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### **Original Research Article**

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# Assessment of prevalence of depression and anxiety and factors associated with them in undergraduate medical students of Dr. S. N. Medical College, Jodhpur

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#### **ABSTRACT**

**Background:** Anxiety and depression are worldwide problems which reflect the mental health of the population. A lot of researches have reported anxiety and depression among medical students as they are going to suffer from academic stressors such as information input overload, lack of leisure time and academic evaluation. The present study was aimed to assess the prevalence of anxiety and depression in undergraduate medical students; to find association between presence depression/anxiety and socio-demographic factors; to find correlation between depression and anxiety scores.

**Methods:** The cross-sectional study was carried out at Dr. S. N. Medical College, Jodhpur. 426 undergraduate students were selected by simple random sampling. After obtaining informed written consent, students were given self-reporting questionnaire which included socio-demographic details, PHQ-9 and GAD-7.

**Results:** 247 (57.98%) students were found to have depression. 103 (24.17%) students scored  $\geq$ 10 on PHQ-9 indicating a need for further clinical evaluation. Anxiety was found to be present in 202 (47.41%) students. Presence of depression was associated with history of mental illness in family, any co-morbidities present in student and type of family. Anxiety was associated with medium of language students studied until senior secondary education and type of family. Significant positive correlation was observed between depression and anxiety scores.

**Conclusions:** There is a need for conducting regular psychiatric evaluations and counselling for medical students so that presence of mental disorders can be detected early in their course prompting immediate treatment.

Keywords: Depression, Anxiety, PHQ-9, GAD-7, Undergraduate medical students, Medical college

#### INTRODUCTION

For all individuals, mental, physical and social health are vital and interwoven strands of life. As our understanding of this relationship grows, it becomes ever more apparent that mental health is crucial to the overall well-being of individuals, societies and countries. Indeed, mental health can be defined as a state of well-being enabling individuals to realize their abilities, cope with the normal

stresses of life, work productively and fruitfully, and make a contribution to their communities. Unfortunately, in most parts of the world, mental health and mental disorders are not accorded anywhere near the same degree of importance as physical health. Rather, they have been largely ignored or neglected. Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or

appetite, and poor concentration. Moreover, depression often comes with symptoms of anxiety. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. At its worst, depression can lead to suicide. Almost 1 million lives are lost yearly due to suicide, which translates to 3000 suicide deaths every day. For every person who completes a suicide, 20 or more may attempt to end his or her life (WHO, 2012).<sup>2</sup> Depression results from a complex interaction of social, psychological and biological factors. People who have gone through adverse life events (unemployment, bereavement, psychological trauma) are more likely to develop depression. Depression can, in turn, lead to more stress and dysfunction and worsen the affected person's life situation and depression itself.<sup>3</sup> Anxiety disorders refer to a group of mental disorders characterized by feelings of anxiety and fear, including generalised anxiety disorder (GAD), panic disorder, phobias, social anxiety disorder, obsessive-compulsive disorder (OCD) and posttraumatic stress disorder (PTSD). Symptoms can range from mild to severe. The duration of symptoms typically experienced by people with anxiety disorders makes it more a chronic than episodic disorder.<sup>4</sup> Anxiety and depression are worldwide problems which reflect the mental health of the population. A lot of researches reported anxiety and depression among medical students specially in their first academic year as they are going to suffer from academic stressors such as information input overload, lack of leisure time and academic evaluation, for many students depression stimulates feeling of fright, lack of ability, anger and can be associated with psychological and physical morbidities.

With these standpoints we carried out the present study which aimed at following objectives:

- To assess the prevalence of anxiety and depression in undergraduate medical students
- To find association between depression anxiety and factors instigating them.
- To find correlation between depression and anxiety scores.

#### **METHODS**

The cross-sectional study was conducted at Dr. S. N. Medical College for period of 6 months from October 2016 to April 2017, initial 4 months for filling of the questionnaires and remaining 2 months for data entry and analysis.

#### Study population

The study was conducted on undergraduate students of Dr. S.N. Medical College.

#### Inclusion criteria

All undergraduate students who gave their consent were included in the study.

#### Sample size determination

Using formula we calculated a sample size of 380, by using prevalence of depression in medical students as 39%. Taking a non-response rate of 10% for overcorrection a total sample size of 418 was calculated. 426 students were selected for the study by using simple random sampling from a total of 1000 students currently enrolled in the medical college.

The selected students were given self-reporting questionnaire which included socio-demographic details, PHO-9 and GAD-7.

*PHQ-9*: PHQ-9 is a validated questionnaire to screen for depression. Cut-off scores used were 0-4 for no or minimal depression, 5-9 for mild depression, 10-27 for moderate to severe depression. At a cut off ≥10 on PHQ-9, respondents were most likely to meet DSM IV criteria for major depressive disorder (likelihood ratio ≥7.1).<sup>6</sup>

GAD-7 anxiety severity: This is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of "not at all," "several days," "more than half the days," and "nearly every day," respectively. GAD-7 total score for the seven items ranges from 0 to 21. Scores of 5, 10, and 15 represent cut points for mild, moderate, and severe anxiety, respectively. Though designed primarily as a screening and severity measure for generalized anxiety disorder, the GAD-7 also has moderately good operating characteristics for three other common anxiety disorders - panic disorder, social anxiety disorder, and posttraumatic stress disorder. When screening for individual or any anxiety disorder, a recommended cut point for further evaluation is a score of 10 or greater. Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for generalized anxiety disorder.

