Depressive symptoms among undergraduate Medical students: Study from a Medical college in Kolkata, India.

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Abstract: *Psychological Morbidities among medical undergraduates are quite common at various stages of their training, which vary depending on academic pressures, different socio-demographic factors and the scale of measurement. Impaired mental health among students may adversely influence their academic performances, play a role in alcohol and substance use and place them at increased risk of suicidal attempts. A cross-sectional questionnaire based study was undertaken among undergraduate medical students of different batches in a Medical College in Kolkata, India using BDI II scale to assess the proportion of students had depressive symptoms along with relation of some socio-demographic factors and methods to cope with. Males and hostelites were more. Total 41.1% had probable depression among which 15% had Mild and 26.1% had Mod-Severe depression. Lower proportion of depression found among 3rd.semester batch (21.6%) than their senior batches. Depression was more among males, hostelites, students coming from higher income category. As cope up strategies, 24.4% adopted substance abuse, 6.7% attempted self mutilation which even increased to 17% for Mod-Severe depression. Screening for psychological well being of the medical students during training on regular basis along with appropriate intervention is the need of the hour.*
Keywords: *Beck Depression Inventory, Depression, Medical Undergraduates, Semester.*

I. Introduction

Training in Medical Colleges is intended to prepare graduates for a personally rewarding, career promoting and socially meaningful health care provider. During medical training students are subjected to different kinds of stressors such as burden of vast academic pressure with an obligation to succeed, an uncertain future, difficulties of integrating into the system along with emotional, social, physical and family problems. These stressors often exert an inadvertent negative effect with catastrophic consequences on students' academic performances, physical health and psychological well being with a high frequency of depression, anxiety, stress and even attrition from medical course. Psychological distress among students' also reduces their self-esteem, quality of life and the quality of care they provide to patients with decreased empathy. They may engage in potentially harmful methods of coping strategy from stress such as tobacco, alcohol and other substance abuse. Medical students have a higher risk of suicidal ideation and suicide than age matched peers and general population.[1-9] Worldwide, the three main causes of years lost because of disability (YLDs) for 10-24 years old were neuropsychiatric disorders (45%), unintentional injuries(12%) and infection and parasitic diseases(10%). Depression among medical students is an issue of concern worldwide for nearly half a century. It is very important to detect early symptoms of depression with appropriate intervention so that ill effects of depression could not hamper one's education and career, thereby protecting valuable future human resource. Prevalence of depression among medical students varies depending on age, gender, year of training, place of staying during training, ethnicity, geographical area, parents' socio-economic status and the scale used to measure depression.[3,6,9,10]

With these perspectives, we conducted the present study with the following objectives:
1) To assess depressive symptoms among M.B.B.S students of different semesters using BDI scale alongwith relation of some socio-demographic factors with presence of depression.
2) To find out the coping strategies of depression among the study population.

II. Methodology

A cross-sectional questionnaire based study was carried out in the month of November, 2012 in a Government Medical college in Kolkata, West Bengal, India. Data were collected on a particular day involving students of different batches present on that day in different places in the college campus like canteen, library, hostels and classrooms. The undergraduate M.B.B.S course under West Bengal University of Health Science is

a four and half year course with nine semester batches and one year compulsory rotatory Internship period. Semester batches of odd numbers (3rd,5th,7th,9th,) were available during the day of data collection. After briefing the purpose of the study the students were encouraged to participate in the study. Students who reported suffering from any psychological disorders were excluded. Participation was voluntary, informed verbal consent was taken from the participants and they were ensured that confidentiality and anonymity would be maintained throught the study. Total 183 students volunteered for the study. Due to incompleteness finally 180 questionnaires were analyzed. Before data collection Institutional Ethics Committee clearance and permission from the Head of the Institution were taken. This study was in accordance with Helsinki declaration. Data were collected using Beck Depression Inventory II(BDI II), which is a well established reliable questionnaire used to screen for depression and has been validated in non psychotic patients in different studies.[1,6,11,12,13]Beck Depression Inventory (BDI, BDI II) created by Aaron T.Beck, is a 21-question multiple choice self-report inventory. It is a subjective scale used for screening purpose which has to be further evaluated to confirm the diagnoses. In its current version the questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression in last two weeks such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue and weight loss. Beck developed a triad of negative cognitions about the world, the future and the self which play a major role in depression. Each question has a set of at least four possible answer choices, ranging in intensity on a scale value of 0 to 3 and total score being 63.Higher total score indicates more severe depressive symptoms. The cut-offs we used were 0-13 no depression,14-19 mild depression,≥20 moderate-severe depression.BDI II is positively correlated with the Hamilton Depression Rating scale and highly reliable. [14,15] The questionnaire also included some socio-demographic variables such as gender, place of staying, fathers' education, occupation, income ,position among sibling, relation with parents, friends and coping strategies. Substance Abuse was considered if the students used any one of these substances in last 2 weeks like tobacco, alcohol, gutkha, sedatives, hypnotics, illicit drugs. Data were analyzed using EpiInfo version 3.5.1 by descriptive statistics and χ^2 when needed. P value < 0.05 was considered as significant.

