Original Article

Association of Mental health to Emotional Intelligence in Medical Undergraduate Students: Are there Gender Differences?

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Abstract

Introduction: Emotional intelligence (EI) has a potential to improve mental health and work performance of a person. Present study was conducted to evaluate gender difference in mental health and EI of first year medical students and assess the relationship between them in both genders.

Materials and Methods: 170 medical students (86 males; 84 females) participated in this cross-sectional, questionnaire-based study. Mental health was assessed by General Health Questionnaire-12 (GHQ-12) and EI by Trait Emotional Intelligence Questionnaire-short form (TEIQue-sf).

Results: Females had a significantly higher mean GHQ-12 score (p=0.001) and greater prevalence of psychological morbidity as compared to males. There was no significant gender difference in mean global TEIQue-sf and its four subscale scores (p>0.05). In both genders, GHQ-12 showed significant negative correlation with global TEIQue-sf scores (r=-0.394 and -0.434 in males and females respectively; p<0.001) and its subscales.

Conclusion: Results indicate significant gender difference in mental health with comparable emotional intelligence in both the genders. Strong negative association between mental health and EI suggests that higher EI moderates psychological distress in both male and female medical students, contributing towards better self-perception of mental health in them. Enhancing EI may prove beneficial for allaying stress in undergraduate medical students and fostering better professionalism in them.

Introduction

Mental health or psychological well -being signifies a balanced state of mental, emotional and social functioning in an individual (1). Its key components include self-actualization, self-esteem, affect and mood (2). People with better self-esteem exhibit higher degrees of positive and more rational thinking as compared to those people who have lower self-esteem (3). This inherent ability, by virtue of which an individual perceives, understands, expresses and regulates emotions in self and others has been referred to as trait emotional intelligence (EI) (4).

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Trait EI reflects an emotion based thinking which is instinctive, involuntary and subjective to each individual and is different from conscious thinking. EI skills can be subjected to learning process and are modifiable too (5). It has been postulated that EI has a potential to improve both personal mental health as well as work performance of a person (6). However, contrary findings have also been put forth, in which, the researchers have found that individuals with higher EI tend to have greater sensitivity to mood related stimuli which leads to greater psychological distress in them during adverse circumstances (7).

The popularity of the concept of EI for the past decades has led various researchers to examine its potency in promoting better psychological well-being amongst healthcare personnel. Initial researches have shown a beneficial role of EI in academic achievements, interpersonal skills and better patient care amongst doctors (8). Previous research on medical students in different years of the curriculum, have also yielded similar kinds of results (9). However, the research in this area is still in its infancy and contradictory results too, have been put forth. Much less is known about the gender differences in EI. Preliminary evidence from EI studies have suggested that men and women are emotionally intelligent in different ways. Women have been found to be more emotionally self-aware, empathetic and to have more interpersonal skill, while men have been found to be more self-confident, optimistic and adaptable (10). Despite these advances, it is still not clear, if such variations in emotional components of the two genders would also produce marked differences in their EI. Moreover, despite the fact that higher prevalence and severity of psychological morbidity has been reported in females as compared to their male counterparts both, in general population (11) as well as among medical students (12), very few studies have assessed the association of EI and mental health in the two genders. Therefore, justification of the study is derived from the limitation of earlier studies. The main objectives of the present study were to evaluate gender difference in mental health and emotional intelligence of first year medical students and to assess the relationship between mental health and EI in the two genders.

Materials and Methods

A cross-sectional, self-reported questionnaire based study was conducted in the Department of Physiology, Maulana Azad Medical College, New Delhi. Prior approval was taken from the institutional ethical committee for conducting this study. Participation was entirely on voluntary basis. The purpose of the study was fully explained to all the participants and their informed signed consent was taken at the time of inclusion.

Participants

Out of a total of 250 first year medical undergraduate students, we selected 180 (Male: Female=90:90) students through controlled quota type of purposive sampling technique. Since there is marked variation in the number of male and female students being admitted to our institute in an academic year, we employed this sampling technique to obtain a more homogeneous sample. Two male students refused to participate in the study and two, who returned incomplete forms, were excluded from the study. Four female students expressed their unwillingness to participate in the study and two returned incomplete forms. They were also excluded from the study. The total number of participants who were finally included in the study was Males=86 and Females=84. The identity of each student was kept anonymous by allocating a random number to each one of them and strict confidentiality was maintained.

