Emotional intelligence and anxiety, stress, and depression in first phase medical undergraduates

Kaushal Kumar Alam

Assistant Professor, Department of Physiology, University College of Medical Sciences, University of Delhi, New Delhi, India

ABSTRACT

Background: Medical studies are one of the stressful course in India and worldwide. Emotional intelligence (EI) is a group of skills that can be learned to enhance coping skills and promote well-being. **Aims and Objectives:** The present study is aimed to analyze the relationship between EI and psychological distress such as depression, anxiety, and stress in 1st-year medical undergraduates. **Materials and Methods:** A self-reported questionnaire is used for assessing EI and psychological distress. A shorter version of the Trait EI questionnaire is used for assessing EI and the depression, anxiety, and stress subscale is used for assessing psychological distress. A total of 98 medical students participated in the study. Unpaired student's t-test, ANOVA, and Pearson's correlation coefficient analysis was performed. **Results:** The results showed a negative association between EI and depression, anxiety, and stress. Depression, anxiety, and stress were found in 35.7%, 50%, and 14.3% of 98 participants, respectively. EI was found to be significantly higher in men. Women were found to be more affected than men. **Conclusion:** High EI is associated with the lower psychological distress. This shows the need to assess and improve EI through practices that can improve their psychological health.

Key words: Emotional intelligence; Psychological distress; Anxiety; Medical students

INTRODUCTION

Medical course is considered as one of the most stressful careers in India and worldwide.[1] Various studies on medical students worldwide indicate that they develop symptoms of anxiety, depression, and stress during the training period.[2] Emotional intelligence (EI) was first described as a psychological concept in the 1990s. It was defined as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions."[3]

EI came into the focus of research and intervention for its promise as a group of skills that can be learned to enhance coping skills and promote well-being.[4] There are two types of EI models: Trait EI (TEI) and ability EI (AEI). The TEI is linked to how people perceive emotions and how they behave, as determined by self-report questionnaires. AEI is linked to emotional-related cognitive skills, which are assessed using optimum performance assessments in a similar way to IQ. Higher levels of TEI and AEI are commonly regarded as beneficial, as they can predict wellbeing, good relationships, educational achievement, and work-related performance, among other positive life outcomes.[5]

Few studies are available which show an association between EI and psychological health in medical undergraduates. Yelkikalan et al., have shown that EI is associated with the social and cultural environment.[6] Since many students come from diverse backgrounds and India is known for

Address for Correspondence:
Dr. Kaushal Kumar Alam, Assistant Professor, Department of Physiology, University College of Medical Sciences, University of Delhi, New Delhi - 110 095, India. **Mobile:** +91-7063956213. **E-mail:** kaushal.alam@gmail.com

its cultural diversity, it is appropriate to assess EI and psychological health across the region.

Aims and objectives

The study was conducted with the objectives as follows:
1. To determine the association between EI and psychological health in first phase medical undergraduates
2. To estimate the prevalence of psychological health of first phase medical undergraduates
3. To determine the sociodemographic factors associated with EI and psychological heath.

MATERIALS AND METHODS

Study design

A cross-sectional study based on a self-report questionnaire was conducted in medical college of north east state of India.

Study population

Study participants included were first phase medical undergraduates. It was conducted in December 2019. Participants were well informed about the objectives of the study. Participation was voluntary and their verbal consent was taken before conducting the study. The questionnaire was administered during the last 20 min of a 2-h theory lecture and collected on the same day.

Sampling procedure and sample size

Out of 100 students, 98 students participated in the study. Forty-six were men and 52 were women. They were selected through the quota type of non-probability sampling method.

Data collection

Data were collected using the self-reported, structured form, and paper-based version of the questionnaire in the English language. Participants were asked to read the instructions carefully at the top of the form and answer all the questions. Sociodemographic characteristics of students such as age, gender, family income, choice of career, family residence, and extracurricular activity were collected by a semi-open-ended questionnaire.

