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Mental health is an important dimension of health as defined by the World Health Organization. Globally mental and substance use disorders account for 30 % of the non-fatal disease burden and 10 % of the overall disease burden and this is projected to rise in the years to come. Yet, the concern on mental health is not being adequately addressed resulting in a daunting treatment gap of 90 % in many parts of the world. The picture is not different in our country. So, to show the importance of mental health, not only of patients, but also of teachers and students, this issue of CME journal is being dedicated to only mental health issues.

A descriptive type of cross sectional study on “Necessity to assess the attitude of students in the selection process of MBBS course in Bangladesh: teachers' views” was conducted by Tasnim NE et al. In this study 99% teachers agreed to include attitude test in the selection process. They opined to assess attitude by taking viva (54.72%) and by taking personal statement of the students (41.71%).

Alam MN et al conducted a cross sectional study on “Emotional intelligence (EI) of undergraduate medical students of Bangladesh”. In this study it was found that female undergraduate students had higher EI than their male counterpart and the study recommended to include EI in the undergraduate medical curriculum.

A cross sectional quantitative study was carried out by Mamun MMAA et al on Personality trait assessment of undergraduate medical students of Bangladesh and its relation with academic performance. The study found that, among the personality traits- openness, Conscientiousness and CGPA were associated positively and neuroticism and extroversion were associated negatively with scores of professional examinations. This study suggested personality trait assessment to be included in selection process of MBBS students in Bangladesh.

A cross sectional study was conducted by Ahmed Z et al on “Determinants of suicide risk in medical students of Bangladesh”. Study was done on 405 students from 1st year to 5th year. Among the respondents 14.6% were found positive for suicide risk.

A cross sectional study was conducted by Ahmed HU et al on “Stress and associated factors among teachers of medical colleges and hospitals of Bangladesh”. This study found that the prevalence of stress was reported to be 75% among the participants and it was also found that age and working hours were positively associated with the higher level of stress.

A cross sectional study was conducted by Shamsad et al on “ Self- report of mental health issues amongst third year and fifth year medical students of Dhaka Medical College”. This study showed that 75.8% (n=252) participants had some mental health problems. The forms of mental health problems were anxiety(53.6%), depression (48.8%) and phone addiction (42.5%). The mental health problems were found significantly affecting daily activities, relationship with others and dietary habits. This study put importance on the necessity of starting and maintaining support programme for the medical students.

This issue of journal included a review article on “Use of social media and mental health: Bangladesh context” by Alam F et al. This review identified relatively high prevalence of social media use in Bangladesh and also a positive relationship between overuse of social media and negative mental health impacts among its users.

A case of social anxiety disorder is reported here by Sarkar M et al. This case was suffering from social anxiety which led him to depression and then to suicidal thinking. He was offered pharmacological and psychological interventions and he is now returning to normal life.

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Emotional Intelligence of Undergraduate Medical Students of Bangladesh

Alam MN¹, Talukder HKT², Alam KK³, MAkhter⁴, Talukder MAS⁵

Abstract

Background: Emotional Intelligence (EI) combines the important aspects of interpersonal and intrapersonal relationship, adaptability, mood and stress management skills. It is also widely accepted as one of the dominant factors contributing to superior and professional performance.

Method: This cross-sectional study was aimed to measure the score of different dimensions of emotional intelligence of undergraduate medical students of Bangladesh using Genos Emotional Inventory (concise version). Genos Emotional Intelligence Inventory questionnaire (concise version) consists of 31 items with 5 answering options for each as per Likert scale. Confidentiality of the data and participants were maintained all through. Data were analyzed using SPSS 25. To determine internal consistency of the questionnaire Cronbach's alpha was used. This Study was conducted at selected medical colleges of Bangladesh. Out of nine, five were government and four were non-government, five from Dhaka and four from outside of Dhaka. Study period was one year. Undergraduate students of all four phase of MBBS course were study population. Sample size was 904, pre-tested self-administered semi-structured questionnaire were used to collect data. Medical college and students were selected by adopting convenient sampling technique.

Results: This study revealed that, mean Emotional intelligence score in male was 64.47 ± 8 and female it was 67.2 ± 38.14 . The result of current study indicate that female undergraduate students had higher EI than their male counterpart. Among the different sub-groups of EI highest score in EAO sub-group, mean score was in male 70.90 ± 13.48 and in female 72.47 ± 12.34

Conclusion: This study recommended that EI should be incorporated in undergraduate medical curriculum and should be taught with the details of learning outcome what are desired from registered medical graduate so that learning can be turned into practice.

Keywords: Emotional intelligence, Undergraduate medical students

Introduction

Emotional intelligence (EI) has been attracting a lot of attention since its inception in 1990. EI means ability to

monitor one's own and other feelings and emotion¹. In medical education and clinical practice EI is related to higher academic achievement and improved doctor patient relationship.² EI is also reported to be predictor of the communication skills.³

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Many questionnaire assessing emotional intelligence in the workplace have been developed. Each tool has its own merits and demerits and has been tested in multiple institution of different countries. Genos EI was originally conceptualized by Ben Palmer and Con Stough at Swinburne University. It was published as the Swinburne University Emotional Intelligence Test^{4,5} and appeared in numerous research paper as such. Since then it has been revised now being used widely in research and commercial setting as Genos EI. Full version consists of 70 items designed to measure the frequency with which an individual displays emotionally intelligent behaviors across seven dimensions. In addition to full item version of Genos EI inventory, two abbreviated version have recently been developed based on statistical and psychometric analysis. Two abbreviated versions include 31-items Concise version and a 14-items short version.

Now a days, the importance of improving the interpersonal skills, empathy, managing high stress situation are

increasingly being recognized as essential to functioning doctor. Research on emotional intelligence among health professional is rising but little is known about medical students.

In undergraduate MBBS curriculum importance of teaching of behavioral science is emphasized. Research, however on, emotional intelligence in undergraduate medical students is scarce worldwide and few researches have been done on this topic in Bangladesh. So, research to explore the level of emotional intelligence level of undergraduate medical students.

Methods

This article representing a small section of a thesis work that was conducted from 01 January 2022 to 31 December 2022 for partial fulfilment of ‘Masters in Medical Education (MMEd)’ degree under ‘Faculty of Basic and Paraclinical Science’ of ‘Bangabandhu Sheikh Mujib Medical University (BSMMU)’.¹² This particular section tried to explore emotional intelligence of undergraduate medical students of Bangladesh. This was a descriptive type of cross-sectional study. The study period was from 01 January 2022 to 31 December 2022. The study places were five were government and four were non-government medical college of from Bangladesh. Of the medical colleges 5 were government and 4 were non-government medical colleges. Undergraduate students of all four

phases of the MBBS course were the study population. The total sample size was 904 medical students. A self-administered semi-structured questionnaire was used to collect data. The questionnaire included the concise version of Genos Emotional Intelligence Inventory (GEII) questionnaire. The GEII consists of 31 items in a 5-point Likert scale. The scores were given as almost always agree = 5, usually agree = 4, sometimes agree = 3, rarely agree = 2 and never agree = 1. The medical colleges were selected purposely and available students who were willing to participate in the study were included in the study. Data were checked after collection manually and then entered into Statistical Packages for Social Sciences (SPSS) version 25 for further checking for inconsistency and then for statistical analysis. The figures and tables were constructed using Microsoft Excel and Words respectively.

Results

The results of this descriptive type of cross-sectional study are organized according to the instruments used. A total of 904 undergraduate medical students provided their views through the self-administered questionnaire. This study was conducted at nine medical colleges of Bangladesh, out of which five government and another four non-government medical colleges. The responses of the questionnaires were analyzed and have been presented in the form of tables and charts with necessary description according to the objectives of the study.

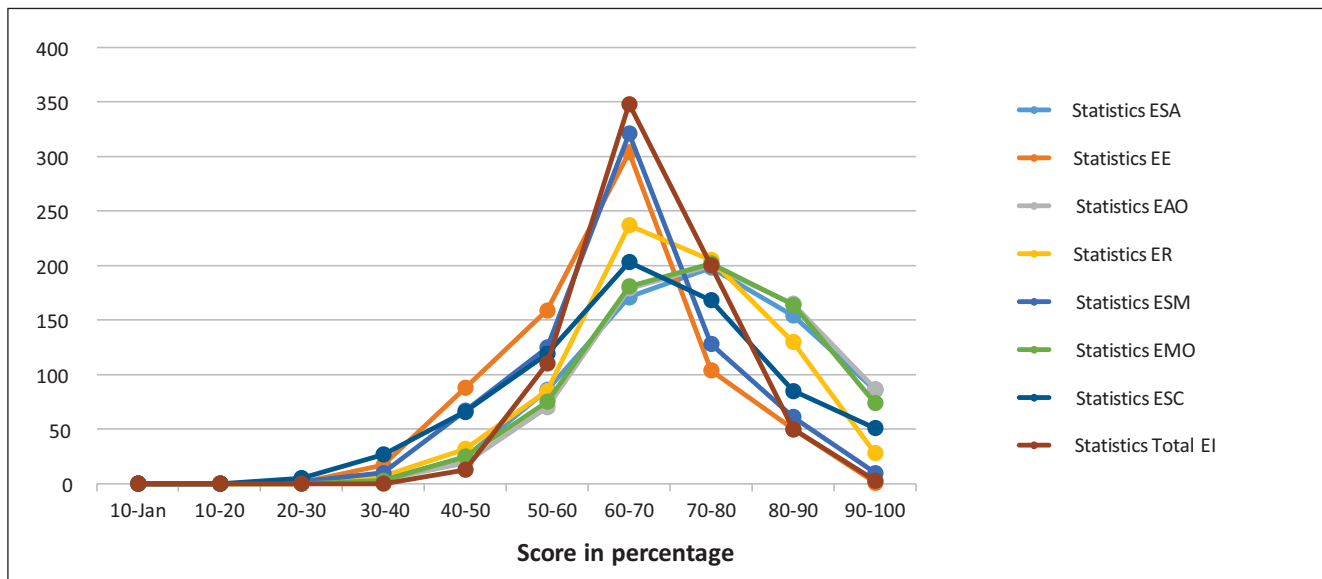


Figure 1: Distribution of the respondents by their score (in percentage) of seven sub- groups of Emotional Intelligence

ESA=Emotional Self Awareness, EE=Emotional Expression, ER=Emotional Reasoning=Emotional Awareness of others, ESM=Emotional Self-Management, EMO= Emotional Management of Others, ESC=Emotional Self Control, Total EI=Total Emotional Intelligence.

Figure 1 shows that maximum score in 60-70% in all sub-groups of EI and total EI

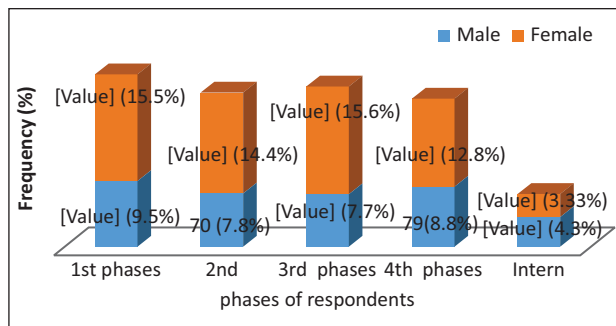


Figure 2: Distribution of the respondents by their gender and academic phase.

Figure 2 bar diagram shows the distribution of 901 respondents according to gender and academic phase of study where 343(43%) were male and 558(61.9%) were female. Maximum respondents were from 3rd phase 210(23.3%) and minimum respondents were from interns 69(7.7%).

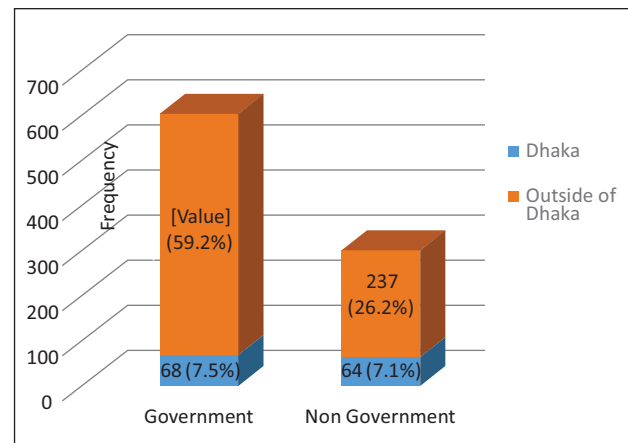


Figure 3. Distribution of respondents by ownership and location of Medical colleges

Figure 3 bar diagram shows that 488(53.98%) undergraduate medical students were from government medical colleges, 284 (38.42%) were from non-government medical colleges that are located outside of Dhaka and 68 (7.5%) were from government medical college, 64 (7.08%) were from non-government medical colleges that are located within Dhaka.

Table 1: Distribution of statistics of different the students by their sub-group of Emotional intelligence (n=90)

Statistics	ESA	EE	EAO	ER	ESM	EMO	ESC	Mean EI
Mean	71.23	61.44	71.88	69.33	63.73	71.02	64.45	67.32
Median	70	60	70	72	64	70	65	67.1
Mode	65.00	64.00	65.00	76.00	64.00	70.00	65.00	63.23
Minimum	20.00	28.00	35.00	32.00	28.00	35.00	20.00	43.23
Maximum	100.00	92.00	100.00	100.00	100.00	100.00	100.00	91.61
Std. Deviation	13.5327	11.3673	12.7967	12.005	11.3575	13.0852	15.105	8.1488
Skewness	-0.160	-0.116	-0.140	-0.210	-0.084	-0.065	-0.127	0.135
Std. Error of Skewness	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
Kurtosis	-0.116	-0.082	-0.248	0.043	0.376	-0.324	-0.119	0.085
Std. Error of Kurtosis	0.181	0.181	0.181	0.181	0.181	0.181	0.181	0.181

ESA=Emotional Self Awareness, EE=Emotional Expression, ER = Emotional Reasoning, EAA = Emotional Awareness of others, ESM=Emotional Self-Management, EMO= Emotional Management of Others, ESC=Emotional Self Control, Total EI=Total Emotional Intelligence

Table 1 shows maximum mean score was 71.88 in EAO sub-group and minimum mean score was 61.44 in EE sub-group. The Median values ranged from 64 to 72 and modal values ranged from 63.23 to 76.

Table 2: Distribution of descriptive and inferential statistics of the students by their sub-group of Emotional Intelligence and gender (n=724)

Sub groups of EI	Gender	Descriptive statistics			Statistical inference		
		N	Mean	Std. Deviation	t-	df	Sig. (2-tailed)
ESA	Male	273	70.4212	14.01503	1.250	722	.212*
	Female	451	71.7184	13.22399			
EE	Male	273	62.1392	11.05047	1.285	722	.199*
	Female	451	61.0200	11.54651			
EAO	Male	273	70.8974	13.48408	-1.607	722	.109*
	Female	451	72.4723	12.33949			
ER	Male	273	69.6996	11.61315	.651	722	.515*
	Female	451	69.0998	12.24332			
ESM	Male	273	64.0293	11.18293	.543	722	.588*
	Female	451	63.5565	11.47047			
EMO	Male	273	70.2747	13.63311	-1.196	722	.232*
	Female	451	71.4745	12.73617			
ESC	Male	273	66.4652	14.74837	2.800	722	.005*
	Female	451	63.2373	15.20406			
EI Grand total	Male	273	67.4702	8.18006	.391	722	.696*
	Female	451	67.2255	8.13745			

Independent sample t test done due to homogeneity of variances among the groups

Table 2 shows that mean scores students by their sub-group of Emotional Intelligence and gender were above 60%. The differences of the mean scores among the male and female students were significantly different only in case of ESC.

Table 3: Distribution of descriptive and inferential statistics of the students by their sub-group of Emotional Intelligence and ownership of the medical colleges (n=724)

Sub groups of EI	Ownership	Descriptive statistics			Statistical inference		
		N	Mean	Std. Deviation	t-	df	Sig. (2-tailed)
ESA	Gov MC	451	70.9424	13.53797	-.733	722	.464*
	Non Gov	273	71.7033	13.53549			
EE	Gov MC	451	60.2395	11.12256	-3.690	722	.000*
	Non Gov	273	63.4286	11.50813			
EAO	Gov MC	451	71.4967	12.71174	-1.032	722	.302*
	Non Gov	273	72.5092	12.93454			
ER	Gov MC	451	68.6829	11.12651	-1.777	497.8	.076**
	Non Gov	273	70.3883	13.28351			
ESM	Gov MC	451	63.2018	11.50079	-1.625	722	.105*
	Non Gov	273	64.6154	11.08135			
EMO	Gov MC	451	70.1885	13.10716	-2.209	722	.027*
	Non Gov	273	72.3993	12.95545			
ESC	Gov MC	451	63.1375	14.75620	-3.032	722	.003*
	Non Gov	273	66.6300	15.44673			
EI Grand total	Gov MC	451	66.5703	8.02204	-3.192	722	.001*
	Non Gov	273	68.5525	8.22069			

* Independent sample t test done due to homogeneity of variances among the groups

** Welch correction done to perform independent sample t test done due to heterogeneity of variances among the groups.

Table 3 shows that in independent sample t-test $p < 0.05$ in EMO, ESC sub-groups and Grand total EI score, this indicate that there is significant difference in score in above mentioned sub-groups in government and private medical college

Table 4: Distribution of descriptive and inferential statistics of the students by their sub-group of Emotional Intelligence and location of the medical colleges (n=724)

Sub groups of EI	Location	Descriptive statistics			Statistical inference		
		N	Mean	Std. Deviation	t-	df	Sig. (2-tailed)
ESA	At Dhaka	110	70.8182	13.17712	-.346	722	.730
	Outside Dhaka	614	71.3029	13.60463			
EE	At Dhaka	110	63.1636	11.90908	1.727	722	.085
	Outside Dhaka	614	61.1336	11.24973			
EAO	At Dhaka	110	72.3636	13.52383	.432	722	.666
	Outside Dhaka	614	71.7915	12.67162			
ER	At Dhaka	110	68.3273	13.24027	-.947	772	.344
	Outside Dhaka	614	69.5049	11.77283			
ESM	At Dhaka	110	63.4545	11.77748	-.281	722	.779
	Outside Dhaka	614	63.7850	11.28972			
EMO	At Dhaka	110	70.3182	12.13981	-.612	722	.540
	Outside Dhaka	614	71.1482	13.25281			
ESC	At Dhaka	110	67.9545	15.68461	2.650	722	.008
	Outside Dhaka	614	63.8274	14.92536			
EI Grand total	At Dhaka	110	67.7595	8.34829	.617	722	.537
	Outside Dhaka	614	67.2386	8.11689			

*Independent sample t test done due to homogeneity of variances among the groups

Table 4 shows that in independent sample t-test $p < .05$ in ESC sub-groups, this indicates that there is significant difference in score in ESC sub-group among the respondents from medical colleges located in Dhaka and outside of Dhaka.

