DOI: 10.5958/2319-5886.2014.00024.1

International Journal of Medical Research & Health Sciences

www.ijmrhs.com Volume 3 Issue 4 Coden: IJMRHS Copyright@2014 ISSN: 2319-5886

Received: 20th Aug 2014 Revised: 15th Sep 2014 Accepted: 28rd Sep 2014

Research article

EVALUATION OF MAJOR RISK FACTORS RELATED TO DEPRESSION AMONG MEDICAL STUDENTS OF NRS MEDICAL COLLEGE

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ABSTRACT

Background and objectives: Medical students experience depression, burnout, and mental illness at a higher rate than general population. A better understanding of related risk factors can help target appropriate support services for them. The aim of the study was to assess the occurrence of depression and identify its risk factors among undergraduate students in a medical College in Kolkata, India. **Methodology:** A descriptive, cross-sectional study using a two stage, stratified cluster sampling technique was used to select a sample of 289 students. Data were collected using a self-administered, anonymous questionnaire based on Becks Depression Inventory II. **Results:** The mean score of students on depression scale was 10.47±10.39. 22.5 % of students tested positive for some form of depression while 6.2% had severe to extreme depression. The risk factors of depressive symptoms identified were older age, lower family income, students who did not choose admission in MBBS course on their own, had addictions, felt negatively about results, faced difficulty with study course and had relationship issues. Students with relationship issues in their personal lives were 3.7 times more likely to exhibit depressive symptoms than without them. Students who faced difficulty coping with study course were 2.18 times more likely to exhibit depressive symptoms than without them. **Conclusion:** Academic performance alone doesn't influence the mental health of students, rather factors like older age, socioeconomic status, role in choice of medical career, negative perception of academic performance, difficulty with study course and relationship issues are also important.

Keywords: Depression, Medical students.

INTRODUCTION

Mental and behavioural problems are increasingly assuming public health importance due to increased prevalence resulting in considerable morbidity and disability. Global estimates reveal depression as the fourth leading cause of disease burden and disability.[1] Depression is mostly under reported and presents with nonspecific physical symptoms. Less than one fourth of such cases are correctly diagnosed while many are treated with medicines of doubtful efficacy.[2] Depression resulting in suicides claims 850 million lives annually and represents one of the major causes of death in 15 to 35 years age group.[3]

Medical students and residents have even higher rates of depression, a common stress-related challenge that impairs quality of life and job satisfaction and predisposes those affected to general medical illness.[4,5] In addition, this co-morbidity is associated with an increased risk of suicide, evaluated by attempted and completed suicides.[6] Medical education is long in duration and consists of immense academic

pressure leading to stress, depression and burnout. Studies have reported prevalence of depression in medical students ranging from 10.2% to 71.2%.[7] There may be several factors responsible for this situation, such as poor academic and professional performance, exhaustive academic courses and training, contact with diseases and death.[8] Additionally lack of awareness regarding the problem and stigma attached with it pose serious obstacles in identifying and addressing this problem In effect depression remains an iceberg disease among medical students. Studies done more commonly in developed countries have reported that medical students, the future caregivers, experience depression, burnout and mental illness at a higher rate than the general population, with mental health deteriorating over the course of medical training.[9,10.]

There is a lack of data regarding the prevalence of depression and the role of the precipitating factors of depression in medical students in India. Assessing the burden of depression among medical students can inform us of their status of mental health and related risk factors. In the long run, promoting students' well-being will benefit patients, the public, and the profession, in addition to the individual.

OBJECTIVES

To assess the magnitude of self reported depression among medical students and identify the influencing risk factors.

MATERIAL AND METHODS

A descriptive, cross-sectional study was done among medical students of Nil Ratan Sircar Medical College & Hospital, West Bengal, India. The undergraduate medical course is divided into 9 semesters with 4 MBBS examinations conducted at the end of 2nd, 5th, 7th and 9th semesters and 4 ongoing semesters at a given point of time**.** The study protocol was approved by the Institutional Ethical Committee and informed consent form was obtained from participants.

