (up to 13), mild depression (14–19), moderate depression (20–28) and severe depression (29–63). Anxiety was assessed by Beck Anxiety scale

(BAS)[10], which is also self-administered scale. Rated as very low (up to 21), moderate (22–35) and severe (36 and more).

Students were approached during their regular classes; they were informed about the purpose and procedure of the study. They were assured of full confidentiality regarding their demographic data and their anxiety and depression scores. However, students were able to check their scores from the principal investigators and if needed be they could consult the psychiatrist in full confidence. Students from all five years who gave informed consents were included in the study except those with known psychiatric histories. The data for the students who completed all three evaluations was finally entered for analysis.

Data was analyzed by using SPSS-13. Mean and standard deviation (SD) were used to describe quantitative variables; and frequencies and percentages to describe categorical variables. Chi-Square test was applied to find out association of independent variables with anxiety and depression. One-way ANOVA was applied for comparison of anxiety and depression at different times of session. Multiple comparison test (Tukey HSD) was applied where the difference was statistically significant.

RESULTS

Four hundred and fifteen (415) out of 500 students participated in the initial assessment which was conducted at the start of each academic year. Out of 415 students, 150 students from the five years completed all three assessments. Statistical analysis and results were calculated for these 150 students.

Mean age of the students was 20.6±0.88 years with a range of 17–26 years. Out of the 150 students, 112 (76.4%) were female with 117 (78%) of the student's locals and 33 (22%) were expatriates. Fifty one percent (51.4%) 78 were day scholars and 73 (48.6%) were residing in the hostels. Only 4 (2.66%) students were married. Mothers of the majority of students (78%) were housewives and 22% of the mothers were working women. All fathers were employed. (Table-1)

In the initial assessment at the start of the academic year 54 (35.76%) of the students had no depression and 96 (64.24%) had mild to severe depression (40% had mild depression, 24% had moderate to severe depression). In the assessment of anxiety 122 (81%) of students had no or very low anxiety and 28 (19%) had moderate to severe anxiety.

For those who completed all three assessments, the frequency of depression was mild in 57 (37.46%) and moderate to severe in 21 (14%). Out of total 72(48%) students had no depression. Regarding frequency of anxiety 130 (86.81%) had no anxiety and 20(13.19%) had moderate anxiety.

The association of depression and anxiety was seen with the year of study, time of assessment, gender, age, mother's profession, accommodation (boarder, non-boarder), residence (local-expatriates) as shown in table-1. Regarding demographic data, only in final year, gender was statistically significantly (*p*-0.037) related to depression. Females were found to be more depressed than their male counterparts. (Table-1)

No statistically significant difference was seen with the year of medical training and time of assessment except for 2nd year, in which frequency of both depression and anxiety were significantly associated (*p*-0.000) with time of assessment (Table 2, 3). Mean scores of depression and anxiety were highest at the start of the session.

Table-1: Demographic variables and their association with anxiety and depression (n=150)

Variables		n (%age)	Anxiety		Depression		*p*-value
Total participants		150 (100)	150 (100%)		150 (100%)		
			Yes	No	Yes	No	
Age (Mean±SD)	1st year	18.3±.6	2	35	18	19	.21
	2nd year	19.74±.8	2	33	19	16	.32
	3rd year	20.6±.7	3	17	7	13	.33
	4th year	21.6±.9	2	20	12	10	.27
	5th year	22.8±1	7	29	24	12	.01*
	Mean Age of sample	20.6±.8					
Gender	Female	112 (74.6)	13	99	60	52	.03*
	Male	38 (25.4)	3	35	19	19	
Residence	Local	117 (78)	14	103	60	58	.13
	Expatriates	33 (22)	2	30	19	13	
Accommodation	Boarder	72 (48)	6	67	41	32	.31
	Non-Boarder	78 (52)	12	66	47	31	
Father's occupation	Business	45 (30)	5	39	24	21	.55
	Doctor	22 (14.66)	0	22	7	1	
	Armed forces	22 (14.66)	2	17	8	13	
	Others	61 (40.66)	9	50	35	21	
Mother's occupation	Housewife	117 (78)	15	102	61	56	.57
	Teacher	20 (13.33)	2	18	12	8	
	Doctor	11 (7.34)	1	10	5	6	
	Others	2 (1.33)	0	2	1	1	