III.   Results

Background characteristics of the study population has been depicted in Table 1.Among the interviewed students proportion of male was more (54.4%) which was also true for different semester batches except 9th semester where proportion of female was more (55.3%).Majority of the study population (72.2%) were hostelites. For the 7th Semester batch, proportion of Day Scholar was more (34.9%) compared to other batches. In our study we have found 58.9% had no depression (score 0-13),15.0% had probable mild depression (14-19) and 26.1% had probable moderate-severe depression(≥20) using BDI II scale. For no depression 3rd semester students were more (72.8%) followed by 7th semester (58.1%).When the level of depression was mild, 7th semester were more (23.2%) followed by 9th semester (15.8%). More proportion of 5th semester students (39.0%) had moderate-severe level of depression followed by 9th semester (31.6%). Among males, 5th semester hostelite had higher mean BDI score (19.7±8.9) and 3rd semester day scholar (had lowest mean score (12.38±5.2) which was also lowest among all interviewed students. Among females highest mean score found in female day scholar of 7th semester students (27±16.9) which was also highest score among all interviewed students and lowest mean was found in 7th semester hostelites (12.5±6.3). Table 2 showed that 13.3% students treat their father like ATM, for students who had no depression this was 5.6% which gradually increased to 11.1% for mildly depressed students and 31.9% when the depression level was moderate-severe depression. More proportion of respondents were friendly & confidant with their mother (68.9%) than with their father (57.8%).Apprehension of telling secret to father was less (7.5%) than mother (14.1%) for not depressed students. But this aspect was more towards father in case of mild depression (22.2% vs 11.1%) and also moderate-severe depression (10.6% vs 4.2%). More proportion of mild depressed students (37.0%) was neutral with their father and in moderate-severe level depression 40.4% students were neutral towards their mother. Relation of the respondents with their friends was very cordial among majority (70.0%) which was also true for all levels of depression. Nearly two fifth (41.2%) students do not have any boy\girl friend, which was more (51.8%) in mild depressed category. Very highly committed to their boy\girl friend was the response among 33.3% mild depressed students. Among moderate-severely depressed students 23.4% had break-ups before with their boy\girl friends. Table 3 showed that for 3rd semester students, proportion of depressed students was less (21.6%) compared to other senior batches and their not depressed counterpart was more(39.6%).As the year of study increases proportion of depressed students were more than not-depressed students (5th semester-29.8% vs17.9%, 7th semester-24.3%vs 23.6%,9th semester 24.3% vs 18.9% consecutively).Though this relation was not statistically significant (p=0.05).More proportion of male was depressed (56.7%) than their female counterpart (43.3%),but this findings was not significant. Depressed students were nearly double among hostelites (66.2%) than day-scholars (33.8%), but this was not statistically significant. No significant relation between presence of depression and fathers' literacy level, occupation, and position among sibling was found.