Discussion

Statistical Package for Social Sciences-version 25 (SPSS-2) was used for analysis. Questionnaires for the participants were pre-tested. Quantitative part of the data was presented by tables and graphs with necessary description for easy understanding and interpretation. Qualitative part of the data was presented as the key findings in diagram. Appropriate statistical tests were done for data analysis. P value of <0.05 was be considered as statistically significant.

Among 901 respondents 343 (43%) were male and 558(61.9%) were female. Maximum respondents were from 3rd phase 210 (23.3%) and minimum respondents were from interns 69 (7.7%) (Figure 2).

Among the government medical colleges 535 (59.2%) respondents were from outside of Dhaka and 68 (7.5%) were from within Dhaka. Among the non-government medical colleges 237 (26.2%) respondents were from outside of Dhaka and 64 (7.1%) were from within Dhaka (figure 3).

In this study 343 (38.1%) were male and 558 (61.9%) were female students. From this data we see the general trend of medical education in Bangladesh. In both government and non-government medical colleges reflect the same male and female ratio (Figure 2). In another study it was stated that the gender ratio among medical students indicates 68% female to 32% male and this ratio is increasing day by day. This is a positive development reflecting the women empowerment in the society despite many obstacles.

This current study demonstrate that Bangladeshi undergraduate medical students are emotionally intelligent. Total mean score in male was 64.47 ± 8.18 and in female it was 67.23 ± 8.14 . The result of the current study indicates that female undergraduate students had higher EI score than their male counterpart. Among the different sub-groups of EI Highest score was in EAO sub-groups mean (expressed in percent) score in male 70.90 ± 13.48 and in female 72.47 ± 12.34 .

Independent sample t-test was done to evaluate the difference in total EI as well as sub-groups of EI between male and female, respondents from government and non-

government medical college, respondents from medical college from Dhaka and outside of Dhaka. An independent samples t test revealed that women scored higher in EI than Men (Men= 43 women 51) $p<.001$ and that academic performance of women was superior compared to men (Men=35, women 48) $p<.001$.

This study shows that there is significant difference in score in ESC sub-group in male and female ($p=.005$) and among the respondents from medical colleges from Dhaka and outside of Dhaka. This study found significant difference in score in EMO ($P=.027$), ESC ($p=.003$), Grand total score ($p=.001$) between respondent from government and non-government medical colleges.

Result of the present study shows that there is statistically significant difference of emotional intelligent level among male and female, respondents from government and non-government medical college and from respondent from Dhaka and outside of Dhaka (table 2,3 and 4).

This study also revealed that female showed significantly higher EI score than male. In EAO sub-group maximum score in female was 72.47 ± 12.34 and in male was 70.89 ± 13.48 . In independent sample t-test $p<0.05$ in ESC sub-group. This indicates that there is significant difference in score in male and female.

In agreement studies from United Kingdom⁶, India⁷ Malaysia⁸, Saudi Arabia¹, showed that female had higher EI than male. This finding was contradicted by the result of Ahmed et al 2017 on the effect of emotional intelligence of medical undergraduates which revealed value of EI was significantly higher in the male than in female students.

Researchers across the world have come to consensus that EI has important role that foster the future success and well-being of students. Team leadership and communication training can also be done by using Emotional Intelligence as a tool.

Undergraduate medical students have shown quite worthy level of emotional intelligence. In study, score in ESA, EM were good. But it should be improved further.

Mean score of EI in Phase 1 student were greater than respondents of other Three phases and these findings were significant.

Conclusion and Recommendations

On the basis of present study and with the understanding from available literature, following recommendation are made:

Awareness level should be increased through CPD program about Emotional Intelligence.

Students should be taught on the way of handling the problems of emotion, to control their emotion, to concentrate to their study process.

Parents should be informed about the importance of EI so

that they can assist their children to enhance different aspect of their EI

A large scale study should be carried out to focus and find out the problems in academic research to determine its necessity.

Administrator may think about incorporation of Emotional Intelligence level assessment in selection process.

Training on Emotional intelligence may be given to undergraduate medical students. The teacher should acquire a skill to explore the advantages at each dimension of the students EI. Thus, They should know about EI, so that they can help to develop the EI among their students

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Ethical clearance: The research protocol was approved by Institutional Review Board (IRB) of Centre for Medical Education (CME), Dhaka.

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Necessity to Assess the Attitude of Students in the Selection Process of MBBS Course in Bangladesh: Teachers' Views

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Abstract

Background: Assessment of attitude is an important task to select medical professionals. Interest for the subject is a pre requisite. Students also need high level of motivation, intelligence and stamina to cope up with the stresses encountered in the steps of medical profession.

Method: This descriptive type of cross sectional study was carried out from January 2021 to December 2021, among 107 teachers of 8 medical colleges (4 government and 4 non-government medical colleges) of Bangladesh. Data were collected by pre-tested self-administered semi-structured questionnaire. Then data were compiled and analysed using SPSS version 26.

Results: Regarding need of attitude test 99.07% teachers agreed. Among the reasons in favour of attitude test 58.49% teachers agreed about the statement 'the candidates will enjoy the course'. Regarding procedures of taking attitude test 54.72% teachers gave opinion for oral test /viva and 41.51% teachers mentioned about personal statement as a second choice for attitude test.

Conclusion: Study recommended that attitude test could be incorporated in our selection process for getting better medical professionals. More extensive studies are recommended for establishing the evaluative standards of the attitude test in valid and reliable way.

Keywords: Attitude, selection process, medical students.

Introduction

Attitude is the expression of our internal make up. In Psychology, it is an acquired tendency of human to evaluate certain things in terms of a predefined frameset. As a result, attitude might be characterized as a summary appraisal of a thought object.¹ They go on to say that attitude is a set of inclinations and predispositions that govern an individual's behavior and convince him to do a positive or negative action.

It can be simply defined as an established way of thinking or feeling or behaving about something or someone. Attitudes form as a result of personal experience, observation and influence by social norms.²

Evans discovered a strong link between students' attitudes and achievement at the start and conclusion of an introductory undergraduate college statistics.³

The selection process should have the ability to choose the persons who would be the effective members of the profession and able to meet the need of the society.⁴

If anything does not match with personal desire, it's difficult to maintain the race, causing depression, sometimes which may result in suicide.⁵

Hasan showed that 17.6% medical students had suicidal tendency or attempted suicide at least for once after attending medical school.⁵

However, now is the good time to develop and practice selection tools that could be beneficial enhancement to a holistic selection process that is fair, transparent, and accountable to both candidates and their potential patients.⁶

In our country, it is not known who are the appropriate candidate and who are not. The existing selection system mainly selects students according to their academic qualification by previous records and written (MCQ) test. Oral test or any test related to assessment of attitude is not a component of selection process.

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There are a few studies conducted in our country to identify the problem magnitude of attitude assessment in the selection process of MBBS course. So it was intended to conduct a study about attitude test to describe its importance and the need of incorporation in the selection process.

This study may generate an overview regarding importance of attitude test in the selection process of MBBS course of Bangladesh. It emphasizes that willingness is the principal motivator that prepares the student to take the responsibility of his career and also maintain the activities concerned. Such an opinion finding study would help policy makers, health personnel and other stakeholders in formulating policies and taking necessary actions. It may also help the medical community to find out the proper tool of student selection

Methods

After taking permission from ethical review committee, this descriptive type of cross sectional study was carried out from January 2021 to December 2021, among 107 teachers of 4 government and 4 medical colleges of Bangladesh. Willing teachers were respondent. Convenience sampling technique was adopted. Questionnaire was developed through review of literatures according to present country context. Data were collected by pre tested self-administered structured and semi-structured questionnaire. Data checked, processed and analyzed by using Statistical Package for Social Science (SPSS) computer software version 26. Likert scale was used to measure some responses of respondents. Scores were given to each scale as: strongly agree=5, agree=4, neither agree nor disagree=3, disagree=2, strongly disagree=1. Interpretations were done subsequently.

This article was derived from the thesis “Attitude and aptitude test of students in the selection process of MBBS course in Bangladesh: Stakeholders' views” which was a pre-requisite for MMed final part examination under

Faculty of Basic Science & Para Clinical Science, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

Results

Quantitative results:

Table 1: Distribution of the medical teachers by their teaching experience n=107

Experience of teachers (years)	Frequency (f)	Percent (%)
1-5	56	52.34
6-10	22	20.56
11-15	14	13.08
16-20	9	8.41
21-25	5	4.67
26-30	1	0.93
Total	107	100

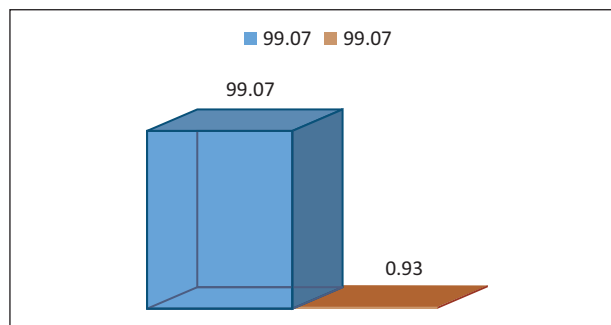


Figure 1: Distribution of the medical teachers as per their views regarding the need of attitude test in the selection process of MBBS course of Bangladesh (n=107)

Table 2: Distribution of medical teachers as per their views regarding the reasons in favour of the need of attitude test in the selection process of MBBS course of Bangladesh (n=106)

If the interested candidates enroll in the MBBS course	Level of agreement with corresponding score					Mean (±SD)
	Number (%)					
	1=SDA	2=DA	3=NAND	4=A	5=SA	
They will enjoy the course	1 (0.94)	2 (1.89)	1 (0.94)	40 (37.74)	62 (58.49)	4.49 (0.78)
They will make good results in the examination	2 (1.89)	3 (2.83)	6 (5.66)	48 (45.28)	47 (44.34)	4.49 (0.85)
Percentage of defaulter/drop out will be less	1 (0.94)	3 (2.83)	5 (4.72)	56 (52.83)	41 (38.68)	4.27 (0.76)
Society will get good physicians	1 (0.94)	1 (0.94)	8 (7.55)	57 (53.77)	39 (36.79)	4.25 (0.71)
There will be a reduction of wastage of time, money and energy	2 (1.89)	0 (0)	7 (6.60)	58 (54.72)	39 (36.79)	4.25 (0.74)
Cause of their eagerness to enroll into this course will be known	2 (1.89)	3 (2.83)	12 (11.32)	59 (55.66)	30 (28.30)	4.25 (0.83)

NB. SDA= Strongly disagree, DA= Disagree, NAND = Neither agree nor disagree, A =Agree, S =Strongly agree.

Table 3: Distribution of medical teachers as per their views regarding causes of their eagerness to enrol in to the MBBS course (n=106)

The candidates enroll in the MBBS course to	Level of agreement with corresponding score Number (%)					Mean (\pm SD)
	1=SDA	2=DA	3=NAND	4=A	5=SA	
Fulfil own dream	2 (1.89)	7 (6.60)	10 (9.43)	52 (49.0)	35 (33.02)	4.06 (0.93)
Fulfill the parents' wishes	2 (0.94)	7 (13.21)	10 (1.89)	53 (50)	36 (33.96)	4.05 (0.99)
Serve the humanity	2 (1.89)	7 (6.60)	24 (22.64)	50 (47.17)	23 (21.70)	4.03 (0.92)
Earn a lot of money	16 (15.09)	20 (18.87)	33 (31.13)	30 (28.30)	7 (6.60)	3.80 (1.16)
Hold a prestigious position	3 (2.83)	3 (2.83)	9 (8.49)	54 (50.94)	37 (34.90)	2.92 (0.89)
Solve the marital purpose	22 (20.75)	27 (25.47)	24 (22.64)	27 (25.47)	6 (5.66)	4.12 (1.22)
Follow the family members and relatives who are doctor	8 (7.55)	27 (25.47)	29 (27.36)	32 (30.19)	10 (9.43)	2.69 (1.11)

SDA= Strongly disagree, DA= Disagree, NAND = Neither agree nor disagree, A=Agree, S=Strongly agree.

Table 4: Distribution of the medical teachers as per their views regarding procedure of attitude test in the selection process of MBBS course of Bangladesh (n=106)

Candidates' attitude can be assessed by	Level of agreement with corresponding score Number (%)					Mean (\pm SD)
	1=SDA	2=DA	3=NAND	4=A	5=SA	
Written test	14 (13.21)	17 (16.03)	118 (16.98)	41 (38.68)	16 (15.09)	3.08 (1.27)
Oral test or Viva	5 (4.72)	11 (10.38)	4 (3.77)	58 (54.72)	28 (26.42)	3.26 (1.07)
Personal statement (Description about source of interest from real life experience)	5 (4.72)	9 (8.49)	20 (18.87)	44 (41.51)	28 (26.42)	3.88 (1.08)

SDA= Strongly disagree, DA= Disagree, NAND = Neither agree nor disagree, A=Agree, S=Strongly agree

Table 5: Distribution of the medical teachers as per their views regarding constraints in the implementation of attitude test in the selection process of MBBS course of Bangladesh n=103

The constraints	Level of agreement with corresponding score Number (%)					Mean (\pm SD)
	1=SDA	2=DA	3=NAND	4=A	5=SA	
Lack of awareness of the stakeholders regarding importance of personal desire of the candidate and his/her psychological fitness	2 (1.94)	2 (1.94)	6 (5.83)	63 (61.17)	30 (29.13)	4.14 (0.77)
Lack of appropriate tool for the test	2 (1.94)	1 (0.97)	4 (3.88)	75 (72.82)	21 (20.39)	4.09 (0.67)
Lack of fairness in the selection process	5 (4.85)	7 (6.80)	13 (12.62)	41 (39.81)	37 (35.92)	3.95 (1.10)
Lack of trained and experienced faculty	5 (4.85)	15 (14.57)	15 (14.57)	49 (47.57)	19 (18.45)	3.58 (1.09)

SDA= Strongly disagree, DA= Disagree, NAND= Neither agree nor disagree, A= Agree, S =Strongly agree

Table 6: Distribution of the medical teachers as per their views regarding possible recommendation to overcome the constraints in the implementation of attitude test in the selection process of MBBS course of Bangladesh (n=103)

The suggestions	Level of agreement with corresponding score					Mean (\pm SD)
	Number (%)					
	1=SDA	2=DA	3=NAND	4=A	5=SA	
Stakeholders should be aware regarding importance of personal desire of the candidate	2 (1.94)	1 (0.97)	5 (4.85)	56(54.37)	39 (37.86)	4.25 (0.76)
Development of appropriate tool for the test	1 (0.97)	2 (1.94)	7 (6.80)	58 (56.31)	35 (33.98)	4.20 (0.76)
Several boards may be set	6 (5.83)	7 (6.80)	15 (14.56)	55 (53.40)	20 (19.41)	3.73 (1.04)
Practical test may be introduced where candidates are exposed to some unfamiliar situation	4 (3.88)	7 (6.80)	19 (18.45)	53 (51.46)	20 (19.41)	3.76 (0.97)
Faculties should be trained about the necessity and the procedure of the test	3 (2.91)	2 (1.94)	7 (6.80)	55 (53.40)	36 (34.95)	4.16 (0.86)

SDA= Strongly disagree, DA= Disagree, NAND= Neither agree nor disagree, A= Agree, S= Strongly agree

Part of quotations from the open-ended part of the self-administered semi-structured questionnaire by teachers

----- Regarding teachers' opinions about the constraints in the implementation of attitude test in the selection process of Bangladesh.

- Lack of interest and initiative of the policy makers for modification of MBBS selection process
- Lack of experienced and trained teachers
- Lack of knowledge about the process or system
- Lack of research and initiative in this field
- Bureaucratic complicacy
- Lack of political commitment
- Nepotism in the selection process specially oral test/viva
- Face to face oral test is a constraint
- Lack of collaboration among different authority of the selection process.

