Original Research Article

Prevalence of Anxiety, Depression and their Associated factor among Medical students in Bihar

Suman Kumar[1], Vikash Kumar[2*], Nisha Singh[3]

[1]Associate Professor, Department of Community Medicine, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India

[2] Assistant Professor, Department of Community Medicine,Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India

[3] Tutor, Department of Microbiology, NMCH, Patna, Bihar, India

Received: 05-10-2020 / Revised: 20-11-2020 / Accepted: 21-12-2020

Abstract

Objective: To assess the prevalence of anxiety and depression in medical students, to find out association between presence of depression, anxiety and socio-demographic factors and to find out correlation between depression and anxiety scores. **Methods**: The cross-sectional study was conducted in the Department of Community Medicine at Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India. initial 4 months for filling of the questionnaires and remaining 2 months for data entry and analysis. Total 400 medical students include in this study. After obtaining informed written consent, students were given self-reporting questionnaire which included socio-demographic details, PHQ-9 and GAD-7. **Results**: out of 400 students, 175 (43.75%) scored 0-4, 136 (34%) scored 5-9, 61(15.25%) scored 10-14, 18 (4.5%) scored 15-19 and 10 (2.5%) scored more than 19 on PHQ-9 scale. distribution of students according to GAD-7 score was 218 (54.5%) scored 0-4, 128 (32%) scored 5-9, 43 (10.75%) scored 10-14, and 11 (2.75%) scored 15-21 on GAD-7 scale. Of total 400 students surveyed, 225(56.25%) were found to have depression i.e. PHQ-9 score more than 4. 89 (22.25%) students scored ≥10 on PHQ-9 indicating a need for further clinical evaluation, as scores ≥10 suggest underlying major depressive disorder. Anxiety was found to be present in 182(45.5%) students. Median PHQ-9 score was calculated as 9±6 (Q_1-6, Q_3-12). Median GAD-7 score was found to be 8±5 (Q1-6, Q3-11). **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, medical students.

Introduction

For all individuals, mental, physical and social health is 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.[1]

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

**Correspondence*

Dr. Vikash Kumar

Assistant Professor, Department of Community Medicine,Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India.

E-mail: v.kumar.vrif@gmail.com

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).[2]

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.[3] 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 post- traumatic 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.[4]

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 physicalmorbidities.[5] The objective of the study was to assess the prevalence of anxiety and depression in medical students and find correlation between depression and anxiety scores.

Material and Methods

The cross-sectional study was conducted in the Department of Community Medicine at Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India .initial 4 months for filling of the questionnaires and remaining 2 months for data entry and analysis. Total 400 medical students include in this study.

Ethical approval

The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance.

Inclusion criteria

All medical students who gave their consent were included in the study

Determination of Sample size

Using formula we calculated a sample size of 350, by using prevalence of depression in medical students as 40%. Taking a non-response rate of 10% for overcorrection a total sample size of 380 was calculated. 400 students were selected for the study by using simple random sampling from a total of 550 students currently enrolled in the medical college. The selected students were given self-reporting questionnaire which included socio-demographic details, PHQ-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).[6]

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 post- traumatic 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.[7]

Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages. Test applied for the analysis was chi-square test.

Results

A total of 200 students participated in the study giving a response rate of 96%. The profile of the study sample was predominantly male (60%); hosteller (69%) with 60.5% of students having one sibling. Nearly 25.5% and 33.5% of students reported having ever smoked or consumed alcohol, respectively. The overall mean age of students was 20.69 (standard deviation=1.96) years.

Table 1 depicts sociodemographic profile of study participants. It was also found that 33.5% had a family history of chronic non-communicable disease; 11.5%

further mentioned that there was a family history of chronic mental illness while 24% of students had suffered with some medical conditions such as typhoid, malaria, pneumonia, and hospitalization due to injury in the past. It was found that 50(25%), 70(35%), and 80(40%) medical students were affected by symptoms suggestive of depression, anxiety, and stress, respectively. Some students were affected by >1 emotional state. It was observed on bivariate analysis that higher proportion of students with anxiety had a history of some medical condition and this was found to be statistically significant (P<0.05). Similarly, family history of chronic non-communicable disorder was significantly (P<0.05) associated with stress and family history of mental illness with depression only.