Data collection

Data was collected using self-reported, pre-tested, paper-based version of questionnaires (in English language) on mental health and emotional intelligence. The paper-based versions of questionnaires were distributed amongst students during breaks from their teaching schedule. The process of filling in the questionnaire took about 15 minutes and the completed questionnaire was collected on the same day. Completion of the questionnaires was voluntary and did not affect their progression in the medical course. The participants were asked to complete the given questionnaires by

indicating on a Likert scale how each statement applied to them over past one week.

Questionnaires

The mental health was assessed by the 12-item version of the General Health Questionnaire (GHQ-12). This scale was chosen because of its well-established validity for identification of minor psychological disorders in student samples (13) and young populations in the community (14). The self-reported questionnaire focuses on two major areas namely, the inability to carry out normal functions and the appearance of new and distressing phenomena. The 12 items on the GHQ-12, represent 12 manifestations of psychological morbidity (15). Respondents are asked to indicate how their health has been "over the last week" compared to their usual state on a 4-point scale ('better than usual'=0, same as usual=1, less than usual=2, much less than usual=3). The GHQ scoring was more normally distributed than Likert scale, so we adopted it for this study. The scoring method was binary scoring method whereby the two least symptomatic answers score 0 and the two most symptomatic answers score 1 – i.e., 0-0-1-1 with possible range of score between 0 to 12. The sensitivity and specificity of the GHQ12 score at cut-off point of 4 has been found to be 81.3% and 75.3% respectively with positive predictive value of 62.9% (16). Therefore, the participants who scored >4 were considered as having a higher risk of psychological morbidity and taken as 'caseness' or GHQ "case" in this study.

EI was measured using Trait Emotional Intelligence Questionnaire-short form (TEIQue-sf) (17). Trait EI questionnaire is 30 items, self-report inventory that measures self-perception of emotions based on personality traits of the individual. TEIQue-sf is a short version, based on the long form of trait EI questionnaire (153 items). It provides quick, robust assessment of global trait EI as well as its four factors, namely, wellbeing, emotionality, self-control and sociability. Each item is scored on a Likert scale ranging from 1 (completely disagree) to 7 (completely agree). Six items each correspond to scores of wellbeing, self-control, sociability subscales and 8 items for emotionality subscale. The rest four items

contribute to the global trait score. The global trait EI score is calculated by summing up the item scores and dividing it by the total number of items. The possible range of scores is from 30 to 210. Similarly, subscale scores are also calculated by summing up the item scores in that particular subscale and dividing it by the total number of items in it.

Statistical analysis

The data was analyzed using SPSS 21 software (Inc., Chicago, Illinois, USA). All data collection forms were given serial numbers. Reliability analysis of all measures was conducted by calculating Cronbach's alpha internal consistency coefficients using the data from all participants. Descriptive statistics in the form of mean and standard deviation (SD) was calculated for the scores of both questionnaires. GHQ "case" were expressed in frequency and percent in male and female participants. Cross-tabulation and Chi-square test were used to compare the gender difference in scores of GHQ-12, global TEIQue-sf and its four factors. Pearson's correlation was used to analyze the relation between mental health and EI amongst the two genders. A p value <0.05 was considered statistically significant.

Results

Out of total 180 participants (90 male and 90 females), 170 returned completed questionnaires giving an overall response rate of 94.4%. The mean age of males was 18.24±1.11 years and of females was 18.21±0.75 years and was found to be comparable in both the genders (p>0.05).

Questionnaires

The Cronbach's alpha coefficient of GHQ-12 and TEIQue-sf and the mean (SD) scores of mental health and EI in male and female participants are shown in Table I. Mean GHQ-12 scores showed a statistically significant difference between the two genders. The female participants scored significantly (p=0.001) higher as compared to the male participants. There was no significant difference between the two genders in either the mean TEIQue-sf global score or any of its four subscale scores.