Regarding teachers' suggestions to overcome the constraints in the implementation of attitude test in the selection process of Bangladesh

- There should be proper training and course for the faculties regarding attitude test
- Being free from political influence
- Separate selection committee comprising of appropriate people trained in assessment of attitude
- No members of the selection committee will be permanent, all will be temporary
- Selection system should be impartial
- Decision maker / policy maker should be cordial, student friendly and have the goodwill to improve the selection system

Discussion

All medical doctors start their professional career as a medical student. So, it is important to gain perspective on medical student's thoughts about a standardized admission test. Standardized tests are of particular interest to researchers and policy makers because tests and their scores are often vital components in decision making process.⁷

To make our admission test standardized, whether we needed attitude test or not, was the objective of this study.

Regarding need of attitude test in our selection process of MBBS course 99.07% teachers were agreed. So, it was really justified that before starting a long race of medical education, the candidate must have consent to it. It is well accepted that candidates' personal liking-disliking is the first pre-requisite for choosing a profession. No study found that reveals the necessity of attitude test for MBBS course but a literature review done by Mathew and Thomas showed the nearly thinkings. They worked about the interest of the students for the profession and assessment of the areas of medical aptitude.⁸

Regarding the reasons in favour of the need of attitude test 58.49% teachers strongly agreed that 'they will enjoy the course' and 55.66% teachers agreed regarding the statement 'cause of their eagerness to enroll into this course will be known'. Though no study found regarding the opinion of teachers but there were some study regarding these opinion among students. At the University of Missouri-Columbia School of Medicine, Murden R et al worked among 458 students and evaluated the admission interview data and college academic credentials.⁹ This study showed that personal characteristics like motivation for medicine correlated significantly with the performance that was resulted as internship letter rating ($p=0.0003$). On the other hand, Willoughby et al investigated the prediction of medical school success from selection variables where a correlation was not found for the aspects like attitude with academic achievement.¹⁰

In another study where they found hyperurecaemia was in 52% of patients in non-alcoholic group and 28% of participants in control group. Hyperurecaemia was found significantly more in non-alcoholic fatty liver disease compared to control subjects ($p < 0.05$).

In our study, 52.83% teachers were agreed on 'Percentage of defaulter/drop out will be less'. A study conducted in Bangladesh shows that personal liking and interest is very important to continue and complete the MBBS course duly. It was found that 25% of defaulters and 72.7% of dropouts had no personal liking for medical education.¹¹

Actually it was a vicious cycle of disinterest/disliking, bad score in the exam, defaulters/dropouts, depression, despair and again worse score. The consequences of this events sometimes led to substance abuse, addiction, problematic internet behavior, suicidal ideation or occurrence of suicide. Study done in Bangladesh showed that medical students who came to medical study willingly without any pressure from the family had less tendency to suicide (33.30%).⁵

Regarding the statement 'There will be a reduction of wastage of time, money and energy' 54.72% teachers were agreed. This was very much justified in all regards of the country like Bangladesh. Because the price of wrong choice was non-refundable and made a student totally non-productive for the society and the country. A study done in Khaibar Medical College, Peshawar, Pakistan where among 200 undergraduate medical students a total of 78 (40%) students felt that they had made a wrong career choice.¹²

Regarding causes of the students' eagerness to enroll, among 106 teachers, 49% were agreed about the statement that they want to "fulfil own dream". It was supported by the study done in Khaibar Medical College, Peshwar, Pakistan where among 200 undergraduate medical students a total of 138 (66%) students had chosen the profession to fulfil own dream.¹² But just opposite scenario was found in a study done in the Addis Ababa University, Ethiopia which showed that only 1.2% (7 among 600) supported similar statement 'to fulfil the childhood dream'.¹³

In this study, maximum teachers (50.94%) agreed that they enrol 'To hold a prestigious position'. But Ethiopia's study showed that only 13.3% students supported this.¹³ It also expressed that ideas regarding physician's position in the society among teachers and students had been changing.

To solve the marital purpose- regarding this topic, 27 (25.47%) of teachers were agreed whether another 27 (25.47%) were disagreed. It also reflected that demand of doctor as bride/bridegroom still an important reality of our society. As this mental outlook is solely owned by our culture, no such study is found on this context.

Among 107 teachers, only 1 teacher (0.93%) thought that there was no need of attitude test. Among the reasons, the important one was 'They are not matured enough'.

Actually it was the reality in our context to some extent. Candidates who apply to medical schools are usually in their late teens, and age that is hardly ideal for making sound decision for a life-long commitment to a profession like medicine. In the United States, candidates apply to do medicine only after completing pre-medical college studies. This occurs when applicants are older and a more matured decisions making is likely.¹⁴

Regarding procedure of attitude test, most of the teachers (52.43%) supported for oral or viva test. Though it is highly controversial for its incongruity, inconsistency, subjectivity and threat to impartiality. Regarding this issue Mini Multiple Interview (MMI) was considered a highly authentic assessment that offered a deeper understanding of the applicant than traditional tools, with an immediate relevance to clinical practice.¹⁵ A selection blog says that 'With unlimited opportunities to write, rewrite, and edit your essays, it's possible to submit error-free application materials. On the other hand, it's much more difficult to cover up obvious flaws during a live in-person interview'.¹⁶

Interestingly 44 (41.51%) teachers of our study supported for personal statement as a second choice. To eliminate the fallacy of oral test, it might be a good option to know about the interest of the students. Peskun C et al and Benbassat J et al reported that autobiographical submissions like personal statements were predictive of subsequent performance.^{17,18} However, Oosterveld P and ten Cate O reported that autobiographical submissions have low reliability compared to other common selection instruments.¹⁹

As constraints for the implementation of attitude test, most of the teachers (72.82%) agreed about 'lack of appropriate tool for the test'. Secondly they mentioned about 'lack of awareness regarding importance of personal desire of the candidates'. They also expressed opinion regarding lack of interest, initiative, knowledge and research of teachers as well as policy makers in this field for modification of MBBS selection process.

Among several recommendations to overcome the barriers, development of appropriate tool was the first priority as most of the teachers (56.31%) were agreed about its necessity. Separate selection committee comprising of people trained in assessment of attitude may be a strong step in this regards. Committee must be impartial, free from political influence and no members will be permanent.

Conclusion

Results of this study show that the issue of attitude test has been extremely welcomed by respondents. The study proves that attitude test is an essential need for the medical students as majority teachers agreed about it. Regarding attitude, the study reveals that candidates' interest is directly related with the enjoyment of the course, good result in the examination and finally good physician of the society. It is also inversely related with the failure in the course, defaulters and dropouts.

Recommendation

Society should consider the interest of the students. Hence attitude test should be incorporated in the selection process of Bangladesh for getting motivated and dedicated doctors.

Conflict of interest: None

Ethical Clearance: The research protocol was approved by Institutional Review Board (IRB) of Centre for Medical Education(CME),Dhaka.

Results

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Personality Trait Assessment of Undergraduate Medical Students of Bangladesh and its Relation with Academic Performance

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Abstract

Background: Personality trait refers as the differences regarding expression of feelings, emotions, thinking, and behaviours of different individuals. Different personalities have either a positive or a negative impact on communication skills and on examination results.

Method: A descriptive cross-sectional quantitative study carried out as a thesis work from January 2022 to December 2022 over 540 medical students of all four academic phases of the MBBS course. This particular section of the thesis aimed to determine the personality characteristics of the students and to find out the effect of personality traits and past academic results on medical students' summative examination performance. A self-administered semi structured questionnaire was used for data collection. Multiple liner regression was applied to examine the association between personality trait and past academic results with the examinations' performance.

Result: The study found that the predominant personality trait of this study group was agreeableness followed by openness, less dominant traits were extroversion and conscientiousness but least dominant was neuroticism. There was an association present between five personality characteristics and GPA of SSC and HSC with scores of professional examinations. Most important positive contributing factors were openness, conscientiousness and CGPA but neuroticism and extroversion contributed negatively.

Conclusion: Incorporation of psychometric trait assessment is recommended during MBBS students' selection process in Bangladesh for better performance of medical students in professional examinations and to get doctors with good communication skills.

Keywords: Personality trait, Openness, Agreeableness, Conscientiousness, Neuroticism and Extroversion.

Introduction

Personality traits are individual differences that are stable across time and situations and that explain an individual's

patterns of cognitions, behaviour, and emotions.¹ It is the unique features of every human being; exhibition of characteristic adaptations; unique identifications towards life and a set of cultural differences.^{1,2} There were numerous (4000) personality traits exist. Recently a consensus has emerged among personality psychologists that the numerous personality characteristics measured by different personality inventories can be grouped under five higher-order personality traits: extraversion, agreeableness, conscientiousness, neuroticism (emotional stability) and openness to experience.^{3,4} Extraversion is displayed through a higher degree of sociability; assertiveness, talkativeness, warmth, gregariousness, excitement-seeking and positive emotions. Agreeableness refers to being helpful, cooperative, trust, straightforwardness, altruism, compliance, modesty, tender-mindedness and sympathetic towards others. Conscientiousness is exemplified by being disciplined, organized, competent, order, dutifulness, deliberate and achievement-oriented. Neuroticism refers to degree of emotional stability, anxious, angry, hostile, depressed, self-consciousness, impulsive and degree of vulnerability. Finally, openness is reflected in a strong intellectual curiosity and a preference for novelty, variety, fantasy, aesthetics, feelings, actions, ideas and values as displayed through following figure.^{5,6}

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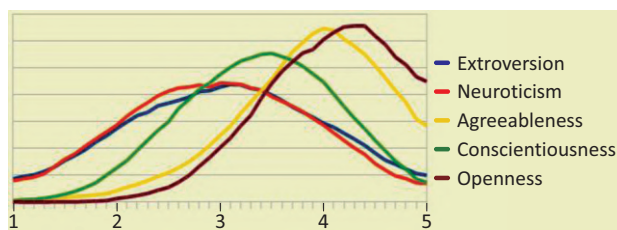


Figure 1: Distribution of peoples' trait scores

The distribution of peoples' trait scores (Source: personality-testing.info/testes/BIG5.php) showed (Figure 1) that among the big five personality traits the distributions of extroversion, neuroticism and conscientiousness is almost symmetrically distributed in general population except agreeableness and openness which are skewed to the left.

The Big Five framework of personality traits³ has emerged as a model for understanding the relationship between personality and different academic attitudes.⁷ Also, there are evidences that personality traits are intricately tied with individual differences of learning styles and academics. It is recommended that educators go beyond the current emphasis on cognition and include these variables in understanding of academic behaviour.⁶

Personality is likely to play a significant role in influencing academic achievement. The quality of students' thoughts is critical to learn and could potentially determine their academic achievement.⁸ Among big five personality traits students who bear neurotic and extroverted traits are worse in academic performance, prone to be unhappy in social relationships, and have an unrealistic self-awareness regarding their capabilities and limitations.⁹

It is known that personality refers as the differences regarding expression of feelings, emotions, thinking, and behaviours of different individuals. Different personalities have either a positive or a negative impact on communication skills.¹⁰ Besides cognitive abilities, personality characteristics are necessary for medical students to be successful in studies and eventually in the medical profession.¹¹⁻¹³ Personality assessment of medical students showed bi-dimensional interpersonal dynamics because extroversion and agreeableness had high score among big five traits. Conscientiousness personality significantly predicts final scores in assessments and had an impact on examination results. This phenomenon helps

the doctors to collaborate and communicate in professional life.⁵ But there is still debate about which personality traits do medical students possess as compared to students in other academic majors¹¹⁻¹³ and it is found that personality traits are remarkably related to high performance in profession and study, both logically and statistically.¹⁴

Students differ in their learning styles and generally do well in the environment that fit their personality types. There are many studies that attempted to develop personality profiles of medical students either at the beginning or during the course.¹⁵ In recent decades there have seen growing bodies of research reveal that showed personality is important for learning and academic performance^{5,16} In studying medicine, there is increasing recognition of the importance of non-cognitive factors, including personality for performance in medical school and more broadly for good medical practice.^{17,18}

The present study was conducted to determine different personality characteristics of medical students of Bangladesh and its correlation with their academic performance. Thus, teaching and learning methods can be adopted to produce excellent academic achievements considering the students personality trait pattern.

Method

This article representing a small section of a thesis work that was conducted for partial fulfilment of 'Masters in Medical Education (MMed)' degree under 'Faculty of Basic and Paraclinical Science' of 'Bangabandhu Sheikh Mujib Medical University (BSMMU)'.¹⁹ This was a descriptive cross-sectional quantitative study; it was carried out from January 2022 to December 2022. A total 12 medical colleges having both government and non-government ownership were purposively selected from capital city Dhaka and outside of Dhaka. Of the medical colleges, 540 medical students (willing to participate) of all four phases of MBBS course were enrolled in this study; foreign students were excluded from the study. A self-administered semi structured questionnaire was used for collection of data to determine the students' personality traits, past and present academic records. This article presenting the major personality traits of the students and association between the personality traits and past academic results with summative examinations performance.

Result

Total respondents were 540 among them 217, 114, 102 and 107 were from first, second, third and fourth phases respectively. The response rate was about 70 percent.

Table 1: Distribution of the medical students' personality traits in percentage**

Statistics	Personality traits				
	Consci.	Open.	Extro.	Agree.	Neuro.
Frequency (%) of response	379 (70.1)	378 (70.0)	379 (70.1)	379 (70.1)	379 (70.1)
Mean	73.93	77.65	71.07	81.11	64.60
Median	72.00	76.00	72.00	80.00	64.00
Mode	80.00	80.00	80.00	80.00	64.00
Std. Deviation	11.8020	14.1108	13.8313	12.7224	15.5335
Skewness	-0.224	-0.537	-0.306	-0.554	-0.139
Std. Error of Skewness	0.125	0.125	0.125	0.125	0.125
Kurtosis	0.224	0.739	0.160	0.299	-0.219
Std. Error of Kurtosis	0.250	0.250	0.250	0.250	0.250
Minimum	36.00	20.00	20.00	32.00	20.00
Maximum	100.00	100.00	100.00	100.00	100.00

Consci. = Conscientiousness, *Open.* = Openness, *Extro.* = Extroversion, *Agree.* = Agreeableness and *Neuro.* = Neuroticism **Multiple responses

This multiple response table (Table 1) shows the distribution of the medical students by their percentage of personality traits. Here Mean (\pm SD) of conscientiousness, openness, extroversion, agreeableness and neuroticism are 73.93(\pm 11.8020), 77.65(\pm 14.1108), 71.07 (\pm 13.8313), 81.11 (\pm 12.7224) and 64.60 (\pm 15.5335) respectively. The median, skewness, minimum and maximum of the above data set inferred the big five personality traits of the observation were skewed to left.

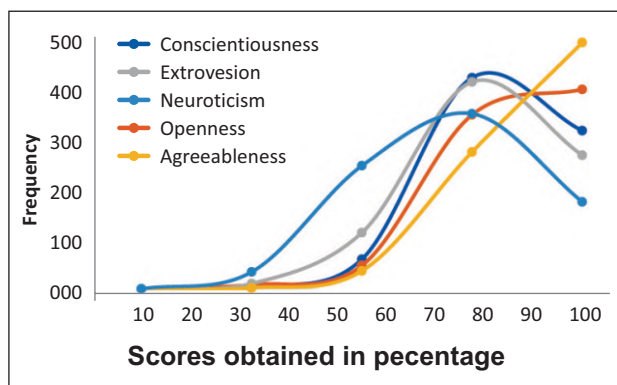


Figure 2: Distribution of the respondents by their obtained scores of different personalities expressed in percentages (n = 540)

The line chart (Figure 2) shows the frequency distribution of the different categories of personalities in percentage of medical students. It was found that all the distributions are highly skewed to the left and the higher values were from 70 to 100 except neuroticism where many values lies below 70% and the highest value was agreeableness.