For measuring EI, short version of the TEI Questionnaire (TEIQue-SF) was used based on the theoretical model of Petrides and Furnham.[7] The TEIQue–SF is a 30-item questionnaire with seven options that assesses global TEI. It is derived from the full form of the TEIQue, which evaluates four factors covering 15 distinct facets. The four factors (subscales) are emotionality (perceiving emotions), self-control (regulating emotions in self), sociability (regulating emotions in others), and well-being (strategically utilizing emotions). Participants had to indicate on a

Likert scale ranging from "Completely Disagree" (1) to "Completely Agree" (7). A global TEI score is calculated by summing up the item scores and dividing by the total number of items. The four factors of TEI are evaluated by summing up the item scores for each factor and dividing by the number of items.

The depression, anxiety, and stress subscale (DASS-21) questionnaire was used to measure psychological distress. It is a numerical indicator of distress rather than a categorical indicator of clinical diagnoses. The complete version of DASS contains 42 items, and the shorter version (DASS-21) contains 21 items, with both assessing the same domains. The main advantage of the DASS-21 is its brevity and conciseness which makes it easier to complete in a shorter period. Several studies have shown high internal consistency (Cronbach's alpha scores of >0.70). Good convergent validity has also been indicated. It contains seven items for each subscale, that is, depression, anxiety, and stress. Participants had to indicate on a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time) how each statement applied to them over the past 1 week. Overall scores for each subscale were calculated by summing the scores for the relevant items. Lovibond and Lovibond's severity scores were used to evaluate the prevalence or absence of depression, anxiety, and stress.[8] These severity ratings are not used as a diagnostic tool but only as a way to measure these symptoms. Table 1 showed the cutoff scores for depression, anxiety, and stress.

Data analysis

The data were analyzed using IBM SPSS version 26.0. Demographic characteristics and prevalence of depression, anxiety, and stress were expressed in frequencies (percentages). Based on normal distribution of data, unpaired student's t-test test (two study groups) and ANOVA (more than two study groups) were used to analyze any difference in TEIQue-SF and DASS-21 scores according to their demographic characteristics. A correlation between EI and psychological distress was measured using Pearson's correlation coefficient test. $P < 0.05$ was considered significant.

Ethical consideration

The approval of the Institutional Ethical Committee was obtained before the conduction of the study. Each student was allocated a random number to keep identity anonymous and strict confidentiality was maintained.

RESULTS

Table 2 shows proportion of male (46.94%) and female (53.06%) students. There were total 98 study subjects. Mean

Table 1: DASS-21 scoring showing cutoff scores for each subscale

Grading	Depression	Anxiety	Stress
Normal	0–4	0–3	0–7
Mild	5–6	4–5	8–9
Moderate	7–10	6–7	10–12
Severe	11–13	8–9	13–16
Extremely severe	14+	10+	17+

Table 2: Frequencies for demographic characteristics (n=98)

Variable	Category	Frequency (%)
Gender	Male	46 (46.94)
	Female	52 (53.06)
Family residence	Town	52 (53.06)
	City	46 (46.94)
Choice of career	Parent	11 (11.22)
	Self-chosen	87 (88.78)
Extracurricular activity	No	48 (48.98)
Family income	Yes	50 (51.02)
	<20,000	10 (10.2)
	20,000–40,000	21 (21.42)
	40,000–60,000	19 (19.39)
	>60,000	48 (48.98)

Figure 1: Severity of depression

(±SD) age was 18.51±1.12 years. No statistical difference was found between the mean age for men (18.76±1.47) years and women (18.29±0.60) years. Eighty-seven (88.78%) students self-chosen this course and 11 (11.22%) were influenced by their parents. Fifty students (51.02%) were involved in an extracurricular activity.