When the fathers' income was upto Rs.9999 proportion of depressed students was less than not depressed (39.2% vs 52.8%).When the income of the father increased, the proportion of depressed students also increased than not depressed counterpart (Rs.10000-19999-36.5% vs 34.9%, ≥Rs.20000-24.3% vs 12.3% consecutively),but it was not significant. Table 4 showed that more proportion of students confide in to their friends followed by parents as a coping strategies which was also true for any level of depression. Among the surveyed students 6.7% attempted self mutilation, this proportion increased as the level of depression increased (mild-11.1%,moderate-severe-17%).Most commonly adopted strategy for relief when depressed, was falling in substance abuse (24.4%) which was 46.8% for moderate-severely depressed patients. Speaking to friends (48.8%) followed by parents (43.3%) were other strategies. Only 5.5% students visited counselor but 14.3% mod-severely depressed students visited counselor. Only 2.8% students spoke to teachers, which was 8.5% for mod-severely depressed students.

IV. Discussion

Psychological well being is important for medical students, for the patients they met and for their future medical practice. Current education process in medical training exposes their students several types of stressors, some are exogenous such as adaptation to medical curriculum, vastness etc. and some are endogenous like gender, personality traits etc. This study presents the report of 180 undergraduate medical students of a Medical College in Kolkata, West Bengal, India where this type of study was not done in the recent past. We have used the reliable and valid depression screening tool, BDI II. The overall depression reported by our respondents was 41.1% of which 15.0% had mild and 26.1% had moderate-severe depression. Using same BDI scale, findings of the study done by Dr Singh & others (49.1%) in a Medical College in Northern India and another study in India by Ganesh S Kumar & others (71.25%) in Mangalore, Karnataka found higher proportion of depressive symptoms among medical undergraduates.[6,13]This difference may be due to different study area, different cut-offs used to analyze the results. Other studies in different parts of the world also showed wide range of variation of depression among medical trainees, 2.2%-upto 85% of the students. Reasons are different geographical regions, different sample sizes with varied demographic characteristics, scales used to assess depression and cut-offs used were also different and different medical curricula in these countries. In our study we found that as the depression level increases social relations of the respondents with their parents and friends also worsens which emphasizes that during medical training, medical educators should also pay attention to develop some strategies for reduction of stress of their students. Parents should also be careful that they do not pressurize their sons & daughters for their high expectations. This study showed more proportion of males had depression than females, but the highest mean depression score found among females and lowest mean depression score found among males. This difference in proportion of depression among respondent according to gender in our study was not statistically significant. Our findings was in contrast to the findings of other studies where they found rates of depression among women two times higher as shown by Deborah Goebert & others in Multischool study in Hawaii,[3] significantly more than their male counterpart as shown by other studies.[1,3,16,17]Similar to our study findings Ganesh S Kumar & others in Mangalore, India, also found proportion of male depressed students were more and it was not statistically significant.[13]Other studies also showed that male and female medical students did not differ in the degree of depressed mood.[9,18] Male students in our study had more depressive symptoms, which may be due to their more competitiveness and future planning, less adjustment in the hostel atmosphere as we found that male hostelites had more mean BDI score than day scholars. This study showed that hostelites had more depressive symptoms, reason of which might be due to the quality of food in the hostels, lack of entertainment, feeling of loneliness. Though we had not searched for that but these were some of the reasons shown by the study done by Chandrashekhar T Sreeramareddy & others in their study in Nepal Medical schools.[2] This study showed that proportion of depressed students was less in the 3rd. semester batch than senior batches, consistent to the findings shown by Hamza Mohammad Abdul ghani & others in their study in Saudi Arabia(highly significant)[19] and also other studies.[2,13]Contrary to our study findings the study by Ajit Singh & others in Northern India found students of junior years of study had more proportion of depressive symptoms[6] and the same findings was also shown by other study.[4] Another study done by G.M.Koochaki in Eastern Mediterranean region found there were no significant differences between years of study and prevalence of depression.[20] More depressive symptoms among higher semester batches in our study might be due to the information overload, increasing examination load, increasing future planning pressure to become a successful doctor with less time to spend in recreational activities. We found in this study that students coming from higher income groups had more proportion of depressive symptoms, reasons of which might be due to more expectation and pressure from their parents resulted in increased stress among these students. This study showed that friends followed by parents were the persons to whom the respondents confide in when depressed, whereas few proportions (2.8%) spoke to their teachers and only 5.5% visited a counselor. As it is well established that Medical Training is a stressful period, teachers must come forward to be friendlier with their students, interact with the students how to deal with stressors and encourage them to seek counseling when needed. Similar to