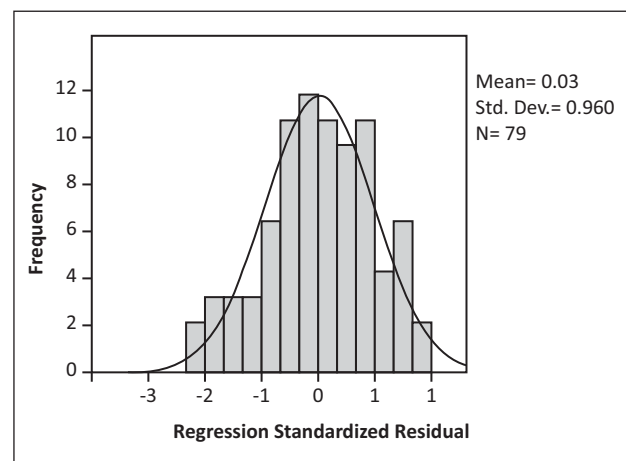


Figure 3a: Normal probability plot of standardized residuals

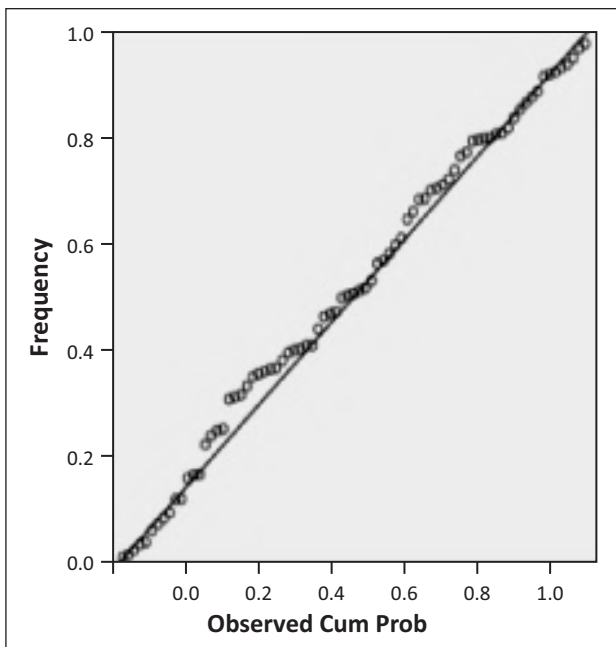


Figure 3b: Normal P-P plot of regression standardized residual

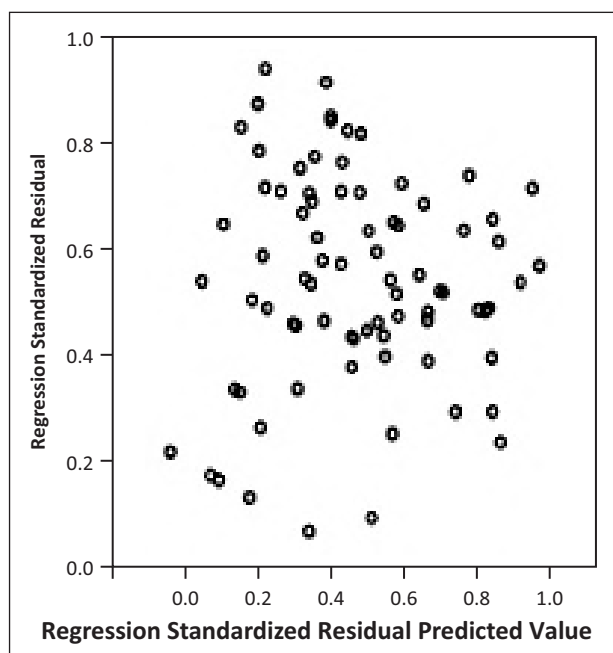


Figure 3c: Scatter plot of standardized residuals against standardized predicted values

In this diagram (Figure 3a, 3b & 3c) multiple linear regression was used to assess the ability of six independent variables (CGPA of 40% of SSC and 60% HSC, five big personality traits of the students: Conscientiousness, openness, extroversion, agreeableness and neuroticism) to predict academic performance (Mean scores of professional examinations). Preliminary normal probability plots of standardized residuals (Figure 3a & 3b) as well as the scatter plot of standardized residuals against standardized predicted values (Figure 3c) indicated that the assumptions of normality, linearity and homoscedasticity of residuals are well met.

Table 2. a: Correlation between dependent and independent variables

	Pearson correlation coefficient						
	Prof.	CGPA	Consci.	Open.	Extro.	Agree.	Neuro.
Prof. (n=81)	1.000	0.118	0.231	0.380	0.065	0.169	-0.080
CGPA (n=344)	0.118	1.000	-0.140	0.038	-0.025	-0.245	-0.039
Consci. (n=376)	0.231	-0.140	1.000	0.274	0.591	0.306	-0.273
Open. (n=375)	0.380	0.038	0.274	1.000	0.057	0.308	0.007
Extro. (n=376)	0.065	-0.025	0.591	0.057	1.000	0.307	-0.200
Agree. (n=376)	0.169	-0.245	0.306	0.308	0.307	1.000	-0.208
Neuro. (n=376)	-0.080	-0.039	-0.273	0.007	-0.200	-0.208	1.000

Prof.= Mean scores of professional examinations, **CGPA**= 40% of SSC and 60% of HSC, **Consci.**= Conscientiousness, **Open.**= Openness, **Extro.**= Extroversion, **Agree.**= Agreeableness and **Neuro.**= Neuroticism

This table (Table 2. a) shows the maximum Pearson correlation coefficient between the Extroversion and Conscientiousness 0.591 which is less than 0.7. So, these analyses ensured that there was no violation of the assumptions of multicollinearity.

Table 2b: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.432	0.186	0.119	5.53715

Table 2 c: ANOVA

	Sum of Squares	df	Mean Square	F	p value
Regression	505.481	6	84.247	2.748	0.018
Residual	2207.519	72	30.660		
Total	2712.999	78			

Independent variable: CGPA of 40% of SSC and 60% HSC, five big personality traits of the students: Conscientiousness, openness, extroversion, agreeableness and neuroticism.

Dependent Variable: Academic performance = Mean scores of professional examinations. These tables (Table 2.b and 2.c) show; combined effects of the overall the model, the six independent variable (CGPA of 40% of SSC and 60 % HSC, five big personality traits of the students: Conscientiousness, openness, extroversion, agreeableness and neuroticism) to predict dependent variable (academic performance= Mean scores of professional examinations) accounted for 11.9% of the variability in academic performance, ($R^2 = 0.186$, adjusted $R^2 = 0.119$). This finding was statistically significant ($F = 2.748$, $df = 6$ and $P = 0.018$).

Table 2d: Relation of CGPA, five big personality traits of the students with academic performance of professional examinations

	Unstandardized coefficients		Standardized coefficients	t	P value
	Beta (β)	Std. Error	Beta (β)		
Constant	23.661	26.756		0.884	0.379
CGPA (40% of SSC and 60% HSC)	0.628	0.480	0.148	1.310	0.194
Conscientiousness	0.460	0.346	0.191	1.329	0.188
Openness	0.572	0.223	0.304	2.562	0.013
Extroversion	-0.179	0.271	-0.090	-0.658	0.513
Agreeableness	0.172	0.284	0.075	0.605	0.547
Neuroticism	-0.045	0.193	-0.026	-0.233	0.817

This table (Table 2. d) shows in the model, out of the six independent variables to predict the dependent variable the academic performance extroversion ($\beta = -0.179$) and neuroticism ($\beta = -0.045$) contribute negatively. On the other hand; CGPA ($\beta = 0.628$), conscientiousness ($\beta = 0.460$), openness ($\beta = 0.572$) and agreeableness ($\beta = 0.172$) contribute positively to academic performance. But from this table it is found CGPA contributes highest [one unit increase of CGPA increases 62.8% of marks in professional examinations ($p = 0.194$)] to academic performance and among the personality traits openness contributes highest [one unit increase of openness increases 57.2% of marks in professional examinations ($P = 0.013$)] to academic performance.

Discussion

Analysing the mean and median (Table 1) it was observed that predominant personality trait of our students was agreeableness then openness, conscientiousness, extroversion and the least dominant personality trait was neuroticism. Almost similar findings were also observed by Al Naim et al.¹⁵ where about half of the participants had agreeable personality followed by openness, conscientiousness, neuroticism and a very minimum participant were belonged to extroversion personality trait. Another study revealed the most dominant personality trait was openness followed by conscientiousness extroversion

agreeableness and the least dominant was neuroticism.²⁰ Finding of a study conducted over 785 medical students showed highest score on extroversion and agreeableness.⁵ Medical students' high scores on extroversion and agreeableness might be beneficial for doctors' future professional practice^{21,22} including team work, interpersonal dynamics, high level of orientation towards people and to become practitioners in particular specialty.²³ Students' high score on conscientiousness are more likely to succeed in study, conscientiousness was the only dimension that had a significant regression weight than other traits and had higher scores for success.⁵

Among the big five personality traits the distributions of extroversion's, neuroticism and conscientiousness is almost symmetrically distributed in general population except agreeableness and openness which are skewed to the left (Figure 1). The frequency distribution of all five personalities of our students showed the distributions are highly skewed to the left. The higher values are from 70 to 100 in all personality trait except neuroticism, there were many values lies below 70% and the highest value is agreeableness (Figure 2). This finding indicates distribution of personality trait were better in medical students than general population. It should be mentioned that less dominant neurotic personality trait indicates; medical students are self-aware, good in academics, socially happy, felt less stress in their daily life. Students who bear neurotic and extroverted personality are worse in academic performance, prone to unhappy in social relationships, and having an unrealistic self-awareness regarding their capabilities and limitation.⁹

A model (Table 2.b and 2.c) was developed with six independent variables CGPA, five big personality traits of the students: (Conscientiousness, openness, extroversion, agreeableness and neuroticism) to predict the dependent variable (academic performance = Mean scores of professional examinations) and it was found that 11.9% variability of academic performance is accountable to the six independent variables and this finding was statistically significant ($P = 0.018$). The Big Five traits explained 15% of the variance in GPA with neuroticism, openness, agreeableness and conscientiousness emerging as significant predictors [$F(5, 252) = 8.56, (p < .001)$].⁸ In similar study significant, positive correlation was observed between conscientiousness and anatomy examination performance ($R = 0.24, P = 0.03$) but non-significant relationships were found between anatomy examination performance and the other four personality domains.²⁴

Of the model (Table 2.d) to predict the academic performance the beta coefficient of extroversion (-0.179) and neuroticism (-0.045) contribute negatively. On the other hand, the beta coefficient of CGPA (0.14), conscientiousness (0.460), openness (0.572) and agreeableness (0.172) contribute positively to academic performance. Among the positive contributors; contribution of openness was only significant ($P = 0.013$) to academic performance (Table 2.d). Medical students showed mixed pattern of personality traits. It was found earlier that the conscientiousness domain has significant influence or well-established predictor of performance in academic settings.^{20,24} Studies also revealed that there was significant correlation observed between GPA and following traits: openness, conscientiousness and extraversion.²⁰

Present study finding suggests (Table 2.d) openness has strong and significant ($p = 0.013$) contribution to academic performance but conscientiousness has strong but insignificant contribution to academic performance. Multiple linear regression analysis showed that openness and conscientiousness personalities were positively associated

with academic performance.²¹ Conscientiousness was positively, significantly and strongly associated to predict GPA. and appears to facilitate a variety of effective learning strategies and may be a special trait for attaining high levels of academic achievement than those are careless and do not study systematically. Beside this both agreeableness and openness were positively associated with GPA. This suggests that, besides being conscientious, students may also get benefit from cooperativeness and intellectual curiosity.⁸

The findings regarding personality trait denote neurotics are anxious, tensed, not confident, having low esteem, uneasy in communication and unaware about events. The extroverted personality usually does not concentrate on study properly and they are free reiner. On the other hand, those who are conscientious, open and agreeable they are confident, well alert, self-aware regarding their activities as well as their study. Personality assessment may be a useful tool for medical student for guidance and counselling.⁵

Conclusion

The most predominant personality trait of the medical students in this study was agreeableness then openness, extroversion, conscientiousness and neuroticism. Most important positive contributing factors were openness, conscientiousness and CGPA (GPA of 40% of SSC and 60% of HSC) but neuroticism and extroversion contributed negatively the scores of professional examinations. So, we can recommend that the policy maker can incorporate the psychometric trait assessment during MBBS students' selection process in Bangladesh.

Conflict of interest: Nil

Ethical clearance: Taken from IRB, CME taken.

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Determinants of Suicide Risk in Medical Students of Bangladesh

Ahmed Z,¹ Sarkar AA²

Abstract

Background: Research has demonstrated higher suicide risk in medical students that not only threatens their quality of life but also threatens the quality of care received by the patients. There are well-documented factors that are inherent in today's medical environment which contributes to this poor mental health outcome. The objectives of the study were to estimate the prevalence of at-risk suicide condition and find out the determinants of suicide risk in medical students.

Methods: A cross-sectional study was conducted in students of one government and one non-government medical college hospitals and a total of 405 students studying from first year to fifth year were conveniently enrolled for this study. A semi-structured sociodemographic and other relevant information questionnaire, Depression Anxiety Stress Scale 21 (DASS-21), Ask Suicide-Screening Questions (ASQ) Bangla versions were used to collect data.

Of the 405 medical students, 14.6% were screened positive for suicide risk. Results of binary logistic regression analysis showed increasing study hour (OR=1.18, p=0.002), presence of physical illness (OR=2.96, p=0.007), presence of mental illness (OR=17.20, p=0.002), screened as depression in DASS-21 tool (OR=11.75, p=0.000) and regular smoking (OR=29.29, p=0.000) increased the probability of at-risk suicide. On the other hand, self-reported satisfactory (OR=0.20, p=0.028) and good (OR=0.19, p=0.028) English language skill was found to be associated with lower risk.

Keywords: Medical students, suicide, Bangladesh

Introduction

Suicide is the act of intentionally ending one's own life and suicidal behaviors include suicide ideation, suicide plan and suicide attempt.¹ Individual involved in such behavior is said to have at least some intent to die in contrast to self-injurious behavior in which the individual has no intent to die.¹ These behaviors are an enormous public health problem throughout the world and the World Health Organization estimates 80% of suicides occurs in low-and-middle income countries.² Suicide is also the second leading cause of death in adolescents and young adults.³ A nationwide survey conducted in Bangladesh in 2019 revealed 4.7% of adolescent and youth population had suicide thought and 1.5% had suicidal plans and attempted suicide at least once.⁴ Medical students, who are the future physicians and have a distinct role in managing the health and well-being of the citizens have demonstrated higher prevalence of mental illnesses and suicide risk than general population. For instance, one study from Bangladesh reported presence of suicidal tendency in 18.8% students; among them 14.3% had thoughts of killing themselves but they would not carry them out, 3% would like to kill themselves and 1.5% would kill themselves if they had the chance.⁵

Rotenstein et al.⁶ reviewed some of the evidence and outlined several risk factors behind the elevated risk. They pointed to the intense academic and clinical workload, exposure to death and suffering, increase likelihood of developing mental health issues, stress, highly competitive and perfectionistic culture within medical training programs, structure of medical education and training, lack of autonomy and control over one's schedule and workload during medical training, stigma surrounding mental health and limited access to mental health resources as potential contributors to elevated suicide risk. As suicide is a complex phenomenon with a number of biological, psychological and social factors contributing to elevated risk, we intended to conduct this study to estimate the prevalence of at-risk suicide condition and determine factors that could be associated with elevated risk in Bangladeshi medical students.

Methods

It was a cross-sectional study, conducted in 2022 among the students of one government and one non-government medical college hospitals of Dhaka city. Prior to the study, ethical approval was taken from Institutional Review Board (IRB) and all relevant ethical issues were considered throughout the study. Medical students studying from first year to fifth year, who were Bangladeshi and who had no severe physical or mental illness were conveniently enrolled in this study. A total of 405 students were thus enrolled for this study.

A semi-structured sociodemographic and other relevant information questionnaire, Depression Anxiety Stress Scale 21 (DASS-21) [7], [8] Ask Suicide-Screening Questions (ASQ) [9] Bangla versions were used to collect data. In DASS-21 scale the cut off points for depression, anxiety

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and stress used were 21, 15 and 26 respectively [10]. The ASQ is a four-item screening to assess the suicide risk of an individual and ‘Yes’ answer in any of the four questions indicate suicide risk. The tool has a sensitivity of 96.9%, specificity of 87.6% and is in extensive use in American and British health services. Data were collected by face-to-face interview by paper and pencil method and self-report method was used. Following recording the data was encoded and analyzed using SPSS 28.0.

Results

Of the total 405 students, 203 (50.1%) were from the government medical college and 202 (49.9%) from the non-government medical college MBBS course Bangladesh medical system consists of five academic years and we recruited 20% from each year (batch). Mean age of the students was 21.7±2 years and male female ratio was near equal. We found that, 2.5% of the student had diagnosed mental illnesses and 4% were smokers. Table 1 shows the demographic characteristics of the students.

Table 1: Characteristics of medical students (N= 405)

Variable	Government	Non-government	Total
Academic year			
First	40 (9.9)	41 (10.1)	81 (20)
Second	40 (9.9)	41 (10.1)	81 (20)
Third	41 (10.1)	40 (9.9)	81 (20)
Fourth	41 (10.1)	40 (9.9)	81 (20)
Fifth	41 (10.1)	40 (9.9)	81 (20)
Gender			
Male	93 (23)	101 (24.9)	194 (47.9)
Female	110 (27.2)	101 (24.9)	211 (52.1)
Family type			
Nuclear	170 (42)	174 (43)	344 (84.9)
Extended	33 (8.1)	28 (6.9)	61 (15.1)
Residence			
Urban	136 (33.6)	186 (45.9)	322 (79.5)
Rural	49 (12.1)	2 (0.5)	51 (12.6)
Semi-urban	18 (4.4)	14 (3.5)	32 (7.9)
Religion			
Islam	188 (46.4)	181 (44.7)	369 (91.1)
Sanaton	15 (3.7)	21 (5.2)	36 (8.9)
Overall	203 (50.1)	202 (49.9)	405 (100)

Cell values are expressed as frequency (percentage)

In DASS-21, using the cut off points, 108 (27.7%) students showed depression, 136 (33.6%) showed anxiety, 92 (22.7%) showed stress and in ASQ tool, 59 (14.6%) were screened positive for suicide risk. Table 2 shows the results of binary logistic regression analysis for predicted

probability of at-risk of suicide among medical students. Our model correctly predicted the probability of suicide risk in 87.4% cases. Increasing study hour (OR=1.18, p=0.002), presence of physical illness (OR=2.96, p=0.007), presence of mental illness (OR=17.20, p=0.002), screened as depression in DASS-21 tool (OR=11.75, p=0.000) and regular smoking (OR=29.29, p=0.000) increased the probability of at-risk suicide. On the other hand, satisfactory (OR=0.20, p=0.028) and good (OR=0.19, p=0.028) English language skill was found to be associated with lower risk.