Table-2: Year wise frequency distribution of depression and anxiety in medical students

		Year of study				
Anxiety/ depression	**Severity**	**First year n-70**	**Second Year n-64**	**Third Year n-73**	**Fourth Year n-77**	**Final Year n-70**
Depression	No Depression (0–9)	28	35	25	23	30
	Mild depression (10–19)	23	20	19	25	23
	Moderate depression (20–29)	13	06	09	08	12
	Severe depression >30	06	03	03	02	03
p-value		0.64	0.000**	0.25	0.97	0.73
Anxiety	Very low (0–21)	53	53	45	51	53
	Moderate (22–35)	09	06	07	17	09
	Severe (>36)	04	02	07	03	04
p-value		0.569	0.000**	0.10	0.90	0.16

Significant *p*-value <0.05, **Highly significant

Table-3: Comparison of depression and anxiety at three different times of the year

First year	**Time**	**n**	**Mean**	**SD**	**Std. Error**	***p*-value**
Beck depressive score	Start of session	89	14.61	8.61	0.91	0.646 (NS)
	Middle of session	55	13.38	14.47	1.95	
	End of session	80	13.14	10.07	1.13	
	Total	224	13.78	10.79	0.72	
Beck anxiety score	Start of session	87	14.33	9.16	0.98	0.569 (NS)
	Middle of session	52	12.52	12.96	1.80	
	End of session	79	14.54	12.47	1.40	
	Total	218	13.98	11.37	0.77	
Second year						
Beck depressive score	Start of session	64	15.14	9.60	1.20	0.000 (Sig)
	Middle of session	64	9.14	6.53	0.82	
	End of session	59	7.19	7.83	1.02	
	Total	187	10.58	8.73	0.64	
Beck anxiety score	Start of session	64	15.38	9.80	1.23	0.000 (Sig)
	Middle of session	64	8.38	7.28	0.91	
	End of session	58	7.72	11.15	1.46	
	Total	186	10.58	10.06	0.74	
Third year						
Beck depressive score	Start of session	74	12.43	8.19	0.95	0.250 (NS)
	Middle of session	54	11.30	9.43	1.28	
	End of session	40	9.58	8.69	1.37	
	Total	168	11.39	8.74	0.67	
Beck anxiety score	Start of session	73	12.07	9.43	1.10	0.106 (NS)
	Middle of session	47	8.91	11.96	1.74	
	End of session	37	8.30	8.80	1.45	
	Total	157	10.24	10.20	0.81	
Fourth year						
Beck depressive score	Start of session	77	12.19	7.24	0.82	0.979 (NS)
	Middle of session	65	12.40	12.84	1.59	
	End of session	33	12.61	8.62	1.50	
	Total	175	12.35	9.86	0.75	
Beck anxiety score	Start of session	77	11.40	8.16	0.93	0.900 (NS)
	Middle of session	61	10.66	12.58	1.61	
	End of session	33	10.76	9.03	1.57	
	Total	171	11.01	10.06	0.77	
Final year						
Beck depressive score	Start of session	73	13.08	8.48	0.99	0.736 (NS)
	Middle of session	68	12.63	9.45	1.15	
	End of session	60	11.85	9.32	1.20	
	Total	201	12.56	9.03	0.64	
Beck anxiety score	Start of session	70	13.90	11.15	1.33	0.167 (NS)
	Middle of session	66	12.24	9.85	1.21	
	End of session	60	10.43	9.96	1.29	
	Total	196	12.28	10.41	0.74	