#### Statistical analysis

Data was collected in MS-Excel 2010 and analysed in SPSS 16. Chi square test was used to determine association between socio-demographic factors and presence of depression and anxiety. Spearman rank coefficient for correlation was used to determine correlation between depression and anxiety scores. The threshold for significance was set at p <0.05. Alpha error of the study was set at 5% and power was 80%. Data are expressed as median± interquartile range, proportions and percentage.

#### RESULTS

Socio-demographic distribution of total students is given in Table 1. As shown in Figure 1, out of 426 students, 179 (42.02%) scored 0-4, 144 (33.80%) scored 5-9, 69 (16.19%) scored 10-14, 23 (5.39%) scored 15-19 and 11 (2.58%) scored more than 19 on PHQ-9 scale. In Figure 2, distribution of students according to GAD-7 score is shown, i.e. 224 (52.58%) scored 0-4, 136 (31.92%)

scored 5-9, 47 (11.03%) scored 10-14, and 19 (4.46%) scored 15-21 on GAD-7 scale. Of total 426 students surveyed, 247 (57.98%) were found to have depression i.e. PHQ-9 score more than 4. 103 (24.17%) students scored  $\geq$ 10 on PHQ-9 indicating a need for further clinical evaluation, as scores  $\geq$ 10 suggest underlying major depressive disorder. Anxiety was found to be present in 202(47.41%) students. Median PHQ-9 score was calculated as 9±6 (Q<sub>1</sub>-6, Q<sub>3</sub>-12). Median GAD-7 score was found to be 8±5 (Q<sub>1</sub>-6, Q<sub>3</sub>-11). Presence of

depression was associated with history of mental disease in family, any co-morbidities present in student and type of family. Anxiety was associated with medium of language students studied until senior secondary education. It was also associated with type of family. Other socio-demographic factors showed no association with either depression or anxiety as shown in Table 2 and 3. As shown in Table 4 there is significant correlation between depression and anxiety scores and vice versa.

Table 1: Socio-demographic profile.

Socio-demographic factors	Total (N=426)	Percentage (%)
Gender	1000 (11–120)	Tercemage (70)
Male	249	58.45
Female	177	41.55
Place of origin	177	11.00
Rural	214	50.23
Urban	212	49.27
Socio-economic status (B.G. Prasad)	212	17.21
Class 1	260	61.03
Class 2	85	19.95
Class 3	30	7.04
Class 4	37	8.69
Class 5	14	3.29
No. of PMT attempts	17	3.47
1	148	34.74
2	194	45.53
3	73	17.13
>3	11	2.58
Parents' education	11	2.30
Illiterate	35	12.85
Primary	40	13.25
Secondary- Sr. Secondary	73	
Graduate Graduate	109	17.27 25.70
Post-Graduate	269	
	209	30.93
H/o psychiatric illness		1.20
Yes	6	1.20
No	420	98.8
Type of family	101	
Nuclear	186	43.66
Joint	199	46.71
Broken	41	9.63
Place of residence		
Hosteller	275	64.55
Day-Scholar	151	35.45
No. of siblings		
0	18	4.22
1	156	36.61
2	118	27.69
>2	134	31.48
12 <sup>th</sup> class medium		
Hindi	209	49.06
English	217	50.94
Co-morbidities		
Nil	400	93.89
Asthma	11	2.58
DM	4	0.94
HTN	5	1.17
Others	6	1.42

Table 2: Association of moderate to severe depression with various socio-demographic factors (N=426).

S.no.	Socio-demog	graphic factors	Present	Not present	Value of X <sup>2</sup>	Degree of freedom	P value
1.	Gender	Male	61	188	0.033	1	0.909
1.	Gender	Female	42	135	0.033		0.909
2.	Place of	Rural	44	170	3.070	1	0.090
4.	origin	Urban	59	153	3.070	1	
	g :	Class 1	66	194		4	0.699
	Socio- economic status (B.G.	Class 2	21	64			
3.		Class 3	4	26	2.202		
	Prassad)	Class 4	9	28			
	1 Tussuu)	Class 5	3	11			
	No. of	1	37	111		3	0.110
4.	PMT	2	44	150	6.029		
4.	attempts	3	16	57	0.029	3	0.110
	attempts	>3	6	5			
		Illiterate	10	25			
	Parents'	Primary	9	31		4	0.782
5.	education	Sec. and sr. sec	14	59	1.750		
		Graduate	26	83			
		Post graduate	44	125	_		
6.	H/o mental	Yes	1	25	6.244	1	0.012
υ.	illness	No	102	298	0.244		
	Tymo of	Nuclear	37	149		2	0.002
7.	Type of family	Joint	47	152	12.883		
	ramny	Broken	19	22			
8.	Place of	Hosteller	64	211	0.347	1	0.556
0.	residence	Day- scholar	39	112	0.347	1	
	No. of siblings	0	6	12	1.693	3	0.646
9.		1	37	119			
۶.		2	25	93	1.093		
		>2	35	99			
10.	Medium in	Hindi	49	160	0.120	1	0.729
10.	class XII	English	54	163	0.120		
	Co- morbidities	Nil	91	309	9.754	4	0.045
		Asthma	6	5			
11.		DM	1	3			
		HTN	3	2			
		Others	2	4			