Table 2: Binary logistic regression showing predicted probability of suicide risk in medical students (N=405)

Variable	Level	At risk of suicide		
		B	OR (95% CI)	p value
College	Government	-0.174	0.84 (0.41-1.68)	0.624
	Non-government	Ref.		
Academic year	First	-1.258	0.28 (0.07-1.03)	0.056
	Second	-0.018	0.98 (0.36-2.67)	0.971
	Third	0.368	1.44 (0.54-3.84)	0.460
	Fourth	0.307	1.35 (0.50-3.63)	0.540
	Fifth	Ref.		
Gender	Male	-0.320	0.72 (0.35-1.48)	0.382
	Female	Ref.		
Residence	Urban	-0.873	0.41 (0.14-1.18)	0.101
	Rural	Ref.		
Family income		0.001	1 (0.99-1.00)	0.726
Study hour		0.171	1.18 (1.06-1.32)	0.002
Semester loss	Yes	-1.06	0.34 (0.07-1.50)	0.157
	No	Ref.		
English skill	Very good	-0.865	0.42 (0.07-2.54)	0.346
	Good	-1.623	0.19 (0.04-0.84)	
	Satisfactory	-1.597	0.20 (0.04-0.84)	
Desire for medical study	Poor	Ref.		0.866
	Own	0.065	1.06 (0.49-2.28)	
Presence of physical illness	Yes	1.08	2.96 (1.35-6.48)	0.007
	No	Ref.		
Presence of mental illness	Yes	2.84	17.20 (2.72-108.5)	0.002
	No	Ref.		
DASS-21 depression	Yes	2.46	11.75 (5.44-25.37)	0.000
	No	Ref.		
DASS-21 anxiety	Yes	-0.743	3.14 (0.20-1.08)	0.076
	No	Ref.		
DASS-21 stress	Yes	2.32	1.95 (0.82-4.60)	0.127
	No	Ref.		
Smoking	Yes	3.37	29.29 (7.70-111.3)	0.000
	No	Ref.		

B-Regression coefficient, OR-Odds ratio, CI-Confidence interval, DASS-21- Depression Anxiety Stress Scale 21

Discussion

It was found that using ASQ tool, 14.6% of the students were screened positive for suicide risk. Previously, a systematic review analyzed suicidal ideation prevalence data from 24 cross-sectional studies of 15 countries and published overall pooled crude prevalence of suicidal ideation as 11.1% (95% CI, 9.0% to 13.7%) in medical students [6]. In this study, presence of physical illness, mental illness, depression and smoking habit predicted increased risk of suicide in students. The correlation between physical health and suicide risk is not clear-cut, as research has produced varying results. A study conducted in multiple states in the US found that several physical health conditions, including back pain, traumatic brain injury, cancer, congestive heart failure, chronic obstructive pulmonary disease (COPD), HIV/AIDS, migraine, renal disease and sleep disorders, were linked to a higher risk of suicide.¹ Additionally, the study found that individuals with multiple health conditions were twice as likely to die by suicide. Moreover, majority of suicides are associated with mental health disorders, particularly depression, substance abuse disorders and psychosis, which are the most significant risk factors.¹² In certain cases, anxiety, personality disorders, eating disorders, trauma-related disorders and organic mental disorders also play a role in contributing to suicide risk.¹² Unfortunately, data for specific physical or mental illness diagnosis were not collected so, couldn't correlate with previous findings.

Major depressive disorder (MDD) has strong link with suicidal behavior and it is reported to be present in up to 87% cases of completed suicide.¹³ Additionally, 53% of the patients with MDD showed suicidal ideation and 31% attempted suicide.¹⁴ Likewise, we observed strong link between depression and suicide in students. Relation between depression and suicide risk is complex. Genetic vulnerability, epigenetic modulation, abnormality of hypothalamic-pituitary-adrenal axis, serotonin dysfunction, lower levels of brain-derived neurotrophic factor, imbalance between proinflammatory cytokines and tumor necrosis factor-alpha versus anti-inflammatory cytokines, dysregulated lipid metabolism, temperament, character and personality of the depressed individual are some of the factors previously outlined for explaining suicide in depressed individuals.¹⁵ Suicidal behaviors are also more common among current smokers and the prevalence of smoking habits is higher among suicidal individuals. Smoking is considered part of a pattern of problematic behavior that is linked to various psychopathological disturbances including mental illness, substance abuse, sexual and physical abuse which are considered as major risk factors for suicide.¹⁶

Mateus et al.¹⁷ reported those students who have emotional instability in 16PF personality test are likely to spend more time on study and also have sleep problems. Emotional instability and sleep problems are also associated with suicide risk. Hence, we have seen the relation between

study hour and suicide risk. Finally, students who self-reported satisfactory and good English language skill showed lower suicide risk than poor language skill students. Having a good English language skill is essential in Bangladesh as majority students have to adapt from Bangla medium of education to English medium in MBBS curriculum. Proficiency in English could reduce academic stress in students. However, self-reported very good English language skill students didn't show reduced risk.

There were also some findings which were not in line with previous assumption. Some studies have reported that male adolescents are at higher risk of completed suicide while female adolescents are more prone to suicide attempts and additionally, female adolescents are more likely to experience suicidal ideation and thoughts compared to their male counterparts.¹⁸ Also, rates of depression are higher in female medical students.¹⁹ Any significant difference in suicide risk between male and female students was not found in this study. Regarding psychopathology and its relation with academic year, findings are not conclusive. Few studies reported first year being the hardest one.²⁰ while other studies reported third and fourth years.¹⁹ We failed to find any significant difference in suicide risk across academic years of the students. Again, semester loss brings academic stress which in turn is a well-known risk of depression and suicidal ideation. But we didn't see any relation with semester loss of the student and suicide risk. Probable explanation could be as many students undergo academic year loss; students don't feel isolated.

We observed, two mental health conditions, anxiety and stress weren't associated with elevated risk. One notable study by Sareen et al.²¹ investigated the association between various anxiety disorders and suicidal ideation and attempts in a nationally representative sample. The study found that anxiety disorders alone did not significantly predict suicidal ideation or attempts when controlling for other comorbid psychiatric disorders. Similarly, a meta-analysis by Franklin et al.²² examining risk factors for suicide found that psychiatric disorders, including major depression and substance abuse, were the most common factors associated with suicide. While stress may contribute to the onset or exacerbation of these psychiatric conditions, it does not directly increase suicide risk. Stress-Diathesis Model suggests that suicidal behavior results from an interaction between underlying vulnerabilities (diathesis) and precipitating factors such as stressful life events.²³ This model highlights the importance of individual vulnerability factors such as genetic predispositions, personality traits and biological factors, etc. Stressful life events may serve as triggers for suicidal behavior in individuals already predisposed to suicidal thoughts and tendencies. One possible explanation could be many students weren't vulnerable, so stress was not found to be associated with increasing risk.

This study had some limitations; long-term studies are better suited for identifying causal relationships, whereas this particular study's cross-sectional design may restrict the ability to establish causality between sociodemographic and lifestyle factors with mental health conditions. The study relied on self-reported data, which is subject to self-desirability, response and memory biases. As medical students were selected only from Dhaka city, the results might not be generalizable for other population. Additionally, it was challenging to find comparable studies with similar designs and tools for comparison from Bangladesh context.

Conclusion

Any significant difference in suicide risk between male and female students was not found in this study. Regarding psychopathology and its relation with academic year, findings are not conclusive. We failed to find any significant difference in suicide risk across academic years of the students. Again, semester loss brings academic stress which in turn is a well-known risk of depression and suicidal ideation. But we didn't see any relation with semester loss of the student and suicide risk.

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Self-report of Mental Health Issues Amongst 3rd Year and 5th Year Medical Students of Dhaka Medical College

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Abstract

Objective: To determine the prevalence of the subjective presence of mental illness in undergraduate medical students and the sources of their stress.

Methods: A cross-sectional study was done among third and fifth-year medical students of Dhaka Medical College. Students reported their mental health conditions in questionnaires.

Results: A total of 252 students were evaluated and their mean age was 22.6±1.12 years. Among the studied population females were predominant 146(57.9%). Most of the studied students 191(75.8%) reported having some sort of psychological problem. The physical health of the students was average in the majority of the cases 194(77.0%), most of the students were suffering from anxiety 135(53.6%), then depression 123(48.8%), and phone addiction was found in 107(42.5%) cases. Depression was more (50.4%) in 3rd-year students in comparison to 5th-year students (47.0%). On the contrary, anxiety was more among 5th-year students (56.5%). No significant association of mental health problem with sociodemographic parameters was found. The mental health problems significantly affected daily activities, relationships with others and their dietary habits. Previously diagnosed with mental disorders and positive family history of mental disorders were significantly higher in those who had psychological problems (p-value 0.037 & 0.011 respectively). No significant association of mental health problems with electronic devices was found.

Conclusion: A significant number of students 75.8% reported having at least mild mental illness. The major types of psychological problems found were anxiety, depression, and phone addiction. Thus indispensable ongoing support programs are needed for the special needs of medical students.

Keywords: Medical students, mental health conditions, self-evaluation,

Introduction

Medical education curricula are designed to graduate knowledgeable, skillful, professional, and competent doctors. The intensive medical curriculum may threaten students' mental health. Different studies have shown that psychological distress in medical students is higher when compared to the general population.¹ A meta-analysis has shown that nearly one-third of medical students (27%) reported depressive symptoms or depression.² Another study found increased rates of anxiety and depression in both medical school and upon graduating from medical school and symptoms were found highest in the 3rd year of

medical school.³ Some degree of stress is a normal part of medical education and medical students experience substantial stress from the beginning of their study process.⁴ The sources of stress for medical students vary by year in training. Researchers differ in their opinion in which course of studying medicine the stress is highest.⁴

Potential causes of students' distress are adjustment to the medical school environment, ethical conflicts, exposure to death and human suffering, personal life events, student abuse, and educational debt.⁵ As a result, medical students suffer from poor academic performance, academic dishonesty, cynicism, substance abuse, and serious mental illnesses like depression, anxiety, and burnout.⁶ Different medical students receive the same stressors in different ways depending on their personalities, motivations, experiences, coping skills, and years of education.⁷ Studies have shown that the poor health-related quality of life among medical students is contributed mainly by the mental component.⁸ If we consider that stress in medical school may be a risk factor for depression and depression is linked to substance abuse, suicide, and impaired professional function, further evaluation is required to assess the full spectrum of mental conditions of students in medical school. This may assist in the prediction of future dysfunction and suffering.

Different methods were used to evaluate mental illness in medical school students in different studies; some used surveys to evaluate perceived mental illness, while others used student interviews.³

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There is a lack of information about stresses among medical students of Bangladesh. For reducing stress and preventing future psychological problems, identification of the stressors and patterns of mental health problems is important. This study was conducted to determine the prevalence of mental illness among medical students in Bangladesh and the sources of their stress.

Methods

This was a descriptive cross-sectional study. The study was done from December 2020 to February 2021 at Dhaka Medical College, Dhaka. All the 3rd year and 5th year medical students, who were willing to participate, were included in the study. Students who were not available during the data collection period were excluded from the study.

Students were asked to complete a specially designed anonymous self-administered questionnaire. The questionnaire contains questions about self-rated psychological distress as well as items on demographic variables including age, gender, marital status, family, and previous history of mental illness. It also contains questions about their leisure activity, and electronic device uses. A total of 252 medical students were involved in this study. The same questionnaire was used for both groups. The questionnaire was distributed during late part of the lecture classes with the permission of the subject teacher. All participants were ensured of confidentiality and oral consent was taken. They only mention the study year not the name and roll number. Descriptive statistics were used to present the demographic data. The Student's t-test and Chi-square test were used for comparison. Logistic regression analysis was performed to assess the association of mental health problems with different parameters. For analysis, (SPSS version 26) was used.

Results

Table 1: Age distribution of the students (n=252)

Batch	Frequency	Percentage (%)	Age (year) Mean±SD
Third year	137	54.4	21.8±0.84
Fifth year	115	45.6	23.49±0.61
Total	252	100.0	22.6±1.12

The mean age of the studied students was 22.6±1.12 years (table-1).

Table 2: Gender distribution of the study respondents (n=252)

Gender	Batch		Total (n=252)
	Third year (n=137)	Fifth year (n=115)	
Male	61 (44.5%)	45 (39.1%)	106 (42.1%)
Female	76 (55.5%)	70 (60.9%)	146 (57.9%)
Total	137 (100.0%)	115 (100.0%)	252 (100.0%)

Among the students female were predominant 146 (57.9%) (Table 2).

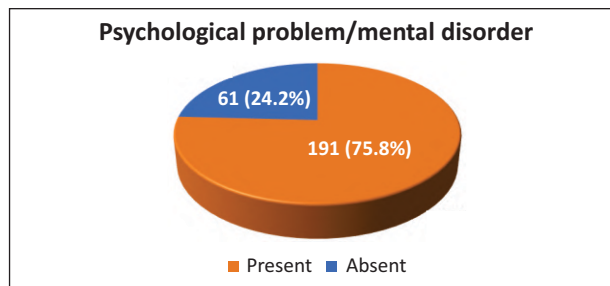


Figure 1: The incidence of mental disorders among the respondents Among the studied students, most of them 191 (75.8%) reported having some mental disorder (Figure 1).

Table 3: Distribution of the study respondents by physical health status (n=252)

Physical health	Group		Total (n=252)
	Third year (n=137)	Fifth year (n=115)	
Excellent	22(16.1%)	19(16.5%)	41 (16.3%)
Average	107(78.1%)	87(75.7%)	194 (77.0%)
Poor	8(5.8%)	9(7.8%)	17 (6.7%)
Total	137(100.0%)	115(100.0%)	252 (100.0%)

The physical health of the students was average in most of the cases 194(77.0%), excellent 41(16.3%) cases, and 17(6.7%) had poor physical health.

Table 4: Distribution of the study respondents by different types of psychological problem (n=252)

Types of psychological problem	Group		Total (n=252)
	Third year (n=137)	Fifth year (n=115)	
Depression	69(50.4%)	54(47.0%)	123(48.8%)
Anxiety	70(51.1%)	65(56.5%)	135(53.6%)
Panic attack	33(24.1%)	22(19.1%)	55(21.8%)
Phone addiction	61(44.5%)	46(40.0%)	107(42.5%)
Inferiorit complex	61(44.5%)	37(32.2%)	98(38.9%)
Illusion	10(7.3%)	1(0.9%)	11(4.4%)
Others	10(8.3%)	6(5.2%)	16(6.3%)

Most of the students were suffering from anxiety 135(53.6%), then depression 123(48.8%) and phone addiction was found in 107(42.5%) cases (Table 4).

Depression was more (50.4%) in 3rd year students in comparison to 5th year students (47.0%).On the contrary, anxiety was more among 5th year students (56.5%) (Table-4).

Table 5: Association of mental health problems with sociodemographic parameters (n=252)

Variables	Psychological problem		p value
	Present (n=191)	Absent (n=61)	
Batch			
3 rd -year student	100 (52.4%)	37 (60.7%)	0.257 ^{ns}
5 th -year student	91 (47.6%)	24 (39.36%)	
Age (years) (mean±SD)	22.60±1.11	22.51±1.16	0.571 ^{ns}
Gender			
Male	78 (40.8%)	28 (45.9%)	0.485 ^{ns}
Female	113 (59.2%)	33 (54.1%)	
Overall physical health condition			
Excellent	28 (14.7%)	13 (21.3%)	0.414 ^{ns}
Average	149 (78.0%)	45 (73.8%)	
Poor	14 (7.3%)	3 (4.9%)	

P-value obtained by the Chi-square test, *significant, ns= not significant

No significant association of mental health problems with sociodemographic parameters was found (Table 5)

Table 6: Association of mental health problems with different parameters (n=252)

Parameters	Psychological problem		p value
	Present (n=191)	Absent (n=61)	
Do mental problems affect daily activities?			
Yes	128 (67.0%)	11 (18.0%)	<0.001*
No	63 (33.0%)	50(82.0%)	
Does mental condition affect relationships with others?			
Yes	126 (66.0%)	11(18.0%)	<0.001*
No	65 (34.0%)	50(82.0%)	
Have noticed any changes in dietary habits?			
Yes	112 (58.6%)	19(31.1%)	<0.001*
No	79 (41.4%)	42(68.9%)	
When was the last time you were really happy?			
Always	54 (28.3%)	45(73.8%)	<0.001*
A few days ago	68 (35.6%)	12(19.7%)	
A few months ago	34 (17.8%)	1(1.6%)	
A few years ago	35 (18.3%)	3(4.9%)	
Have ever been diagnosed with a mental disorder before			
Yes	19 (9.9%)	1 (1.6%)	0.037*
No	172 (90.1%)	60 (98.4%)	
Positive family history of mental disorder			
Yes	35 (18.3%)	3 (4.9%)	0.011*
No	156 (81.7%)	58 (95.1%)	
How many hours of sleep per day			
<4 hrs	5 (2.6%)	0 (0.0%)	0.409 ^{ns}
4-6 hrs	130 (68.1%)	41 (67.2%)	
7-9 hrs	56 (29.3%)	20 (32.8%)	

p-value obtained by the Chi-square test, *significant, ns= not significant

The mental health problems significantly affected daily activities, and relationships with others, and there were changes in dietary habits in those who had mental health problems (Table 6).