Table 3 shows descriptive statistics and reliability of TEIQue-SF (global and subscale scores) and DASS-21 scores. TEIQue-SF (global and subscale scores) and DASS-21 scores had reasonably normal distributions. None of them had a skew or kurtosis >1 (in absolute value). Reliabilities (Cronbach's alpha) for TEIQue-SF factors were high for well-being (0.73) and global TEI score (0.83), moderate for self-control (0.57), emotionality (0.58), and sociability (0.59) subscales. Reliabilities for DASS-21 subscales were high for depression (0.85), stress (0.70), and moderate for anxiety (0.62).

Table 4 shows EI of students (TEIQue-Sf) according to their demographic characteristics. There was a significant difference in the mean (±SD) global EI trait scores between men (4.29±0.812) and women (4.86±1.066). Men had higher global EI trait scores. A significant difference was found in mean (±SD) scores in wellbeing and self-control subscales. Men had higher wellbeing (4.86±1.066) (P=0.007) and self-control scores (4.09±1.029) (P=0.001). There was no significant effect of other demographic variables.
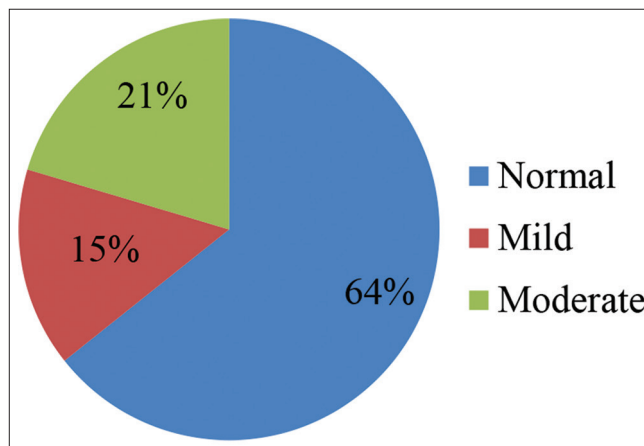
Figure 1 showed proportion of students with different grades of depression. Depression with mild to moderate forms was found in 35 (35.7%) students.

Figure 2 shows proportion of students with different grades of anxiety. Anxiety was found in 49 (50%) students with mild-to-moderate forms and severe form in 43 (43.9%) and 6 (6.1%) students, respectively.

Figure 3 shows proportion of students with different grades of stress. Stress in mild form was found in 14 (14.3%) students.

Table 5 shows significant difference in the mean (±SD) scores for DASS 21 between men and women. Women had higher scores for depression (9.52±5.371) (P=0.003), anxiety (8.85±4.084) (P=0.023), and stress (10.83±3.650) (P=0.000) subscales. A significant difference was found in depression and stress subscales based on family income. Depression (12.10±4.677) (P=0.037) and stress scores (12.10±3.784) (P=0.048) were higher in students with family income <20,000/month. There was no significant effect of other demographic variables.

Table 6 shows correlation of EI (TEIQue-Sf scores) and psychological health (DASS 21 scores). Pearson's correlation analysis showed a highly significant negative correlation between TEIQue-Sf global EI score and DASS-21 subscales depression= −0.573, P=0.000, Anxiety= −0.314, P=0.002, and Stress= −0.364, P=0.000. DASS 21 of DASS-21 was also found to be negatively correlated with well-being and self-control subscales. Depression and stress were also found to be negatively correlated with emotionality and sociability scale which was highly significant. The negative correlation coefficient value suggested an inverse relationship between the variables;

Table 3: Descriptive statistics and Cronbach's alpha of TEIQue-SF and DASS-21 subscales

Dependent variable	Mean	SD	Skewness	Kurtosis	Cronbach's alpha
TEIQ-Sf global score	4.09	0.767	0.192	−0.013	0.85
Well being	4.54	1.105	−0.140	−0.618	0.73
Self –control	3.72	1.019	−0.071	−0.043	0.57
Emotionality	4.34	0.900	0.061	0.427	0.58
Sociability	3.81	0.932	−0.078	0.044	0.59
Depression	8.04	5.231	0.493	−0.797	0.85
Anxiety	8.01	3.899	0.483	−0.166	0.62
Stress	9.31	4.006	0.047	−0.553	0.70