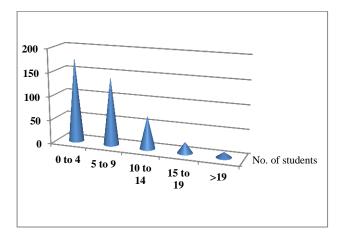


Figure 1: Distribution of no. of students according to PHQ-9 score.

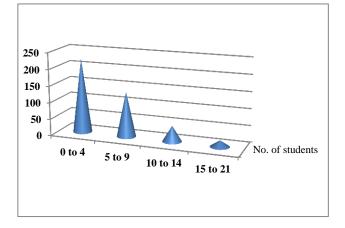


Figure 2: Distribution of no. of students according to GAD-7.

Table 3: Association of anxiety with various socio-demographic factors (N= 426).

		nic factors	Present	Not present	Value of X <sup>2</sup>	Degree of freedom	P value
1. (	Gender	Male	118	131	0.000	1	0.989
1.		Female	84	93	0.000	1	
2. Place of o	Place of origin	Rural	93	121	2.704	1	0.100
	race of origin	Urban	109	103	2.704	1	0.100
		Class 1	133	127	_	4	0.248
	Socio-economic status (B.G.	Class 2	35	50			
		Class 3	11	19	5.407		
l	Prassad)	Class 4	15	22			
		Class 5	8	6			
		1	77	71			0.316
<b>4.</b>	No. of PMT	2	86	108	3.539	3	
4.	attempts	3	32	41	3.339	3	
		>3	7	4			
		Illiterate	16	19			0.105
,	Parents'	Primary	14	26			
_	education	Sec. & sr. sec.	31	42	7.659	4	
	education	Graduate	48	61			
		Post- graduate	93	76			
	H/o mental	Yes	5	1	3.148	1	0.076
i i	illness	No	197	223	3.140		
	Type of family	Nuclear	83	103	12.068	2	0.002
7.		Joint	89	110			
		Broken	30	11			
	Place of	Hosteller	125	150	1.199	1	0.273
1	residence	Day- scholar	77	74			
	No. of siblings	0	11	7	2.495	3	0.476
9.		1	78	78			
<b>9.</b>		2	52	66			
		>2	61	73			
	Medium in class XII	Hindi	88	121	4.644	1	0.031
10.		English	114	103			
	Co-morbidities	Nil	186	214	5.122	4	0.275
		Asthma	7	4			
11. (		DM	1	3			
		HTN	4	1			
		Others	4	2			

Table 4: Correlation between depression and anxiety scores.

Variables	Depression scores	Anxiety scores	P value
<b>Depression scores</b>		0.548	< 0.05
Anxiety scores	0.548		< 0.05

#### **DISCUSSION**

Medical profession is overlong, time-consuming, rife with competition, and consisting of syllabus which makes medical students prone to neuropsychiatric disorders; depression and anxiety chief amongst them. A study conducted in USA by Givens et al found 24% of medical students to be depressed. On the other hand a study conducted on medical students in Alexandria by M.B. Ibrahim et al observed that 43.9% students suffered from

depression and 57.9% students suffered from anxiety.<sup>5</sup> In India the prevalence of depression was found to be 39% by Vaidya et al.<sup>9</sup> Dahlin et al conducted a study in British medical students where psychiatric morbidity was found to be present in 16% of students.<sup>10</sup> In our study 57.99% students were provisionally diagnosed with depression (PHQ-9≥5) with 24.17% having major depressive disorder (PHQ≥10). According to Yadav et al majority (73%) medical students suffer from mild to moderate depression, 3% of students having severe depression.<sup>11</sup>

Anxiety was found in 47.41% students as compared 67% (Yadav). Gender did not have significant association with either anxiety or depression as was seen in a study conducted by Sidana, Kishore, et al. It was observed in our study that presence of depression was significantly associated with presence of co-morbidities such as T2DM, HTN, Asthma, etc.; no. of PMT attempts and type of family to which students belong (nuclear, joint, broken). Anxiety was associated with language medium from which students cleared senior secondary examinations and type of family. It was also found that depression scores and anxiety scores are positively correlated with high significance according to bivariate analysis.

#### **CONCLUSION**

There is a need for conducting regular psychiatric evaluations and counselling for medical students so that presence of mental disorders can be detected early in their course prompting immediate treatment.

#### Limitations

The students included in the study were not categorised according to their academic years therefore prevalence of depression and anxiety in each academic year was not established. Also substance abuse was not enquired in questionnaire hence its association with depression and anxiety was not identified.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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