Significant *p*-value <0.05

DISCUSSION

Depression and anxiety are two of the most common Psychiatric disorders, seen in general population. Medical education poses further stress for the medical students who undergo strenuous studies. Our study population had a mean age of 20.6±0.88 years. This is comparable to other studies in Pakistan, where mean age is 20.6±1.88 (15),21.3±1.88 years.[11] Our study had 74.6% female students. Predominance of female students is more pronounced as compared with other studies in Pakistan where this proportion is 58.5%[11] and 46.7%[12]. In a Malaysian study, it is 61.6%.[4 4]. This high female proportion may be reflective of more recent trends as compared to older studies, especially in private medical education. This should be further explored to investigate the reasons of less men opting to become doctors.

Depression and anxiety are more prevalent in female population.[3] Similar findings were reported in systematic review conducted on medical students in USA and Canada, indicating higher rates of psychosocial distress in female students.[13] Local studies also indicate higher female preponderance.[12] Our results showed higher female frequency for depression and anxiety only in final year students.

Like the previous studies, our results did not show significant correlation with other demographic variables like age, marital status, locality, occupation status of parents. One local study had shown that students residing in college dormitories were significantly more depressed.[12] Our study did not indicate this difference between boarders and nonboarders. (From results: The association of depression and anxiety was seen with the year of study, time of assessment, gender, age, mother's profession, accommodation (boarder, non-boarder), residence (local-expatriates).

Previous studies have demonstrated that increased level of stress increases the likelihood of a person to develop psychiatric disorders.[11,14] Previous research actually indicates high level of stress in medical students[15,16] and resultantly high level of depression and anxiety with 60–70% prevalence of depression and anxiety in medical students in Pakistan[8,17].

Our results found depression in 51% of students. These rates are much higher than western figures where depression is found in 14% of medical students[18] but lower than what studies found in Pakistan[8,17]. Rates of anxiety were low as compared to previous studies. About 13% of our students had moderate to severe anxiety and about 87% did not have anxiety. Local studies indicate 43.7% of students having anxiety.[19] Similar figures have been quoted internationally.[18] Figures from UAE report frequency of depression as 28.6% and anxiety 28.7%.[5]

In our study evaluation of anxiety and depression was done on 3 occasions to find the effect of time of the year on rates of anxiety and depression. This has not been done in previous studies. Our results did not indicate significant effect (from results "No statistically significant difference was seen with the year of medical training and time of assessment except for 2nd year") of the time of the session on frequency of anxiety and depression in all years but it was significantly related in 2nd year students at the start of the session. A possible cause may be their first professional examination, the result of which was still awaited at that point. This area needs further investigation. Regarding the frequency of depression and anxiety in different years, our results indicated higher rates in 2nd year students. This finding is consistent with the results of previous studies, that show high psychiatric morbidity in early years of medical education.[5,6,12] Few of the international studies do not show this difference[4] and some studies have found clinical years especially clerkship years to be more burdensome for students[20].

Regarding students having depression and anxiety at the start of the session especially in first year, it is suggested in studies that entering medical school students' emotional status resembles that of the general population. Further, students opting for medical schools already have concerns about medical school and they are anticipating the necessary adjustment to the challenges ahead of them.[21]

CONCLUSION

The burden of psychological morbidities in medical students, found in our study, need to be diagnosed and treated at the earliest because if untreated they can lead to unwanted effects throughout their professional careers and personal lives.[4] As indicated by studies if these disorders are untreated they can further lead to suicidal ideation and burn out.[22]

As no previous study, has been done for psychological morbidity in FUMC, this data can be used as baseline to further explore the causes of these high rates and to take appropriate measures to overcome these causes and reduce level of stress in these students.

However, the results of the study cannot be generalized as this was conducted in a single private medical college.

AUTHORS' CONTRIBUTION

NA, AS and NA conceptualized and designed the study, critically reviewed the manuscript draft and the final version of it. NA and AS acquired the data, analyzed and interpreted it, drafted the manuscript. AS and NM acquired and analyzed the data.

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