Table 4: Distribution of TEIQue-SF according to demographics and their relationship

Variable	Number (%)	TEIQ-sf global Mean±SD	Well being Mean±SD	Self-control Mean±SD	Emotionality Mean±SD	Sociability Mean±SD
Gender						
Male	46 (46.94)	4.29±0.812	4.86±1.066	4.09±1.029	4.40±0.958	3.94±0.962
Female	52 (53.06)	3.91±0.683	4.26±1.073	3.40±0.901	4.29±0.852	3.71±0.901
		(P=0.013)*	(P=0.007)	(P=0.001)+	(P=0.516)	(P=0.218)
Family residence						
Town	52 (53.06)	4.14±0.763	4.56±1.096	3.79±1.015	4.45±0.938	3.88±0.969
City	46 (46.94)	4.03±0.776	4.52±1.128	3.65±1.029	4.22±0.849	3.74±0.895
		(P=0.486)	(P=0.850)	(P=0.492)	(P=0.200)	(P=0.476)
Career choice						
Parent	11 (11.22)	3.89±0.813	4.61±1.390	3.25±1.234	4.34±0.701	3.41±1.058
Self-chosen	87 (88.78)	4.12±0.762	4.53±1.074	3.79±0.981	4.34±0.901	3.86±0.910
		(P=0.361)	(P=0.837)	(P=0.105)	(P=0.989)	(P=0.127)
Extracurricular activity						
No	48 (48.98)	3.98±0.794	4.32±1.049	3.63±1.072	4.34±0.948	3.69±0.977
Yes	50 (51.02)	4.20±0.731	4.75±1.129	3.83±0.966	4.35±0.862	3.93±0.883
		(P=0.148)	(P=0.056)	(P=0.330)	(P=0.995)	(P=0.213)
Family income						
<20,000	10 (10.2)	3.80±0.486	4.03±1.535	3.40±0.746	4.24±0.356	3.37±0.789
20,000–40,000	21 (21.42)	3.86±0.704	4.27±0.712	3.40±0.901	4.27±0.915	3.54±0.785
40,000–60,000	19 (19.39)	4.15±0.859	4.61±1.118	3.89±0.988	4.35±1.063	3.77±1.161
>60,000	48 (48.98`)	4.23±0.783	4.74±1.118	3.88±1.102	4.40±0.923	4.04±0.875
		(P=0.169)	(P=0.247)	(P=0.204)	(P=0.932)	(P=0.66)

*P≤0.05 - significant, +P≤0.01 – very significant

Table 5: Distribution for DASS-21 and relationship between demographics and DASS-21

Variable	Number (%)	Depression Mean±SD	Anxiety Mean±SD	Stress Mean±SD
Gender				
Male	46 (46.94)	6.37±4.572	7.07±3.486	7.59±3.715
Female	52 (53.06)	9.52±5.371	8.85±4.084	10.83±3.650
		(P=0.003)+	(P=0.023)*	(P=0.000)#
Family residence				
Town	52 (53.06)	7.79±4.904	7.94±3.316	9.04±3.520
City	46 (46.94)	8.33±5.618	8.09±4.506	9.61±4.514
		(P=0.617)	(P=0.858)	(P=0.492)
Career choice				
Parent	11 (11.22)	9.27±6.246	9.64±5.334	10.82±4.662
Self-chosen	87 (88.78)	7.89±5.109	7.80±3.669	9.11±3.910
		(P=0.410)	(P=0.292)	(P=0.185)
Extracurricular activity				
No	48 (48.98)	8.13±5.110	8.56±3.989	9.27±3.988
Yes	50 (51.02)	7.96±5.394	7.48±3.776	9.34±4.064
		(P=0.877)	(P=0.171)	(P=0.932)
Family income				
<20,000	10 (10.2)	12.10±4.677	9.10±4.040	12.10±3.784
20,000–40,000	21 (21.42)	7.62±5.210	8.71±4.161	9.38±3.930
40,000–60,000	19 (19.39)	6.26±3.885	5.95±2.415	7.74±2.884
>60,000	48 (48.98)	8.08±5.484	8.29±4.047	9.31±4.238
		(P=0.037)*	(P=0.068)	(P=0.048)*