Table 2 shows association of academic variables of students with depression, anxiety, and stress, and it was found that enrollment batch and ability to cope with syllabus were statistically associated with depression, anxiety, and stress (P<0.05). Higher proportion of all the three emotional distress states was found in the 1st-year students in comparison to senior students (P<0.05). Table 3 depicts additional personal details of medical students affected by emotional state. It was noted that 10% reported parental conflict; 17.5% were "always" fearful about future life; 19.5% had poor relationship with family members; 25% were unsatisfied with their body image; and 20% were globally dissatisfied. It was found that satisfaction with body image and global satisfaction with life was statistically (P<0.05) associated with depression and anxiety while relationship with family members was statistically (P<0.05) associated with depression only. Higher proportion of student with depression had fair (poor) relationship with their respective families. Subjective (self) assessment of ability to cope with medical syllabus was inversely but statistically associated (P<0.01) with depression and anxiety, i.e., as the ability to cope with syllabus increases, the probability of occurrence of depression and anxiety decreases.As shown in Table 4, one unit improvement in ability to cope with syllabus results in reduction of 1.32 units in depression and 0.74 units in anxiety.We further studied the correlation between depression, anxiety, and stress and it was found that they were highly correlated with each other. The correlation coefficient value between depression and anxiety was 0.70, depression and stress was 0.71, and anxiety and stress was 0.76.

Table 1: Socio-demographic profile

Parameter	N=400	Percentage
Gender		
Male	240	60
Female	160	40
Place of origin		
Rural	208	52
Urban	192	48
Socio-economic status (B.G. Prasad)		
Class 1	254	63.5
Class 2	82	20.5
Class 3	24	6
Class 4	28	7
Class 5	12	3
No. of PMT attempts		
1	136	34
2	186	46.5
3	64	16
>3	14	3.5
Parents' education		
Illiterate	39	9.75
Primary	67	16.75
Secondary- Sr. Secondary	73	18.25
Graduate	85	21.25
Post-Graduate	136	36
H/o psychiatric illness		

Yes	11	2.75
No	389	97.25
Type of family		
Nuclear	177	44.25
Joint	191	47.75
Broken	32	8
Place of residence		
Hosteller	268	67
Day-Scholar	132	33
12th class medium		
Hindi	205	51.25
English	195	48.75
Co-morbidities		
Nil	381	95.25
Asthma	7	1.75
DM	3	0.75
HTN	4	1
Others	5	1.25

Table 2: Association of moderate to severe depression with various socio-demographic factors

S n.	socio-demographic factors		Present	absent	Value of x2	Degree of freedom	P value
1.	Gender	Male	59	181	0.029	1	0.919
		Female	46	114			
2.	Place of origin	Rural	47	161	3.059	1	0.092
		Urban	61	131			
	Socio-economic status (B.G. Prassad)	Class 1	63	191			
		Class 2	25	57			
3.		Class 3	5	19	2.189	3	0.702
		Class 4	11	17			
		Class 5	2	10			
	No. of PMT attempts	1	35	101			
4.		2	42	144	6.031	4	0.100
		3	14	50			
		>3	7	7			
	Parents' education	Illiterate	12	27			
		Primary	11	56			
5.		Sec. and sr. sec	16	57	1.739	4	0.761
		Graduate	29	56			
		Post graduate	47	89			
6.	H/o mental illness	Yes	2	9	6.239	2	0.010
		No	106	283			
	Type of family	Nuclear	41	136			
7.		Joint	49	142	12.861	1	0.002
		Broken	21	11			
8.	Place of residence	Hosteller	65	203	0.351	2	0.561
		Day- scholar	41	91			
9.	Medium in class XII	Hindi	53	152	0.118	1	0.747
		English	49	146			
	Co-morbidities	Nil	97	284			
		Asthma	6	1			
10.		DM	2	1	9.747	4	0.047
		HTN	3	1			

		Others	3	2			

Table 3: Association of anxiety with various socio-demographic factors

s.n.	socio-demographic factors		Present	absent	Value of x2	Degree of freedom	P value
1.	Gender	Male	115	125	0.000	1	0.964
		Female	79	81			
2.	Place of origin	Rural	88	120	2.698	1	0.107
		Urban	104	88			
	Socio-economic status (B.G. Prassad)	Class 1	141	150			
		Class 2	37	45			
3.		Class 3	10	14	5.402	3	0.251
		Class 4	12	16			
		Class 5	6	6			
	No. of PMT attempts	1	79	57			
4.		2	84	102	3.541	4	0.322
		3	29	35			
		>3	5	9			
	Parents' education	Illiterate	15	24			
		Primary	14	53			
5.		Sec. & sr. sec.	30	43	7.664	3	0.111
		Graduate	52	33			
		Post- graduate	91	45			
6.	H/o mental illness	Yes	6	5	3.152	1	0.070
		No	205	184			
	Type of family	Nuclear	91	86			
7.		Joint	96	95	12.072	3	**0.002**
		Broken	24	8			
8.	Place of residence	Hosteller	118	150	1.204	1	0.269
		Day- scholar	82	50			
9.	Medium in class XII	Hindi	92	113	4.640	2	**0.030**
		English	108	87			
	Co-morbidities	Nil	182	199			
		Asthma	5	2			
10.		DM	2	1	5.117	4	0.281
		HTN	2	2			
		Others	3	2			