other studies, our study also found nearly one-fourth respondents adopted substance abuse as one of the method to cope with depression, which even increased to nearly half of the students for severely depressed category. This findings were in accordance with different studies- a meta analyses of 248 articles by Dyrbye & others[1] and also by other studies.[8,13] This study also showed that, ideation of self-mutilation was another method to cope-up, which even increased with increase in BDI score and our findings was more as reported by Thomas L. Schwenk & others. [8] The mental health status of the students we assessed showed a worrying picture. After this study, those whom we found to have probable depression were counseled and encouraged to meet counselor & psychologist.

Our study was a cross-sectional study, so cause and effect relationship of psychological morbidity with other factors could not be established. The scale we screened for depression was a self reporting subjective scale; therefore the scores can be easily exaggerated or minimized by the person completing them. Therefore, it can be evaluated by further studies in depth by quantitative & qualitative methods.

V. Conclusion

Our findings emphasize the importance of screening for depression of medical students during training on a regular basis for early detection and taking appropriate intervention like group counseling, stress management training etc. to protect this valuable future human resource.

TABLES

Table 1 : Distribution of medical students of different batches according to their gender, residence and BDI score (n=180)

Variables	3rd Semester n=58 No (%)	5th Semester n=41 No (%)	7th Semester n=43 No (%)	9th Semester n=38 No (%)	Total n=180 No (%)
Gender					
Male	32(55.2)	24(58.5)	25(58.1)	17(44.7)	98(54.4)
Female	26(44.8)	17(41.5)	18(41.9)	21(55.3)	82(45.6)
Residence					
Hostelite	41(70.7)	41(100.0)	28(65.1)	26(68.4)	130(72.2)
Day-Scholar	17(29.3)	00(0.0)	15(34.9)	12(31.4)	50(27.8)
Level of depression (BDI Score 0-63)					
No depression(0-13)	42(72.4)	19(46.3)	25(58.1)	20(52.6)	106(58.9)
Mild depression(14-19)	05(08.6)	06(14.6)	10(23.2)	06(15.8)	27(15.0)
Moderate-Severe depression (≥20)	11(19.0)	16(39.0)	08(18.6)	12(31.6)	47(26.1)
Mean BDI Score(±SD)					
Male	14.84(±9.3)	19.79(±8.9)	16.61(±5.5)	17.4(±8.9)	17.18(±7.0)
Hostelite	12.38(±5.2)		15.5(±3.5)	19.5(±3.5)	16.09(±4.2)
Day Scholar		----			
Female	16.17(±6.6)		12.5(±6.3)	17(±8.7)	15.18(±8.1)
Hostelite	12.69(±7.1)	17.24(±9.6)	27(±16.9)	24*	20.09(±11.3)
Day Scholar		----			

*single entry

Table 2: Level of depression of respondents and their relation with parents, friends and having boy\girl friends.

Variables	No depression (Score 0-13) n=106 No. (%)	Mild depression (Score 14-19) n=27 No. (%)	Mod.-Severe depression (Score ≥20) n=47 No. (%)	Total (Score 0-63) n=180 No. (%)
Relation with parents Treat like ATM				
Father	06 (5.6)	03 (11.1)	15 (31.9)	24 (13.3)
Mother	00 (0.0)	00 (0.0)	03 (6.4)	03 (1.7)