Previously diagnosed with mental disorders and positive family history of mental disorders were significantly higher in those who had psychological problems (p-value 0.037 & 0.011 respectively) (Table-6)

Table 7: Association of mental health problems with electronic devices and other factors (n=252)

Factors	Psychological disorder	Problem/mental	p value
	Present (n=191)	Absent (n=61)	
Duration of mobile uses (hrs) mean±SD	4.34±2.74	4.0±2.92	0.408 ^{ns}
Laptop used	33 (17.3%)	6 (9.8%)	0.162 ^{ns}
Computer used	5 (2.6%)	4 (6.6%)	0.146 ^{ns}
Television	5 (2.6%)	2 (3.3%)	0.785 ^{ns}
Netflix	16 (8.4%)	3 (4.9%)	0.373 ^{ns}
Web series	21 (11.0%)	2 (3.3%)	0.068 ^{ns}
Extra-curricular activities	158 (82.7%)	49 (80.3%)	0.671 ^{ns}
Outdoor games	46 (24.1%)	16 (26.2%)	0.735 ^{ns}
Indoor games	50 (26.2%)	22 (36.1%)	0.137 ^{ns}
Cultural activities	42 (22.0%)	9 (14.8%)	0.221 ^{ns}
Others	58 (30.4%)	14 (23.0%)	0.264 ^{ns}
Relationship status			
Single	138 (72.3%)	48 (78.7%)	0.174 ^{ns}
Married	12 (6.3%)	6 (9.8%)	
In a relationship	41 (21.5%)	7 (11.5%)	
Addicted to any substances			
Smoking	6 (3.1%)	0 (0.0%)	0.316 ^{ns}
Others	30 (15.7%)	8 (13.1%)	
None	155 (81.2%)	53 (86.9%)	
Have ever done a suicidal attempt			
Yes	15 (7.9%)	2 (3.3%)	0.215 ^{ns}
No	175 (92.1%)	59 (96.7%)	
Have academic loss			
Yes	4 (2.1%)	0 (0.0%)	0.255 ^{ns}
No	187 (97.9%)	61 (100.0%)	

P-value obtained by the Chi-square test, *significant, ns= not significant

There was no significant association of mental health problems with electronic devices.(Table 7)

Discussion

The study was carried out to determine the prevalence of the subjective presence of mental illness in undergraduate medical students and the sources of their stress. The majority of the studied students 191 (75.8%) reported having some mental disorder. An Iranian study has shown that nearly half of the students scored above the threshold on the scale measuring psychological distress (GHQ), indicating significant mental problems.⁹ Another study showed that medical students had a higher level of psychological distress compared to their peers in the Iranian general population (44%).⁹ However, a lower prevalence (21%) of psychological morbidity was reported by Sreeramareddy C. et al. among Nepalese medical students.¹⁰ In their study, Shaikh BT et al. found that more than 90% of students felt stressed during their course.¹¹ A similar study from India reported that 73% of the students had perceived mental stress during their medical school.¹²

Guthrie E. et al. reported 30.6% of first-year medical students, 30.6% of fourth-year and 21.9% of fifth-year medical students scored above the threshold indicating that medical students were suffering from some sort of psychological distress.¹⁴ Among the students female were predominant 146 (57.9%) (Table 2). Studies had shown that female medical students are more likely to suffer from depression compared to their male peers.¹⁴ However, in this study, female predominance was not seen in mental health problems (Table 5).

Type of psychological problems found in the study was depression, anxiety, panic attack, phone addiction, inferiority complex, and Illusion. Research had reported that medical students develop depressive symptoms due to work overload, several examinations and competitive situation.¹⁵

In this study most of the students were suffering from anxiety 135(53.6%) then depression 123 (48.8%). Interestingly a significant portion of students 107 (42.5%) had phone addiction (Table 4).

Depression was more (50.4%) in 3rd year students in comparison to 5th year students (47.0%). On the contrary anxiety was more among 5th year students (56.5%) (Table 4).

Studies have shown that medical students particularly in their later years of medical school and into their internship may be particularly vulnerable for psychiatric morbidity due to both the burden of studies and risk of burnout.¹⁶

In their study Rael D. et al. found that students of fifth year had more Axis I disorders than those students of first year and while there was no difference on overall reporting of Axis 2 traits.³

The mental health problems of the students significantly affected their daily activities, relationship with others. There were changes in dietary habits in those who had mental health problems (table-6). So early diagnosis and effective psychological services is needed to prevent possible future consequences.

Previously diagnosed with mental disorder and positive family history of mental disorder were significantly higher in those who had psychological problems (p value 0.037 & 0.011 respectively) (Table 6).

This is consistent with the findings of Pelzer et al. who showed in their study that 16.3% of medical students, initially showing at least mild depressive symptoms at the beginning of medical education.¹⁷

Interestingly there was no significant association of mental health problem with the use of electronic devices like duration of mobile uses (hours), watching Netflix or web series and use of laptop/PC. Neither the extra-curricular activities, outdoor and indoor games, cultural activities had any significant effect on mental health condition of the students (Table 7). Weng and Chiang study on psychological restoration through indoor and outdoor leisure activities in general student suggested that leisure activities are beneficial for mental health in terms of anxiety reduction and attention restoration.¹⁸ This was a preliminary pilot study. The study was done with relatively small sample number and the students were from only one medical school. These students were not recruited for study participation since enrolment in the study was dependent on student attendance at lectures/tutorials. The questionnaire used in this study was based on subjective report thus introducing bias of self-report. The subjective perception of psychiatric conditions was defined by the accompanying key to the questionnaire that obviously does not qualify for diagnosis as the participants had not been examined by board certified psychiatrists. Since this study investigated only 3rd year and 5th year medical students, it does not reflect the situation of the students at the beginning of medical school and internship or residents. Still the study observations provided some interesting information for further research on the subject and it has value as to our knowledge this is the first study of this type in Bangladesh. This type of study is needed because studies had shown that psychological well-being of medical students needs to be more carefully addressed, and closer attention to eliminating the risk factors may prevent consequent distress.⁸

Conclusion

A significant number of students 75.8% reported to have at least mild mental illness. The major type of psychological problem found were anxiety, depression and phone addiction. The mental health problems of the students significantly affected their daily activities, relationship with others. Extracurricular activities seem to have no significant effect on mental health. Thus indispensable

ongoing support programs are needed for the special needs of medical students.

Ethical Clearance: The research protocol was approved by IRB, DMC, Dhaka.

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Stress and Associated Factors Among Teachers of Medical Colleges and Hospitals of Bangladesh: A Cross-sectional Study

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Abstract

Background: Stress is a common mental health problem that has been reported among different healthcare professionals including medical academics. Several studies were conducted on common mental health issues among medical personnel, but no research has focused on the group of highly ranked medical academicians, although they are mostly exposed to highly stressful environments. Therefore, our study aimed to explore the prevalence and associated factors of stress in high-ranked academics among medical colleges in Bangladesh.

Method: This was a population-based cross-sectional study that included high-ranked academics (principals, heads of departments, professors) from all the public and private medical colleges in Bangladesh. A total of 87 teachers responded to this in-person survey collection initiated by the directorate general of medical education. A semi-structured self-administered questionnaire consisting of variables about sociodemographic characteristics, work, and health-related information was used. A psychometric scale named the perceived stress scale (PSS) was used to assess the level of stress among the participants. Chi-square and multiple binary logistic regression were used to analyze the data.

Results: About 79% of the participants were male, 64% were aged above 52 years, and 68% of the academics were engaged in additional administrative activities and 72% worked for more than 8 hours. The prevalence of stress was reported to be 75% among the participants. The bivariate and logistics regression analysis showed that age and working hours were found to be positively associated with the higher level of stress among the selected medical academicians.

Conclusion: The findings will assist the policymakers and responsible authorities to modify the current work structure and develop evidence-based interventions to be more inclusive and supportive of this population, hence promoting their overall well-being.

Keywords: Perceived stress, highly ranked medical academicians, Medical colleges, Bangladesh

Introduction

Stress is a natural human response that prompts an individual to address daily life challenges.¹ Work plays a critical role in an individual's life, thus the impact of occupational hazards such as stress is a major issue both for

employees and their associated organizations.² World Health Organization reports a rapid increase in the number of people experiencing different mental health conditions such as stress which is further exacerbating throughout the world with the COVID-19 pandemic.³ Similarly, medical professionals such as frontline doctors, nurses, and medical students were also reported to be experiencing more stress and were at greater risk of suffering from major psychological distress during the pandemic.²

The teachers of medical colleges have multidimensional responsibilities including teaching, administrative tasks, and attending patients may cause them to experience irregular working hours.^{4,6} These excessive and prolonged work hours can initiate additional physical exhaustion, burnout, and stress on medical college teachers.⁴ Moreover, coping with the transitional changes in technology and teaching style can pose additional stress on them.⁴ Different past studies have illustrated the increased level of stress, anxiety and burn out among the medical professionals and the rate is higher than the general working population.^{4,7-9}

Unfortunately, the evidence about exploring common mental health issues among the academics of the teaching

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medical college and hospitals are extremely scarce. A recently conducted study from India highlighted that around 57% of the medical college teachers had moderate to high level stress. Additionally, full time academics who were also practicing as dentists, expressed their dissatisfactions due to lack of work-life balance as reported by a past research.^{7,10-12} The academics of the teaching medical colleges are an integral part of a health system by playing an instrumental role in training the next generation of the medical doctors.⁴

However, work related stress and burn out can negatively affect their quality of work and productivity.⁷ Moreover, prolong unaddressed mental health issues can turn into complicated stages of psychological disorders.¹³ Although, several studies have examined the common mental health issues among different types of health care professionals, relatively a few have looked at the medical teachers' stress level, with almost none in Bangladesh.⁴ Therefore, the aim of this study is to find out the prevalence and associated factors of level of stress in high ranked academicians (principals, head of departments, professors) of medical colleges in Bangladesh. The findings will help the policy makers to formulate strategies to restructure the medical education system as inclusive and supportive to all level of related stakeholders.

Methods

This cross sectional survey was conducted among the highest ranked teachers of medical colleges of Bangladesh, under the jurisdiction of the Directorate general of Medical Education (DGME), Ministry of Health and Family Welfare (MoHFW). There are 106 medical colleges comprising of 36 Government and 70 Private medical colleges and hospitals under the MoHFW.¹⁴ The highest ranked administrators, consisting of professors, principles, and head of the department of 93 medical colleges administrative were invited to participate.¹⁵ From each medical college, at least one representative administrative authority despite of their academic discipline was asked to participate in the present study. In addition, the authorities who were unwilling to participate and did not devote full time in administrative work, were on leave (e.g., sick leave, maternity leave, study leave) were excluded from the study.

Sample Size:

This was a population-based survey, conducted among all the highest authorities of medical colleges of Bangladesh. The medical college representatives were invited through an email to attend a seminar entitled "Training and workshop of the focal persons on teaching methodology and assessment for the medical college teachers" in June, 2022. Among them, 87 participants attended the seminar and provided their oral consent to participate in the study. The response rate 93.5%.

Data Collection Procedure and measures:

The participants were approached and invited to attend the seminar over an email and the workshop was held on 11 June 2022 to 13 June 2022. The data collection was

conducted in person using self-administered English questionnaire. Based on prior literatures, information regarding socio-demographic characteristics, professional lifestyle, health and disease were included in the questionnaire. Additionally, the level of stress was evaluated using Perceived Stress Scale (PSS). PSS is widely used and culturally validated in Bangladesh previously.¹⁵ The principal investigator and co-investigator frequently assured the data quality. Following the data collection, open responses were post-coded in accordance with the requirements.

Socio-demographic characteristics, work related information and psychometric measures:

Questions about Sociodemographic characteristics including age, sex, marital status, education; information regarding institution designation: type of institution, place of institution; work related factors: promotion, duration in this designation, working area, transportation facility, accommodation facility; and information regarding health: comorbidities were asked. Also, hopelessness has been a major contributing factor for the stress among different population thus we also assessed this issue by using a psychometric scale: Beck Hopelessness Scale (BHS). BHS consists of twenty items of self-reported questions to assess major aspects of hopelessness such as feelings about the future, loss of motivation, and expectations and its responses among the respondents over the past week. The response is collected in binary format i.e., true/false. Each question has a preset correct answer, and one point is rewarded for each correct answer. The total score is obtained by summing the raw scores of the twenty items ranging from 0 to 20. The responses are categorized into four categories as none or minimal (0-3), mild (4-8), Moderate (9-14) and Severe (15 and above).² Higher BHS score is representative of higher hopelessness.

Perceived Stress Scale (PSS):

10 item version of PSS was used where response was obtained in 5-point Likert scale starting from 0 standing for never to 4 for very often. The score ranges between 0 to 40, and was categorized into 3 categories. Low "0 to 13", moderate "14 to 26" and high "27 to 40". The Cronbach's alpha for this study was 0.903, representing excellent fit.

Statistical Analysis:

The mean and standard deviation were evaluated to represent the continuous variables whereas the categorical variables were represented by the frequencies and percentages. To evaluate the association between stress and other exploratory variables chi-square (χ^2) test was used (p-value less than 0.05 was considered to be statistically significant for all the tests performed). Multiple binary logistic regression models were used to assess factors associated with level of stress among the academics.

Data was entered into dataset developed by SPSS version 26.0 and STATA (version 15.0) was used to perform the statistical analyses.

Ethical Considerations:

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of National Institute of Mental Health and Hospital (NIMH), Bangladesh. Formal informed verbal consent was taken after explaining the study objectives and procedures to the respondents prior to data collection in the workshop.

Results

Socio-demographic characteristics:

Among the 87 participants majority were male (79%), aged above 52 years (64%), all had a post graduate degree. About 41% respondents were from Dhaka division, 68% were teaching at Govt. medical colleges, and 31% were employed as Professors. Moreover, 68% academics were engaged in additional administrative activities and work for more than 8 hours (72%). Accommodation and transportation facilities were available for 81% and 51% participants respectively. Furthermore, 67% were had reported to have at least one form of non-communicable disease (NCDs). (Table 1). About 75% of the participants were identified to have to medium and high level of stress (Figure 1)

Table 1: Socio-demographic characteristics of the participants

Factors	Frequency (Percentage) n= 87 (%)
Age	
Less than or equal to 52	31 (35.63)
More than 52	56 (64.37)
Gender	
Male	69 (79.31)
Female	18 (20.69)
Educational Qualification	
MD/MS and FCPS	36 (41.38)
M.Phil, PhD	43 (49.43)
Diploma	8 (9.20)
Division	
Dhaka	36 (41.38)
Chattogram	14 (16.09)
Sylhet	8 (9.20)
Barisal	3 (3.45)
Mymensingh	5 (5.75)
Rajshahi	9 (10.34)
Rangpur	5 (5.75)
Khulna	7 (8.05)
Institution of teaching	
Govt. Medical College	59 (67.82)

Private Medical College	28 (32.18)
Designation	
Associate professor	27 (31.04)
Professor	27 (31.03)
Head of the department	12 (13.79)
Vice-principle	6 (6.90)
Principle	15 (17.24)
Academic discipline	
Clinical	39 (44.83)
Basic	48 (55.17)
Engaged in additional work (beside teaching)	
Administrative work	59 (67.82)
Clinical practice	15 (17.24)
Both	13 (14.94)
Working hours	
Less than or equal to 8 hours	24 (27.59)
More than 8 hours	63 (72.41)
Transportation facilities	
Available	47 (54.02)
Not available	40 (45.98)
Accommodation facilities	
Available	70 (80.46)
Not available	17 (19.54)
Non-communicable diseases (NCDs)	
Absence of NCDs	29 (33.33)
Presence of NCDs	58 (66.67)

Prevalence of Stress:

The prevalence of stress was around 75% in the overall participants as identified by the psychometric scale. Additionally, majority of the teachers (79%) from basic discipline and more than half of (69%) academicians with clinical background had higher level of stress. In terms of types of medical colleges, about 70% of the teachers from the govt. institution and 86% of the private institutions have been reported to have higher level of stress. (Figure 1, 2)

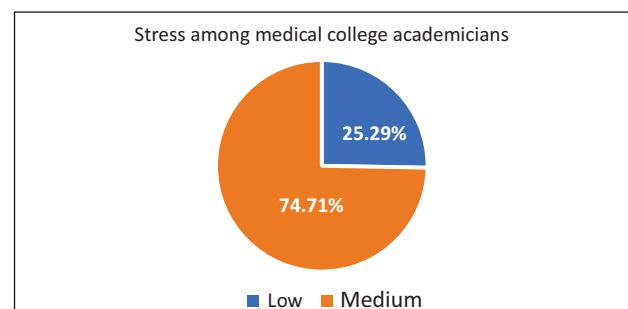


Figure 1: Prevalence of stress level

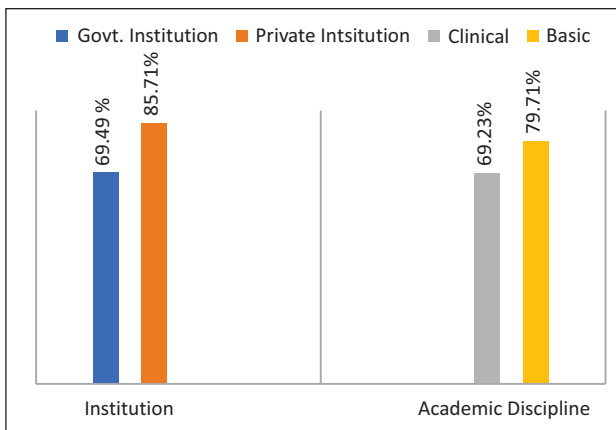


Figure 2: Differences in the prevalence of stress among academics in terms of discipline and types of medical colleges.