Table 4: Correlation between depression and anxiety scores

Variable	Depression score	Anxiety score	P value
Depression scores	------	0.551	<0.05
Anxiety scores	0.551	-------	<0.05

Table 5 Distribution of no. of students according to PHQ-9 score

PHQ-9 score	No. of students	%
0-4	175	43.75%
5-9	136	34%
10-14	61	15.25%
15-19	18	4.5%
Above 19	10	2.5%

Table 6: Distribution of no. of students according to GAD-7

GAD-7	No. of students	%
0-4	218	54.5%
5-9	128	32%
10-14	43	10.75%
15-21	11	2.75%

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.[8] On the other hand a study conducted on medical students in Alexandria by M.B. Ibrahimetal observed that 43.9% students suffered from depression and 57.9% students suffered from anxiety.[5]

In India the prevalence of depression was found to be 39% by Vaidya et al.[9] Dahlin et al conducted a study in British medical students where psychiatric morbidity was found to be present in 16% of students.[10] In our study 56.25% students were provisionally diagnosed with depression (PHQ-9≥5) with 22.25% 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 severedepression.[11] Anxiety was found in 47.41% students as compared 67% (Yadav).[11] Gender did not have significant association with either anxiety or depression as was seen in a study conducted by Sidana, Kishore, et al.[12] 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 seen in our study that presence of type of family significantly affected the development of depression among the medical students. This is consistent with the findings of Ganesh S Kumar et al who also found a significant association between presence of family problems and development of depression among medicalstudents.[13] It was found in our study that having a health problem had a significant association with the development of depression. This is consistent with the findings of Kaya M et al who also reported that students with previous history of physical illness had higher BDIscores.[14] 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. A limitation of this study is that since it is based on self-reported information provided by students, there may be some inaccurate reporting due to the respondents' own unique interpretation of the questions.

References

1. Investing in mental health. Department of Mental Health and Substance Dependence,Non-communicable Diseases and Mental Health, World Health Organization, Geneva. Available from (http://www.who.int/mental_health/media/investing_mnh.pdf) Accessed on 02 March2017.
2. Depression: A Global Public Health Concern Developed by Marina Marcus, M. TaghiYasamy, Mark van Ommeren, and Dan Chisholm, Shekhar Saxena, WHO Department of Mental Health and Substance Abuse. Available at: http://www.who.int/mental_health/management/depression/who_paper depression_ wfmh _2012.pdf Accessed on 02 March 2017.
3. Depression. Overview. Available at: http://www.who.int/mediacentre/factsheets/fs 369/en/) Accessed on 28 February2017.
4. Depression and Other Common Mental Disorders Global Health Estimates. Available at:http://apps.who.int/iris/bitstream/10665/254610/1/WHO-MSD-MER-2017.2-eng. pdf Accessed on 28 February2017.
5. Ibrahim MB, Abdelreheem MH. Prevalence of anxiety and depression among medical and pharmaceutical students in Alexandria University. Alexandria J Med.2015;51:167-73.
6. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med.2001;16:606-13.
7. Spitzer RL, Kroenke K, Williams JBW, Lowe B.

A brief measure for assessing generalized anxiety disorder. Arch Inern Med.2006;166:1092-7.
8. Givens JL, Tjia J. Depressed medical students' use of mental health services and barriers to use. Acad Med.2002;77:918-21.
9. Vaidya PM, Mulgaonkar KP. Prevalence of depression, anxiety and stress in undergraduate medical students and its correlation with their academic performance. Indian J of OccupTher. 2007;39:7-10.
10. Dahlin ME, Runeson B. Burnout and psychiatric morbidity among medical students entering clinical training; a three year prospective and interview passed study. BMC Med Educ.2007;7:6.
11. Yadav R, Gupta S, Malhotra AK. A cross-sectional study on depression, anxiety and their associated factors among medical students in Jhansi, Uttar Pradesh, India. Int J Community Med Public Health. 2016;3:1209-14.
12. Sidana S, Kishore J, Ghosh V, Gulati D, Jiloha RC, Anand T. Prevalence of depression in students of a medical college in New Delhi: A cross-sectional study. AMJ2012;5:247-250.
13. Kumar GS, Jain A, Hegde S. Prevalence of depression and its associated factors using beck depression inventory among students of a medical college in Karnataka. Indian J Psych. 2012;54(3):223-6.
14. Kaya M, Genc M, Kaya B, Pehlivan E. Prevalence of depressive symptoms, ways of coping, and related factors among medical school and health services higher education students. Turk PsikiyatriDerg. 2007;18:137-46.

Conflict of Interest: Nil
Source of support:Nil