Friendly & confident				
Father	77 (72.6)	08 (29.6)	19 (40.4)	104 (57.8)
Mother	79 (74.5)	22 (81.5)	23 (48.9)	124 (68.9)
Apprehension of telling secret				
Father	08 (7.5)	06 (22.2)	05 (10.6)	19 (10.5)
Mother	15 (14.1)	03 (11.1)	02 (04.2)	20 (11.1)
Neutral				
Father	15 (14.1)	10 (37.0)	08 (17.0)	33 (18.3)
Mother	12 (11.3)	02 (07.4)	19 (40.4)	33 (18.3)
Relation with friends*				
Very cordial	86 (81.1)	14 (51.8)	26 (55.3)	126(70.0)
Cordial	38 (35.8)	09 (33.3)	08 (17.0)	55 (30.5)
Chalta Hai	18 (16.9)	06 (5.7)	07 (14.9)	31 (17.2)
Bad	02 (1.9)	01 (3.7)	05 (10.6)	08 (4.4)
Not in speaking term	02 (1.9)	02 (7.4)	03 (6.4)	07 (3.9)
Relationship with Girl friend \Boy friend				
Do not have (n=74)	48(45.3)	14(51.8)	12(25.5)	74(41.2)
Very highly committed(n=40)	24(22.6)	09(33.3)	09(19.1)	42(23.3)
Not placid	06(5.7)	01(3.7)	05(10.6)	12(6.7)
Very superficial, not committed	16(15.1)	03(11.1)	10(21.3)	29(16.1)
Had break-up(s)before	12(11.3)	00(0.0)	11(23.4)	23(12.7)

*overlapping present

Table 3: Study population according to their presence of depression and relation of some factors.

Variables	Not depressed Score (0-13) n=106 no. (%)	Depressed Score (14-63) n=74 no. (%)	x^2	df	p
Semester Batch					
Third	42(39.6)	16(21.6)			
Fifth	19(17.9)	22(29.8)	7.67	3	.05
Seventh	25(23.6)	18(24.3)			
Nineth	20(18.9)	18(24.3)			
Gender					
Male	56(52.8)	42(56.7)	.27	1	.27
Female	50(47.2)	32(43.3)			
Residence					
Hostelite	81(76.4)	49(66.2)	2.26	1	.13
Day-Scholar	25(23.6)	25(33.8)			
Position among sibling					
Eldest	34 (32.1)	22(29.8)			
Intermediate	21 (19.8)	17(22.9)	2.19	3	.53
Youngest	20 (18.9)	19(25.7)			
Only child	31 (29.2)	16(21.6)			
Fathers' Education					
Upto Secondary level	12(11.7)	16(21.6)	3.52	1	.06
Above Secondary level	94(88.7)	58(78.4)			
Fathers' Occupation					
Professional	43(40.6)	23(31.1)			
Executive	27(25.5)	26(35.1)	3.92	4	.41
Clerical	09(8.5)	09(12.2)			
Semi-skilled	07(6.5)	06(8.1)			
Skilled	20(18.9)	10(13.5)			
Per Capita Monthly Family Income in Indian Rupees					
0-9999	56(52.8)	29(39.2)	5.43	2	.06
10000-19999	37(34.9)	27(36.5)			
$\geq$ 20000	13(12.3)	25(24.3)			

Table 4: Distribution of the students according to the level of depression and different coping strategies.

Variables	No depression (Score 0-13) n=106 No. (%)	Mild depression (Score14-19) n=27 No. (%)	Mod.-Severe depression (Score ≥20) n=47 No. (%)	Total (Score 0-63) n=180 No.(%)
Person to whom confide in when depressed*				
No one	07(6.6)	03(11.1)	09(19.1)	19(10.4)
Parents	46(43.4)	08(29.6)	11(23.4)	65(36.1)
Siblings	16(15.1)	06(22.2)	07(14.9)	29(16.1)
Friend	47(44.3)	12(44.4)	19(40.4)	78(43.3)
Boy\girl friend	23(21.7)	05(18.5)	07(14.9)	35(19.4)
Teacher	00(0.0)	03(11.1)	02(4.2)	05(2.8)
Roommate	10(9.4)	01(3.7)	05(10.6)	16(8.9)
Self-Mutilation attempted	01(0.9)	03(11.1)	08(17.0)	12(6.7)
Relief sought when depressed*				
Substance Abuse	19(17.9)	03(11.1)	22(46.8)	44(24.4)
Visiting a counsellor	03(2.8)	00(0.0)	07(14.9)	10(5.5)
Speaking to a teacher	01(0.9)	00(0.0)	04(8.5)	05(2.8)
Speaking to a friend	54(50.9)	18(66.7)	16(34.0)	88(48.8)
Speaking to parents	57(53.8)	11(40.7)	10(21.3)	78(43.3)
Speaking to myself	01(0.9)	01(3.7)	00(0.0)	02(1.1)

*overlapping present

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