Association between stress and other variables:

From the bivariate analysis it was found that stress was negatively associated with increased age (Chi-square 3.97, p-value 0.14). Additionally, those who work for more than 8 hours reported to have higher level of stress than those who work up to 8 hours (Chi-square 8.335, p-value 0.015). (Table 2)

Table 2: Association between stress and other variables

Factors	Stress		Chi-square/ Fisher’s Test p-value
	Low	Medium and high	
Age			
Less than or equal to 52	4	27	3.974
More than 52	18	38	0.014
Gender			
Male	18	51	1.132
Female	4	14	0.568
Educational Qualification			
MD/MS and FCPS	8	28	2.859
M.Phil, PhD	10	33	0.239
Diploma	4	4	
Institution of teaching			
Govt. Medical College	18	41	2.807
Private Medical College	4	24	0.246
Designation			
Associate professor	6	21	14.395
Professor	8	19	0.156
Head of the department	2	10	

Vice-principle	3	3	
Principle	3	21	
Academic discipline			
Clinical	12	27	1.124
Basic	10	38	0.289
Engaged in additional work (beside teaching)			
Administrative work	14	45	1.522
Clinical practice	5	10	0.823
Both	3	10	
Working hours			
Less than or equal to 8 hours	11	52	8.335
More than 8 hours	11	13	0.015
Transportation facilities			
Available	15	32	2.377
Not available	7	33	0.305
Accommodation facilities			
Available	18	52	1.216
Not available	4	13	0.544
Non-communicable diseases (NCDs)			
Absence of NCDs	6	23	0.685
Presence of NCDs	16	42	0.710

Logistic Regression Analysis:

From the logistic regression model, it was found that stress level was higher with increasing working hours. Respondents who work for more than 8 hours are 1.65 times more likely get stressed than those who work up to 8 hours (p-value 0.009) (Table 3)

Table 3 Discussion

Stress	Odds Ratio	P>z		
		Lower limit	Upper limit	
Age				
Less than or equal to 52 years old				
More than 52 years old	0.402	0.106	1.523	0.180
Gender				
Male				
Female	1.109	0.260	4.581	0.904
Working hour				
Less than or equal to 8 hours				
More than 8 hours	0.159	0.041	0.607	0.007
Engaged in additional work				
Administrative work				
Clinical duty	0.462	0.0976	2.188	0.331
Both	1.186	0.207	6.785	0.848
Educational Qualification				
MD/MS and FCPS				
Mphil and PhD	0.447	0.110	1.815	0.260
Diploma	0.153	0.020	1.141	0.067
Designation				
Up to Professor	1.726	0.508	5.86	0.381
Above than Professor				
Others	-3.123	-5.199	-1.047	

Discussion

Occupational stress is one of the leading common mental health problems in medical professionals. The reason is multifactorial including mismatch between job requirement and the available resources, work overload, working environment, workplace conflict, job satisfaction etc. This current study is significant as it focuses on the associated factors of stress among this population and has the potential to reform the medical education curriculum as it was primarily initiated by the interest of the government side. Even though rate of stress and impact of it in this cohort of the population is huge, only limited studies are available globally to identify stress and its associated factors in them. Our study can be considered a pioneer in Bangladesh which aimed to focus on level of stress among medical academics. Our sample population is an integral part of the health system building blocks in multiple ways.¹⁶ They are not only part of service delivery, health workforce

and information in the health system today, but also part of human resource management where they are training the next generation of medical professionals.

Our Study identified that a higher number of academics with stress. A study in India showed that the prevalence of moderate to high level stress is 27-87.4% in the medical doctors which is consistent with our findings.¹⁷ A plethora of studies globally reported about 75% of moderate to high level of stress among healthcare workers which is consistent with our findings as well.^{2,6} Additionally, stress in academics is identified to be significantly higher than the rate in general population which is about 30% according to a meta-analysis published in 2020.¹⁸ Being in the medical profession is usually stressful due to the uncertain work hours, loss of work-life balance, immense work load, responsibilities and long working hours. The participants of our study were not only health workers but also academics and involved in additional administrative work that makes them more vulnerable to stress and other common mental health conditions. The impact of stress is significant since it impacts both physical and mental health of these professionals leading to work-related delay, absenteeism, emigration rate and reduction in productivity. This affect both the quality of their teaching and medical services. In the bivariate analysis, this study found out that age is a significant factor which is negatively associated with perceived stress. Participants aged over 52 reported to be less stressed compared to those who were 52 years old or less. Previous research also showed similar trend where being younger was associated with distress and burnout.¹⁹ This is expected as people at a younger age are more work-oriented which could lead to overwork in desire of promotion, has more familial pressure, has a higher drive to satisfy their esteem needs, has lesser experiences and resources to cope with the different aspects of work among other reasons. Older age is also associated with psychological resilience and subjective well-being which remain steady across old age in spite of many losses associated with aging that can explain lesser perceived stress in the older age group.²⁰⁻²² Previous studies also suggest a reason for reduced perceived stress among older adults could be the use of strategies in older age to avoid or limit exposure to age-related vulnerabilities or negative stimuli in general.^{23,24} It is clear that most people over 52 years old who had been working as academics in medical colleges are likely to be passed the self-esteem needs according to the theory developed by Maslow.²⁴ Additionally, older group of academics are more likely to have completed their required educational degrees and objectives making their position fairly permanent which could be another reason for lower perceived stress score in them.²⁵ Additionally, policy reforms such as providing younger teachers with required resources such as academic trainings, capacity building, resistance building and stress management could help to reduce the level of stress in this age group.

Furthermore, academicians from private medical colleges reported more stress than those from government medical colleges. This aligns with the previous findings that reported that teachers who worked in private institutions experienced greater levels of stress due to the added responsibilities associated with higher standards of professional uncertainty due to the high employee turnover rate and the lack of job security. In contrast, academicians working in the public sector are considered to be civil employees supported by several opportunities for career progression and pensions. These may cause the teachers of private medical colleges to have more difficulties in their career pathway leading to higher levels of stress.²⁶ Therefore, providing job assurance, and organizing different training opportunities may aid in minimizing job-related stress among academicians from private settings.

While evaluating the association with socio-demographic characteristics, it was found that stress level was higher among the academicians who were from the basic discipline. Academicians who teach clinical subjects usually have multiple roles including attending patients through their clinical practice which can help them to stay motivated.⁴ Several past studies conducted in other countries also reported similar findings that teachers involved in basic discipline are usually assigned extra administrative work exposing them to be in higher levels of stress.⁴

Another significant factor associated with stress among the academics were found to be working hours. Participants with higher working hours, i.e., more than 8 hours had a higher perceived stress score compared to those who worked 8 hours or less. A study published in 2019 reported that working more than 8 hours per day could increase the work pressure among the academics and leave lesser time to build resistance to the stress and the body to implement its coping mechanisms.²⁷ Reduction in work-life balance could lead to family issue, relationship conflicts and even health conditions. An integrative review published in 2021 reported that stress was affected by a number of external factors among which work load and working hours were significant.²⁸

Moreover, there is a disparity in the required and actual numbers of the teachers (9,403 vs 25,300) in the public and private medical colleges of Bangladesh.²⁹ This indicates a shortage of teachers resulting in increased workload that leads to occupational stress. Moreover, exploring the risk factors of stress in the medical academics is essential considering this group of the population is responsible to train the country's next generation of medical doctors. High level of stress in the medical academics can lead to poor quality of teaching due to reduced motivation at work, fatigue leading to exhaustion and burnout. It can also lead to several physical health conditions like cardiovascular diseases, increased immune system activation, musculoskeletal disorders etc. leading to poor quality of life among the academics which can increase absenteeism

at work.³⁰ Therefore, policy should be made to ensure standard working hour for the academics by balancing their medical and administrative work in the medical colleges. Furthermore, more medical professionals should be recruited in teaching to meet the increased need of medical education in the country. Resources and trainings should be provided to the younger academics and medical professionals to fulfil their job roles. In addition, resilience building should be promoted targeted to this age group in the workplace.

Limitations & Strengths:

This was a cross-sectional study, hence no cause-and-effect relationships in between components were established. Additionally, since the target population are extremely occupied, not everyone was able to provide time, hence the sample size was small and not generalizable. Another limitation is that the cut-off points of the psychometric tool were established previously mostly among general population and not for this special population who usually work under stressful condition. Additionally, due to self-reporting and related circumstances from positive responses, underreporting & subjective bias is probable. To avoid subjective bias, qualitative methodology can be used where interview would be conducted for conclusive stress diagnosis which would make the results more reliable.

However, even if the sample size was small, key personalities such as professors, head of departments, chairperson were included in the study who are representative of the target population. In addition, as this study has been initiated by the governments side, the applicability of it in policy reformation for medical studies is significant.

Conclusion and Recommendation:

The study findings indicated high burden of stress among medical college academicians in Bangladesh which could help understand their overall well-being better. The findings reaffirmed the high burden of stress among this vulnerable population and the necessity for addressing issues generated due to excessive working hour and less opportunities in the early professional life that negatively impact mental health. Hence, the findings will help develop evidence-based interventions to lessen obstacles to this vulnerable population's access to mental health services in Bangladesh. Including mental health services at primary healthcare facilities, creating an alternative non-specialist force for addressing mental health needs, providing stress-reduction therapy in work places, resilience building session, one-to-one therapy and screening, referrals and multi-sector collaboration for improving current services, with a particular focus on medical academicians, is also empirically necessary. The result of this study could also be used by the policy makers and responsible authorities to formulate changes into the system that would be more inclusive and supportive of all who are involved in the system and promote their well-being.

Conflict of interest: Nil

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Use of Social Media and Mental Health: Bangladesh Context Perspective

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Abstract

Overuse of social media is an emerging problem around the globe including Bangladesh. Dependence on social media is thought to have similar psychopathology like substance dependence. The advantages of social media use are undeniable, but the huge mental health impacts of its uncontrolled use include anxiety, depression, sleep problems, low self-esteem, academic problems, and relational problems. Research is underway to find out the causality of this relationship, but it is still unclear whether internet addiction causes mental illness or mental illness in an individual makes him vulnerable to overusing the internet. This paper has reviewed recent researches and literatures in this background, especially from Bangladesh context. This article covered the aspects of social media use in Bangladesh including some South Asian Countries, issues in good social media operation, impact on mental health, and vulnerable group for mental health problems. In addition it also highlights the scope for further researches, and need to improve capacity of mental health service providers and services indeed. This review is likely to contribute to the existing knowledge regarding the mental health impact of social media use in Bangladesh perspective.

Keywords: Social Media, Mental Health, Bangladesh

Background

Internet technology has brought major changes to the way people communicate. Social media is the fastest way to communicate with the use of internet technology.^{1,2} Social media is a web-based platform for the sharing of thoughts, information, and activities among interested people. Connecting with friends and relatives, freelancing, conducting online business, advertising products, and arranging scientific and business meetings are among the major purposes of social media use. In the absence of the required recreational facilities in society, the people of Bangladesh are among the major users of social media. Even the illiterate or less educated section of society spends a significant part of their daily lives using social media. Though there are so many benefits to social media use, it is detrimental to one's mental health if used too frequently. Internet gaming, gambling, watching pornographic and other videos, developing illicit relations, family conflict, divorce, separation, spreading propaganda, false and

distorted news, and creating criminal gangs are many issues of mental health importance that demand a public health approach to management.

Methods and Materials

Internet searches, library work, textbooks reading, and personal communication were used to gather information on social media use among population of all ages and its mental health impact, especially in Bangladesh. Online searches for related papers following objectives of this article were systematically conducted using key words social media, mental health and Bangladesh. After removing unrelated articles total 19 articles were finally considered for review.

Social media use in Bangladesh including some South Asian countries:

Social media is used through an internet connection. The Internet was launched in Bangladesh in 1996, and national poll results were made available on the website.³ Since then, its use has increased day by day and reached a point where its overuse has become a public health problem. Mobile devices have given easy access to the internet, increasing the opportunity for social media use. Overall, 64% of university students in Bangladesh were found to be using a mobile phone for the internet, 10% a personal computer or laptop, 13% a smart phone and laptop, 7% a smart phone and desktop, 3% a smart phone, laptop, and desktop, and 3% only a desktop.⁴ Smart phones are becoming habitual for almost everyone.

As the internet is a tool used by all populations, it is necessary to understand where internet addiction is most prevalent and debilitating.⁵ Nation-wide survey in Bangladesh in 2022 among youth 10 to 24 years old reported

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prevalence of internet addiction in the country. The prevalence was 25.9% in the 15-24 year old subpopulation and 10.8% in the 10-14 year old sub-population. Males had a higher prevalence (28.4%) of internet addiction than females (12.2%). The majority of youth (79.4%) were using smart phones to access the internet, followed by mobile phones (48.7%). Overall, 39.5% were using multiple devices. The average time spent daily on the internet for men was 3.7 hours and for women 2.5 hours. Overall, 32.8% of youth were using the internet at night and 22.6% in the morning. The most common pattern of internet use was watching videos (76.1%), followed by listening to FM radio (62.7%), social media use (55.99%), and gaming (54.5%). A significantly higher percentage of rural females were using FM radio more frequently.⁶

Facebook is the most popular of all social media activities in universities in Bangladesh.⁴ A study among university students in Bangladesh revealed that 63.7% of social media users used Facebook, 19.5% YouTube, 9.3% Instagram, and 7.3% Twitter.⁴ Another online survey among university students (20–28 years old) in Bangladesh reported that 87.8% of social media users use Facebook, 8.1% use Instagram, and 4.1% use both platforms.⁷ Regarding the time spent on the platforms, 8.1% spend 5-20 hours weekly, 16.2% 41-60 hours weekly, and 41.9% more than 60 hours weekly.⁷ Overall, 78.4% of university students answered “yes” to the question of whether they waste time on social media.⁷ The same study found that 52.7% of university students have attempted to cut back on their time spent on social media.⁷ This study also identified that 20.3% of university students in Bangladesh check social media notifications twice every hour, and 70.3% check notifications whatever they are posted on Media devices.⁷ Another study among university students shows 21.5% of users use social media daily for 1.5 to 2 hours, 16.7% for 2 to 2.5 hours, 11.75% for 1 to 1.5 hours, 14.4% for 12 to 1 hour, 9.56% for 0 to 12 an hour, and 11.9% for 2.5 to 3 hours.⁴ Significant screen time and failure to stop checking notifications are indications of dependence on social media. Facebook addiction was found among 29.4% of medical students in a cross-sectional survey in Bangladesh.⁸ Other common social media uses in Bangladesh include WhatsApp, Viber, Imo and Twitter.

Overall prevalence of internet addiction among the 19–35-year-old young adult population of three administrative divisions of Bangladesh was found to be 27.1%.⁹ The addiction rate was 28.6% among the subgroup of 19–24-year-olds and 23.5% among 25–35-year-olds.⁹ Internet addiction was significantly associated with living arrangements, time spent daily on the internet, a detached family relationship, and a smoking habit ($p < 0.05$).⁹ A cross-sectional study among college students in the city of Bengaluru, India, identified 34% of internet addicts.¹⁰ Internet addiction was associated with male gender, continuous availability of the internet, using the internet for course work or assignments, making new friendships online, and getting into relationships online.¹⁰ Lack of

personal income, poor academic performance, moderate anxiety, moderate perceived stress, and moderately severe depression were all found to play significant roles in the development of Facebook addiction. Living with parents and having positive family relationships reduces the likelihood of becoming addicted to Facebook.⁸ A 12-month longitudinal study among Chinese secondary school students in Hong Kong reported a 16.0% prevalence of internet addiction at baseline. Risk background factors were male sex, higher school forms, and living with only one parent, while protective background factors were having a mother or father living with them.¹¹

Issues in good social media operation (Etiquette in the use of social media):

Social media etiquette is the collection of guidelines and rules that will protect one's personal and professional reputation in a digital environment.¹² Posting frequently, sharing with others without permission, overpromoting and advertising, badmouthing others, transmitting negativity, posting in capital letters, and consuming excessive screen time are some of the things not to do during the use of social media. Rules of maintaining respect for others, maintaining norms, and giving genuine messages should be followed in social media use.¹²

Impact on mental health:

Though there are many advantages to using social media, the disadvantages are not less. Social media allows people to overcome loneliness and increase connectivity among themselves. It appeared as a wonderful source of social connection, especially among people who did not have sufficient friends and social interaction. Although it initially aids in avoiding social discomfort, it rapidly develops into an addiction. As humans' need for social interaction increases, their dependence on social media grows. At some point, life on social media becomes more fascinating than real life. Media platforms have become the main means of emotional expression. Sometimes, real-life love and sexual behaviors are replaced by living in a virtual world. People are easily interconnected with each other through social media, and sometimes rumors spread so quickly that they create social instability. Harassment of girls in different ways on social media is not uncommon. Social media are also sometimes used for organizing criminal activities.

Social media use affects our personal, familial, and social lives in different ways. A study in Bangladesh observed that 32.6% of university students said social media use affected them very much, and 14.6% said social media did not affect them at all. Others opined that social media affects them partly.⁴ Mental health is negatively affected by inappropriate use of social media. Unrestricted availability and use of the internet and smart phones have led to an addictive behavior labeled "behavioral addiction."¹³

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.)¹³, developed by the American Psychiatric Association, have diagnostic criteria for any mental disorder, including substance dependence. Though the internet is not a substance, the concept of internet addiction fulfills the criteria of addiction defined by DSM 5.¹³ Awakening throughout almost the whole night and sleeping during the day are keeping students and individuals away from regular class, study, and daily activities. Spending too much time on social media distracts students from the learning process, leading to poor academic performance. Conversely, people with mental health problems are vulnerable to overuse of social media aggravating their existing mental health conditions. Different studies have proven a relationship between internet addiction and mental health conditions. Studies are underway to find the causal relationship between whether internet addiction causes mental health problems and whether mental health conditions in an individual lead him to overuse of the internet. Besides cross-sectional studies on social media use, longitudinal research is required to determine the association between social media use and mental health conditions. Lack of face-to-face interactions may lead to loneliness, low confidence, low self-esteem, depression, low social skills, and different mental disorders. About 93.2% of university students using social media reported that negative comments, criticism, and feedback affect their self-worth and self-esteem.⁷ The same study also reported that 72.2% of the users indicated that they were clearly aware of their dependence on social media.