Approximately 150 students, typically aged between 18–19 years, enter 1st semester after clearing a competitive entrance examination. As the prevalence of depression among medical students varied greatly, ranging from 10.2% to 71.2% an optimum prevalence of 50% was used for sample size estimation. Using a 8 % allowable error and design effect of 2, sample size was estimated as 240. Taking into account a 10% non response rate the sample size was calculated to be 264. A two stage, stratified cluster sampling technique was used to select study participants. From 4 ongoing semesters, 2 semesters were chosen randomly. Next all students from those 2 semesters were approached to participate in the present study. After excluding the non respondents and incomplete questionnaires, final sample size was 289. Data were collected from the students using a self-administered, anonymous questionnaire from all students present in the class.

The purpose of the study was explained and they were informed about the confidentiality of the reports. Those who were absent were followed up twice. Participation was purely on a voluntary basis. The questionnaire was divided into 2 parts, first part comprised of questions related to social-demographic information and certain risk factors like academic performance, relationship issues, stressful situations at home etc that may contribute to depression. 2nd part was used to assess the intensity of depression using Becks Depression Inventory II (BDI–II). BDI–II is a frequently used instrument that has good psychometric properties with high internal consistency, good test–retest reliability, good construct and concurrent validity with other common measures of depression in clinical and nonclinical samples. The BDI–II is more consonant with the American Psychiatric Association's (1994) Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM–IV) diagnostic criteria for major depressive episode than the earlier forms.[11,12,13] The study design was approved by the ethical and research committee of the institute. Data were analyzed using SPSS version 10. Association between depression and socio demographic and other risk factors were assessed by univariate analysis and binary logistic regression.

RESULTS

The mean age of students was 19.78 ± 0.78 years. 28.37 % students were females and 20.76 % students came from a rural background. 15.57 % students were addicted to smoking and 4.15 % to alcohol (more than 4 days a week). 60.9% students were unsatisfied with the academic facilities (library, lecture theatre /demonstration rooms, canteen etc) and 41.52 %

students found difficulties coping with the study course. About 1/3rd of the students had problems related to health, stressful situations at home and relationship issues (Table 2). The mean score of students using Beck's Depression Inventory II was 10.47 ± 10.39. It was found that 22.5 % of students tested positive for some form of depression using a cutoff score of ≥17 in the BDI II scale (Fig 1). About 6.2% had severe to extreme depression. Increasing age was associated with an increased likelihood of exhibiting depression, but increase in family income was associated with a reduction in the likelihood of having depression.

(Table 1) On the basis of univariate analysis, depressive symptoms were significantly higher in students who did not choose admission in MBBS course on their own, had lower marks in last MBBS, felt negatively about results, faced difficulty with study course, we're worried due to health or stressful situations in the family and had relationship issues. (Table 2) When controlling for other variables in multiple logistic regression, the variables "worry due to health" and "stress at home" lost its significance but the other variables remained significant. Students with relationship issues in their personal lives were 3.7 times more likely to exhibit depressive symptoms than without them. Students who faced difficulty coping with study course were 2.18 times more likely to exhibit depressive symptoms than without them. (Table 3)

No significant association of depression was found with other risk factors such as gender, residence, religion, family size, and satisfaction with academic facilities. (Table 3). The model explained 46.9 % (Nagelkerke R^2) of the variance in depression and correctly classified 83.0% of cases. For the model, the Hosmer-Lemeshow test gave a Chi-square value of 7.67 (p = 0.47), showing that the predicted model is not significantly different from the actual data, indicating a good model fit.

Total Score Levels of Depression using Beck's Depression Inventory II :

0-10 = These ups and downs are considered normal, 11-16 = Mild mood disturbance, 17-20 = Borderline clinical depression, 21-30 = Moderate depression, 31-40 = Severe depression, over 40 = Extreme depression

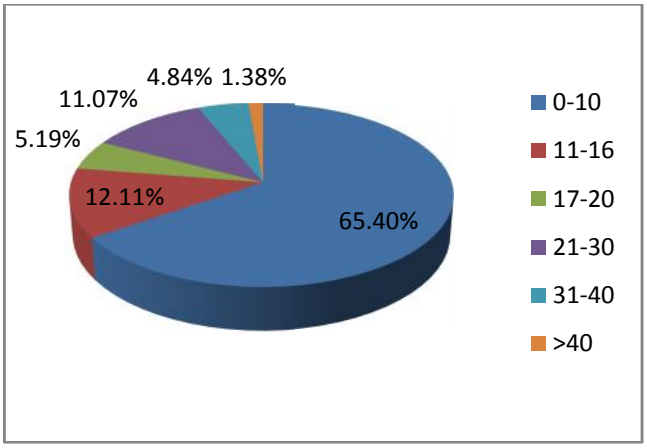

Fig1: Beck's Depression Inventory II Score of medical students

Table1: Sociodemographic characteristics of study participants.