*P≤0.05 - significant, +P≤0.01 – very significant, #P≤0.005 – highly significant

Table 6: Correlation between TEIQue-SF and DASS-21

Variables	TEIQ-Sf global score	Well-being	Self-control	Emotionality	Sociability
Depression	−0.573[#]	−0.486[#]	−0.382[#]	−0.312[#]	−0.381[#]
	P=0.000	P=0.000	P=0.000	P=0.002	P=0.000
Anxiety	−0.314[#]	−0.209[*]	−0.308[#]	−0.168	−0.127
	P=0.002	P=0.039	P=0.002	P=0.099	P=0.213
Stress	−0.364[#]	−0.364[#]	−0.462[#]	−0.322[#]	−0.302[#]
	P=0.000	P=0.000	P=0.00	P=0.001	P=0.002

*Correlation is significant at the 0.05 level, #Correlation is highly significant at the 0.005 level
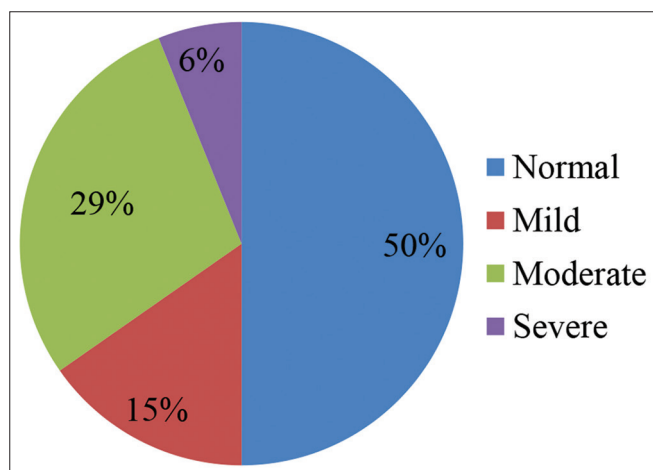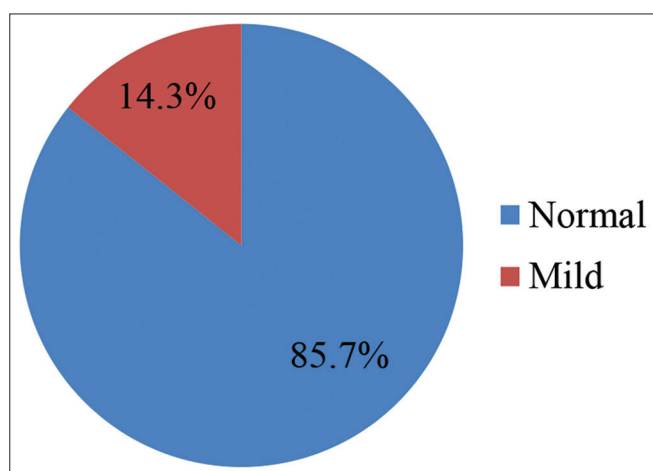

Figure 2: Severity of anxiety

Figure 3: Severity of stress

participants with higher EI scores were more likely to report lower DASS-21 scores.

DISCUSSION

This study shows a significant negative correlation between EI and psychological health. This indicates that high EI is associated with lower psychological distress. These findings are consistent with other studies which state that higher levels of EI are associated with better physical and mental health; greater psychological wellbeing; academic success, and lower anxiety and depression in adolescents.[9-11] However, emotionality and sociability subscales of EI are not found to be correlated with anxiety subscale.