A recent survey in Bangladesh revealed that youth with low mood, social anxiety, family distress, sleep problems, smoking, and substance abuse had increased internet addiction.⁶ Ko et al 2012¹⁴ described the relationship between internet addiction and major depressive disorder, social anxiety, aggressive behavior, and other mental disorders. Overall, 7% of adult cases of internet addiction had dysthymic disorder and 15% had social anxiety disorder.¹⁴ A survey among medical students in Bangladesh reported that 63.7% of medical students had mild to severe anxiety, 29.3% moderate to severe depression, and 84.9% moderate to high perceived stress.⁸ The influence of social media during crises has a longstanding effect. In recent research, during COVID-19, the majority of participants used social media as a primary source of information. Relatively high rates of symptoms of depression (14.14% to 48.3%) and anxiety (7.4% to 47.82%) were observed. The prevalence of stress was reported as 37.67% after exposure to social media in the general population. Risk factors for psychological distress were associated with female gender, younger age group, marital status, staying alone, and duration of exposure to mass media.¹⁵

Unexpected relational problems, family unhappiness, sleep disorders, gaming and pornography addiction, academic failure, headaches, impulsivity, absence from professional and social activities, and linking with criminal groups are common consequences of internet addiction.

Addictive behavior has been observed to be commonly associated with the pleasurable surge of the neurotransmitter dopamine in the brain. The dopaminergic brain reward system involving the ventral tegmental area, nucleus accumbens, and frontal lobe is central to addictive behavior.¹² Addiction to social media use maybe perpetuated through feedback loop mechanism acting through dopamine reward system.¹⁶

Social Media Dopamine Loop¹⁷:

Receiving texts likes shares and messages from friends are rewarding that evokes sense of temporary happiness and satisfaction and users ultimately look for more happiness. It can be the explanation of gambling behavior also.¹⁸ Self-harm and body image difficulties faced by younger generation of people are thought to be influenced largely by social media use.^{19,20,21,22} It has been observed that cravings for cocaine can be reduced by lowering dopamine levels. The neuropeptide oxytocin has also been found to be related to addictive behavior.

Vulnerable group for mental health problems

All classes and all ages of people use social media in Bangladesh. But younger groups of people are at higher risk of excessive use of the facilities. Mental health symptoms and specific mental health conditions related to social media use affecting this group of people are jeopardizing the future of the country.

Need Scope for Further Researches

Researches on investigating mediating factors linking social media use and mental health impact are very limited. Majority of researches on use of social media, internet addiction and mental health were cross sectional in nature conducted among college/university students and young people in the community.^{4,6,8,10} Causality is usually unclear due to cross-sectional nature of almost all studies conducted in this regard. More longitudinal and experimental studies are needed to draw better conclusions about the issue. Nationwide research involving different sections of the population to identify the prevalence and risk factors of social media use is required. Research evidences are needed for developing an intervention strategy to address mental health impact of social media use.

Need to improve capacity of mental health service providers and services:

Mental health intervention is effective in treating social media addiction. A brief psychosocial therapy program applied to youth with internet addiction in Bangladesh was found effective in reducing the severity of internet addiction severity.⁴ About 91.1% of the participants felt the therapy program had brought about changes in them; 93.3% perceived changes in awareness about internet use; and 97.8% reported that, following therapy, they gained knowledge about where to seek help if problems arise.⁴ Conditioning with addictive elements and getting pleasure

from its use are among the explanations for the overuse of social media.²³ So, deconditioning (keeping away the sources) and arranging alternative sources of recreation are among the behavioral therapies to control any kind of dependence.²³ Following a daily activity schedule that includes all essential daily tasks is a good option for managing dependence on social media. Inappropriate use of social media has added additional burden to the existing limited mental health service system in Bangladesh. This additional burden of social media use has probably increased the existing treatment gap of 93% in mental health in the country.²⁴ As in many countries, Bangladesh is lacking enough psychiatrists and psychotherapists to meet the demands of mental health problems. Moreover, mental health service providers are not well trained to deal with this emerging issue of mental health problems. Young medical graduates and university or college students should be encouraged by giving incentives to select psychiatry or psychology as a career.

The government of Bangladesh is committed to people's physical and mental health. Several mental health conditions have been included in government definitions of disabilities with budgeting and funding commitments.²⁵ For real progress, There is a need for adequate resources and infrastructure supported by well-distributed financing towards a real progress by involving traditional healers, village doctors, drug sellers, health workers, nurses, and general physicians in mental health services at the primary health care level, a challenging job for the government.²⁵ The Mental Health Act of Bangladesh was enacted in 2018. The mental health policy and mental health strategic plan have been approved by the government. All the documents on mental health recommend providing mental health services through its integration with the existing health care system, which extends up to the primary health care level. School and college mental health services are required to address the issue of social media dependence. Nationwide screening is needed to identify those at high risk of social media overuse, and intervention should be designed accordingly. School mental health services, college and university counseling services, and industrial and corporate mental health service facilities are among the most demanding issues. Enacting laws in relation to the overuse of social media may be considered.

Conclusion

There is a relatively high prevalence of social media use in Bangladesh. It is indicated that there is a positive relationship between overuse of social media and negative mental health impacts among its users. Identification of the negative effects of social media use and its determinants and planning and execution of designed activities to prevent its mental health impact are recommended. The development of mental health infrastructures, supplying logistics, integrating mental health with the existing health care system, enhancing workforce support and collaborating with other related sectors of government are essential for its effective management.

Conflict of Interest: No issue of conflict of interest

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A case of Social Anxiety Disorder of a Medical Student with Suicidal Thought

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Abstract

Although social anxiety disorder is a much prevalent anxiety disorder, most cases do not get psychiatric attention. Characterized by negative judgement of others in social situations, it causes marked deterioration of functioning and wellness. The case described here was presented with suicidal thinking as he developed depression secondary to social anxiety. Though he developed social anxiety symptoms quite earlier, he came to a psychiatric facility after marked impairment of functioning. Both available pharmacological and psychological interventions were implemented. The patient got gradual improvements and returned to normal level of functioning with improving academic engagement and output. As considerable number of patients with social anxiety disorder are deprived of the existing effective intervention methods, strategies should be carried out to incorporate them more in psychiatric service.

Introduction

Apart from being the most common among all anxiety disorders, social anxiety disorder (SAD) is the third most prevalent psychiatric condition following major depression and alcohol dependence. It is also one of the most common psychiatric disorders among youths.¹ SAD previously known as social phobia is defined as persistent inappropriate fear or anxiety about social situations and events along with negative evaluation of others.² The global 1 year prevalence of this disorder is 2.3% whereas in a worldwide study across seven countries expressed the lifetime prevalence of the disorder varying from 22.9 to 57.6%.³ Besides, in a study among medical students in Germany, relevant social phobia symptoms were found in 12.2% individuals.⁴ Moreover, two studies in India and Bangladesh among medical students showed the proportion of social phobia as 11.37% and 53.9% respectively.⁵

SAD has a notable negative impact on the academic, professional and interpersonal functioning of an individual which is more marked among students of medical science. It creates huge discomfort for the individual as well.⁶ A study was conducted in Jazan University, Saudi Arabia in 2017 where students of medical sciences were also included. Poor performance in the clinical section was observed among those students who were diagnosed as social phobia.⁷ Persons with SAD might have different psychiatric comorbidity including depressive disorders and substance use disorders. Risk of suicide was also found higher among persons with this disorder.⁸ Though SAD is

rising in magnitude, the clinical recognition is substantially small. (Connor et al., 2001) As there are different well-established treatment options, it is crucial to engage those cases in psychiatric intervention to restore their productivity and wellbeing.⁹ A case of SAD is presented here who developed secondary depression along with suicidal thinking.

Case Summary

A 20-year-old 1st year medical student from Bangladesh admitted in a government psychiatry hospital in August 2022 with suicidal thinking. It was preceded by a few weeks of low feeling and diminished interest in different activities specially in the academic field. On retrospective inquiry, he was a self-described shy person since secondary school period who disliked to attend social gatherings. He mostly avoided to face visitors in their house. Though he was a meritorious student he felt difficulties in presentation in front of others and played almost a passive role in group discussions. He always felt uneasiness in front of mostly of known people and specifically an authority figure fearing that they could identify his mistakes during those interactions. Though interested, he had shakiness attending social programs and parties as others could critically evaluate his dressing or speaking pattern. Moreover, he also had a college particular fear that he could do something embarrassing in front of them. Despite those difficulties, he studied hard and got admitted in a medical college. However, after a few months he started to face difficulties interacting with batchmates and teachers mostly when active participation was needed. Despite executing better in written exams, his performance in viva based exams were notably below par. He was frustrated with his academic scores and gradually became irregular in academic activities. He developed a sad feeling as he did not find any interest to take part in academic classes, library works, group discussions as well as in study. He stayed confined in his room mostly with few interactions with others. Besides, his sleep became unrefreshed and appetite

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became poor. He lost his hope to perform better again and gradually thought himself as a worthless creature. Consequently, he developed the thought to commit suicide though he did not take any attempt.

With these complaints he got admission with the aim of having a solution to his problem. Mental status revealed that he was persistently and pervasively depressed for few weeks with reduced mood reactivity. He had the overvalued idea of critical evaluation of others. Psychometric evaluation reflected moderate depression and high level of social anxiety. Diagnosis was made according to Diagnostic and Statistical Manual for Mental Disorder, fifth edition (DSM 5) as social anxiety disorder and secondary major depressive disorder, moderate. The patient was initially treated by antidepressants, propranolol and low dose of benzodiazepines coupled with psychoeducation, relaxation therapy and activity scheduling. Cognitive behavior therapy (CBT) targeting cognitive biases was applied. Family members and teachers of the medical college were incorporated in the intervention program as well. Gradually, his depressive symptoms including suicidal ideation was reduced. He was then given graded exposure considering different social situations including academic environment. After a considerable time, the severity of his social phobia symptoms decreased in both clinical and psychometric evaluation. The patient was discharged from hospital and follow up was maintained along with exposure therapy. Following 6 months of admission, the patient enjoyed his life with brilliant academic display.

Discussion

Persons having SAD in large number of cases could not recognize their symptoms that left them to be undiagnosed. Some others who identified their mental health problems did not visit mental health specialists as they were concerned about stigma as well as afraid of being negatively judged by healthcare professionals. So, the overall clinical detection rate found in different studies were considerably low leading to increased treatment gap.¹⁰ Our patient also developed social anxiety symptoms at an early age. Despite huge distress and functional difficulties, he could not understand the importance of treatment up to a later stage. Though his academic status was maintained up to a certain period, he eventually faced notable problems in oral exams and group discussions. The patient might have performed much better in different academic landmarks if he had intervened early.

Apart from the functional impairments, different psychiatric comorbidities stemmed from SAD. Epidemiological evidence reflected depression as one of the most notorious secondary disorders which led to loss of life by suicide.¹¹ This patient also had frequent suicidal ideation when experienced himself as worthless due to depression. There was a high possibility of another death as the patient was at the end of his patience. However, suicidal ideation was the symptom which propelled him in

psychiatric hospital and provided an opportunity to prevent an imminent unnatural death.

Promising evidence-based treatment options are available for managing SAD. Pharmacological treatments include different medications with antidepressant property, beta adrenergic blockers and benzodiazepines. Psychological intervention strategies are CBT targeting cognitive distortions as well as behavioral exposure to social situations and reduction of safety seeking behaviors. Relaxation techniques comprising breathing exercise, progressive muscular relaxation (PMR) and mindfulness to reduce anxiety are also recommended. Comorbid conditions are treated according to their diagnosis as antidepressants, CBT, activity scheduling, family counselling are strategies to treat depressive disorders.¹² For our patient, antidepressant, activity scheduling and counselling of family members were approached for depression. Along with them, propranolol and low dose benzodiazepine were supported for a period. After some improvement of depression, CBT for SAD combined with practice of relaxation procedures was started resulting in gradual recovery. He improved remarkably with restoration of academic performance and elevation of mental wellbeing. If further follow up is maintained he is expected to act in his occupational career as a doctor with proficiency and excellence. Thus, noteworthy recovery is possible with proper treatment of SAD.

Conclusion

Though SAD is a debilitating disorder having notorious impact on wellbeing and performance, effective treatment options are available. As the diagnosis rate is not satisfactory, different strategies should be taken to take the patients with this disorder to the light of psychiatric intervention.

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The types of papers those may be considered for inclusion are:

- Original research, including epidemiology, clinical care, evaluations of health interventions or programmes, and health practice original work on case studies, audit, workforce or resource development
- Review article, which include meta-analysis and systematic review

On submission, authors should indicate in which category their contribution is to be considered. If authors are uncertain of the category to which their paper is best suited, they should make this clear in their covering letter to the Editors.

CME Journal does not accept study protocols or commentary/opinion papers- except by prior discussion and invitation.

Submission Process

Papers submitted to CME Journal are carefully reviewed in the first instance by one of the Editors. Papers those do not meet editorial needs; are methodically flawed; or lack originality will be rejected. CME Journal will also reject papers that fail to provide sufficient ethical approval where

required and shall refer papers back for revision prior to any review if those do not comply with Journal style.

Papers which pass the Editorial review will be sent for peer-review and will be reviewed by at least two external reviewers (short communications may only be sent to one reviewer). Reviewers are asked to consider whether the paper: contains new research findings or information; is relevant to clinical and public health practice, is technically sound; and is suitably presented.

1. How to submit your manuscript

All manuscripts should be submitted to the Editorial Office at email: cmejournal21@gmail.com

2. Correspondence

The official language of *CME Journal* is British English. Support may be made available to overseas authors whose first language is not English.

Any correspondence should be sent to the Editorial Office as follows:

The Editors

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Center for Medical Education (CME)
Directorate General of Medical Education (DGME)
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Submission Checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the Article presentation section for more details.

Ensure that the following items are present:

- One author has been designated as the corresponding author with contact details:
 - E-mail address
 - Full postal address
- All necessary files have been uploaded:
 - Blinded Manuscript:
 - ◆ Include keywords
 - ◆ All figures (include relevant captions)
 - ◆ All tables (including titles, description, footnotes)
 - ◆ Ensure all figure and table citations in the text match the files provided
 - ◆ Indicate clearly if colour should be used for any figures in print

- Abstract- not more than 300 words
- Supplemental files (where applicable)

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, contact the Editorial Office at email: cmejournal21@gmail.com

Article Preparation

Article types

Article type	Word length	Tables/ figures	References	Peer reviewed
Original research	4,500	5	Up to 100	Yes
Review article	3,500	5	Up to 100	Yes

Original research

Papers should be clear, precise and logical and should not normally exceed 4,500 words. Original research papers should be presented as follows and using the Submission Template:

1. Covering letter- the letter must contain: why the submission is appropriate for publication in CME Journal; what is known about the topic discussed; what your study adds; and confirmation that the paper has not been published elsewhere
2. Separate title page- bearing title, all authors' initials, surname, main degrees (two only), the name and location of the institution(s) where the work was done and the declaration of interests. The author to whom proofs and correspondence should be sent should be clearly indicated with correct address, e-mail, and telephone.

Manuscript

- Abstract (max 300 words). This should include: Background (Objectives, Study design), Methods, Results, Conclusions
- Keywords. 3-6 keywords should follow the abstract
- Introduction
- Methods

- Results
- Discussion
- Conclusion an recommendation
- Acknowledgements including declarations: Statements of ethical approval, funding and competing interests (Optional)
- References

Clinical trials

Registration in a public trials registry is a condition for publication of clinical trials in this journal in accordance with International Committee of Medical Journal Editors recommendations.

Tables and figures

A maximum of 5 tables/figures can appear within the manuscript. Additional tables/figures can be included as online supplementary material. Authors should indicate at approximately what point in the text the table should appear.

Tables must be comprehensible without reference to the text if possible. References can be cited in the tables if needed. Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with superscript lowercase letters. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.

Figures, graphs, drawings etc. should not be over complex and must be intelligible when reduced in size for printing. They should be on separate sheets, numbered and with legends.

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Review Papers

Systematic reviews

Systematic Review papers presenting exhaustive, critical assessments of the published literature on relevant health topics or questions will be considered. Such reviews should be prepared in strict compliance with MOOSE or PRISMA guidelines or with Cochrane's complementary guidelines for systematic reviews of health promotion and health interventions, as appropriate. CME Journal encourages authors to use alternative databases covering scientific literature from low- and middle-income countries not indexed in the traditional international databases (i.e. Medline, Web of Science). All systematic reviews need to be submitted (as supplementary material) with a completed copy of the guideline checklist that has been used in the preparation of the review.

Narrative reviews

Narrative Review papers will be considered by CME Journal. Whilst no formal guidelines for such reviews exist, authors should be very clear in what criteria they have used for the selection of studies and describe the methods used to undertake the review in the body of the paper. Generally speaking, narrative reviews will only be considered where the author(s) are clearly experts in the research field under consideration or the health issue under consideration is not amenable to systematic review. The reviews needs to be submitted with a supporting statement justifying the appropriateness of undertaking a narrative review.

Review papers should not exceed 3,500 words. Reviews can include up to five tables/figures and up to 100 references.

Please follow the guidance for original research in the preparation of the manuscript including a structured abstract.

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