Sociodemo--graphic characteristics	Normal n = 221	Depressed n = 68	Total N=289	χ^2	P value
Age in years					
18	7	-	7	11.6	0.02*
19	85	18	103		
20	100	31	131		
21	26	18	44		
22	3	1	4		
Sex					
Male	153	54	207	2.65	0.10
Female	68	14	82		
Religion					
Hindu	203	62	265	0.03	0.89
Muslim	18	6	24		
Residence					
Urban	177	52	229	0.41	0.52
Rural	44	16	60		
Monthly Family income (Rupees)					
< 5000	2	9	11	25.0	0.00*
5000 - 10000	21	11	32		
> 10000	198	48	246		
Family size					
≤ 4	170	54	224	0.18	0.66
> 4	51	14	65		
Current place of stay					
Hostelite	116	34	150	0.13	0.72
Day scholar	105	34	139		
Addiction (most commonly)					
Nil	196	33	229	52.	0.00*
Smoking	19	26	45		
Ganja	2	1	3		
Alcohol	4	8	12		

* = P<0.05

Table2: Distribution of some risk factors of depression among study participants.

Risk factors of depression	Normal =221	Depressed =68	Total =289	χ^2	P value
Reasons for admission in MBBS					
Own choice	163	28	191	26.53	0.00*
Financial opportunity	7	2	9		
Parent's expectations	51	38	89		
Marks obtained in last MBBS					
50%-60%	26	14	40	8.98	0.01*
60%-70%	185	46	231		
> 70%	10	8	18		
Feelings about results					
Not satisfied	176	38	214	16.22	0.00*
Satisfied	38	23	61		
Very satisfied	7	7	14		
Difficulty with study course					
No	146	23	169	22.26	0.00*
Yes	75	45	120		
Satisfaction with academic facilities					
No	87	26	113	0.03	0.86
Yes	134	42	176		
Worry due to health					
No	139	32	171	5.39	0.02*
Yes	82	36	118		
Stressful situation at home					
No	173	42	215	7.33	0.00*
Yes	48	26	74		
Relationship Issues					
No	174	27	201	37.39	0.00*
Yes	47	41	88		

* = P<0.05

Table 3: Correlates of depression among medical students using binary logistic regression.

Correlates of depression	B	S.E.	Wald	df	Sig.	Exp(B)
Age	.558	.255	4.786	1	.029*	1.747
Sex	-.191	.439	.189	1	.663	.826
Religion	-.092	.600	.023	1	.878	.912
Residence	-.276	.467	.348	1	.555	.759
Family income	-1.274	.360	12.544	1	.000*	.280
Family members	-.134	.185	.526	1	.468	.875
Hostelite/Day scholar	.489	.385	1.612	1	.204	1.630
Addiction	.643	.244	6.929	1	.008*	1.902
Reasonsfor admission in MBBS	.641	.196	10.727	1	.001*	1.898
Marks obtained in last MBBS	-.274	.390	.492	1	.483	.760
Feelings about results	-.679	.315	4.654	1	.031*	.507
Difficulty with study course	.780	.368	4.490	1	.034*	2.182
Satisfaction with academic facilities	.402	.382	1.107	1	.293	1.495
Worry due to health	.203	.373	.294	1	.588	1.225
Stress at home	.279	.393	.502	1	.479	1.321
Relationship issues	1.313	.379	11.996	1	.001*	3.717
Constant	-8.683	5.133	2.861	1	.091	.000

* = P<0.05

DISCUSSION

Despite the huge burden of depression globally its detection and treatment remains a challenge. Medical students have a higher prevalence of depression than the general population. [4,5] Studying medicine is an intense experience and the course is a demanding one. The pressure of huge syllabus, rigorous training schedule, elaborate examination or observing very sick patients can make them fall victims to different mental health disorders. Additionally, medical students are often reluctant to seek help due to stigma associated with the disease. In the present study the overall prevalence of depressive symptoms by screening was found to be 22.5%, which is quite high and similar to other studies.[14,15] However some other studies have reported lower prevalence.[16,17] These differences could be due to different scales used for assessment, different study areas, different academic environment in medical colleges and different methods of study. It remains important to identify such students, especially the more vulnerable with severe to extreme forms of depression early and to encourage them to seek and receive appropriate help.