A relationship between EI and stress, anxiety, and depression is best explained by the nature of EI and its components. Individuals with high EI have better self-awareness, recognize, and understand one's own and other's emotions, and using them to manage their relationships and provide social support. Furthermore, the ability of emotion regulation improves adaptive coping mechanisms such as problem-solving and stress management. Good social skills help them to better resilience for everyday life reduces distress and anxiety.[11,12]

In this study, men are having higher global TEI scores than their women counterparts and results are consistent with other studies.[13,14] However, other studies have found that women achieved higher EI scores while other studies have shown no gender differences in EI scores.[13,15] These different findings may be due to the sociodemographic characteristics of the sample. One plausible reason for lower EI scores in women in this study may be that they become more emotionally exhausted than males when confronted with stress. Women tend to overuse their EI that can lead to EI drainage and emotional exhaustion and there is a negative relationship between emotional exhaustion and EI.[16] Another reason may be women underestimate themselves and men overestimate themselves regarding their emotional skills. Bracket et al., have found that women self-reported a lower EI than they show to have in performance tests.[12]

Significantly higher scores on self-control and well-being except emotionality and sociability subscales are achieved by the men as compared to women counterparts. A similar finding was observed in Chirumbolo et al., in which males scored significantly higher on well-being, self-control, sociability, and global trait scores.[17] The well-being factor is a combination of "optimism," "happiness," and "self-esteem," and the self-control factor is a combination of "emotion regulation," "impulsiveness," and "stress management." This indicates men are more skillful at regulating emotion in self and using them to manage their

relationship and provide social support. Men are thought to be better at managing urges and tolerating stress, while women are thought to be better at coping with and understanding their emotions.[18] No significant difference is found based on other sociodemographic characteristics. Although this study shows students participating in an extracurricular activity, residing in town/villages, self-chosen medical course, and family income >60,000 have higher EI scores but were not statistically significant. Extracurricular activities can increase EI by enhancing one's ability to be self-aware and express emotions. In some studies, EI is significantly associated with the social and cultural environment, in which people are born and brought up.[19]

This study shows that 50% of students experiencing anxiety as major psychological distress followed by depression in 35.7% of students and then stress in 14.3% of students. This is consistent with other studies which also found that the prevalence of anxiety is higher as compared to depression and stress. The severity of these symptoms is in mild-to-moderate forms except anxiety which also shown the severe form. Women have significantly higher scores on DASS 21, in which mean women are experiencing more psychological distress than their men counterparts. This finding is consistent with other studies which reported a higher prevalence of psychological distress in women.[20,21] However, it is in contrast with the other studies which reported no gender differences or any other demographic characteristics in psychological health.[22] Women have been regarded to experience more psychological distress than men. Men have shown to cope up with stress and anxiety better than women due to their involvement in leisure activities.[23]

Limitations of the study

There are several limitations in this study; first, participants have not been selected by random procedures and included only first phase medical students. It would have been better if a student of all the phases was included in the study. Thus, observations of the present study cannot be generalized to the students of other medical colleges. Since this was a cross-sectional study, no causal link could be identified for EI and psychological health. EI and psychological health were assessed based on a self-reported scale which can become a common source of variance that affects the result. There can be information bias as participants may tend to fake their responses out of social desirability concerns. This can be overcome when self-assessment and peer-assessment are also evaluated together.

Recommendations

It is suggested that future studies be conducted in collaboration with other medical colleges. Few sessions should be included in medical curriculum which teaches psychological health through Indian philosophical text. Longitudinal studies which would investigate the impact of teaching over time are suggested.

CONCLUSION

TEI is associated with psychological distress perceived by first phase medical students. The overall EI was found to be significantly higher in men as compared to women from this study. This means that men are capable of recognizing and managing their own emotions and, thus, can tolerate daily life stressors. In this study, women were found to be more psychologically distressed than men. Overall anxiety is found to be a common symptom in medical students. Therefore, it is suggested that medical colleges may develop training programs to develop and enhance the EI of medical students to improve their well-being. This training could be part of the academic curriculum and should be a continuous process because EI can grow and develop over time through learning and practice.[24]

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