Depression is a feminized issue across different countries, affecting women twice more than as men.[18,19] Contrary to this, the present study found no evidence that women were more likely than men to experience depression. This may be due to favourable background characteristics like higher family income, urban residence, smaller family size and parental support among the majority of medical students. Other studies have similarly shown no differences in depressive symptoms between male and female students. [20,21]

Older age was found to be related with depression. Older students may experience more stress due to financial pressures, employment concerns or other familial responsibilities and expectations resulting in depression. Family income was also found to be associated with depression similar to a study done by Lorant et al who reported that depression was 1.81 times more in the lowest socioeconomic group compared to those in the highest socioeconomic group.[22,23] Scope of financial support to meritorious students belonging to economically weaker background, like scholarships can be enhanced in such cases.

Students with addiction were more likely to exhibit depressive symptoms than without them. However, as the study was cross-sectional, it could not be ascertained whether addiction played a causal role or it was the outcome of depression. Various studies have reported substance abuse and alcoholism among medical students and junior doctors under stress.[24,25,26]

Family environment and parental support system can have a profound effect on the mental health of students.[27,28] Staying away from home as in case of hostelites, decision making role in choosing one's own career, worry due to health, loss of a loved one in the family or other relationship issues can lead to stress and depression. In India there are tremendous expectations of parents from their children to pursue 'A' list professional careers like medical and engineering. In the process children often are forced to take up careers in those fields against their choice and when they fail to cope up, it results in depression. The findings of the present study corroborate the association between students' decision making role in choice of their own career and relationship issues with depression.

One interesting finding of the study was that both the students' perception of their own academic performance and marks obtained in MBBS were found to be associated with depression in univariate analysis. However, when other predictors were taken into account "marks obtained in MBBS" was no longer significant. Nevertheless, peer pressure from competition and higher self expectations on academic performances has reportedly been associated with depression. Peer pressure can also lead to negative feelings regarding one's own academic performance. Students who faced difficulty with the study course had higher depression scores than their counterparts. Similar result was observed by T Alvi.[29]

Medical students are the doctors of tomorrow and it is important they are given the right support at an early stage in their training to prevent them from depression and anxiety. As part of this process, new approaches may be needed in medical colleges by the involvement of College administrators, student associations and physicians develop targeted primary prevention strategies, screening and diagnostic programs and accessible early intervention while ensuring confidentiality of the students. [9] Access to medical and other health services must be made available to them in a confidential and enabling environment with clear referral pathways and models of care with the assurance that seeking help will not affect their career progression.[30] At the same time education and awareness of medical students should be provided to reduce the stigma of depression. While evaluation of the existing medical curriculum may be necessary to make the medical course less stressful.

CONCLUSION

The findings of the present study highlight the fact that depression is a problem among medical students. Besides academic performance, factors like older age, socioeconomic status, role in the choice of a medical career, negative perception of academic performance, difficulty with study course and relationship issues are also important. It is important for medical institutes to identify such vulnerable students and develop adequate and appropriate support services for them.

Limitations of the study: Firstly, BDI II was used as a screening tool and no definite psychiatric diagnosis of the medical students could be made. Also, there was no scope of referring the students screened with positive symptoms for confirmation and treatment, as anonymity was maintained. The study was undertaken in only one medical college, hence limiting the generalisability of the results. As the study was cross-sectional in design, no follow up was done; hence it could not be ascertained if depression was persistent or varied during the course of MBBS. Lastly, all risk factors could not be accounted for. Future longitudinal studies involving larger sample across several medical colleges are necessary to ascertain the prevalence and different causal factors in a better way.

ACKNOWLEDGEMENT

The authors are grateful to all the students who participated in the present study.

Conflict of Interest: Nil

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