TABLE I : Mean±SD and Cronbach's alpha value of mental health scale (GHQ-12) and EI scale (TEIQue-sf) in first year medical students.

Variables	Males (n=86)	Females (n=84)	P value	Cronbach's alpha
GHQ-12	3.00±2.435	3.65±2.695	0.001**	0.71
TEIQue-sf global score	117.48±19.644	118.93±20.363	0.643	0.83
Wellbeing	30.02±6.899	31.29±5.762	0.277	0.62
Self-control	26.55±5.958	25.19±6.228	0.841	0.55
Emotionality	36.08±7.110	37.08±8.117	0.351	0.58
Sociability	24.83±6.399	25.37±6.123	0.465	0.60

**p<0.01 Highly significant

Fifty-six (21 males and 35 females) participants had GHQ-12 scores above the threshold value of >4, giving an overall prevalence of self-reported poor general mental health to be 32.94%. The prevalence of poor mental health amongst males and females was found to be 24.42% and 41.67% respectively (Fig. 1).

Correlations

A highly significant negative correlation of GHQ-12 scores with global scores of TEIQue-sf was seen in both male and female participants (r=-0.394 and -0.434 respectively; p<0.001) (Figure 2 a-b). Significant negative correlations were also seen between GHQ-12 scores and all the four factors of EI in both the genders. In males GHQ-12 showed a highly significant negative correlation with well-being factor (r=-0.398; p<0.001). All the other three factors of EI also correlated negatively with GHQ-12 (r= ranging from -0.235 to -0.278; p<0.05) (Figures 3a-d). In females also, GHQ-12 score showed a significant negative correlation with all the four subscales of TEIQue-sf (r = ranging from -0.308 to -0.358; p<0.01) (Figures 4a-d).

Discussion

In the present study, we evaluated gender differences in mental health and EI amongst first year medical students as well as the inter-relationship between the two measures in them. The key findings of our study were, a significant gender difference in GHQ-12 scores, with higher prevalence of psychological
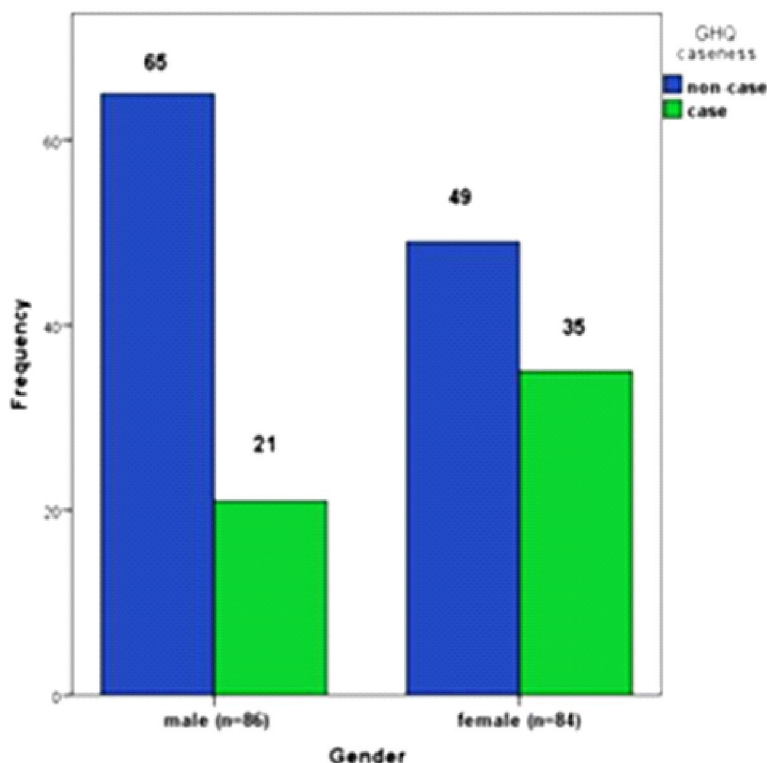

Fig. 1 : Prevalence of Psychological morbidity (GHQ "caseness") in male and female first year medical students.
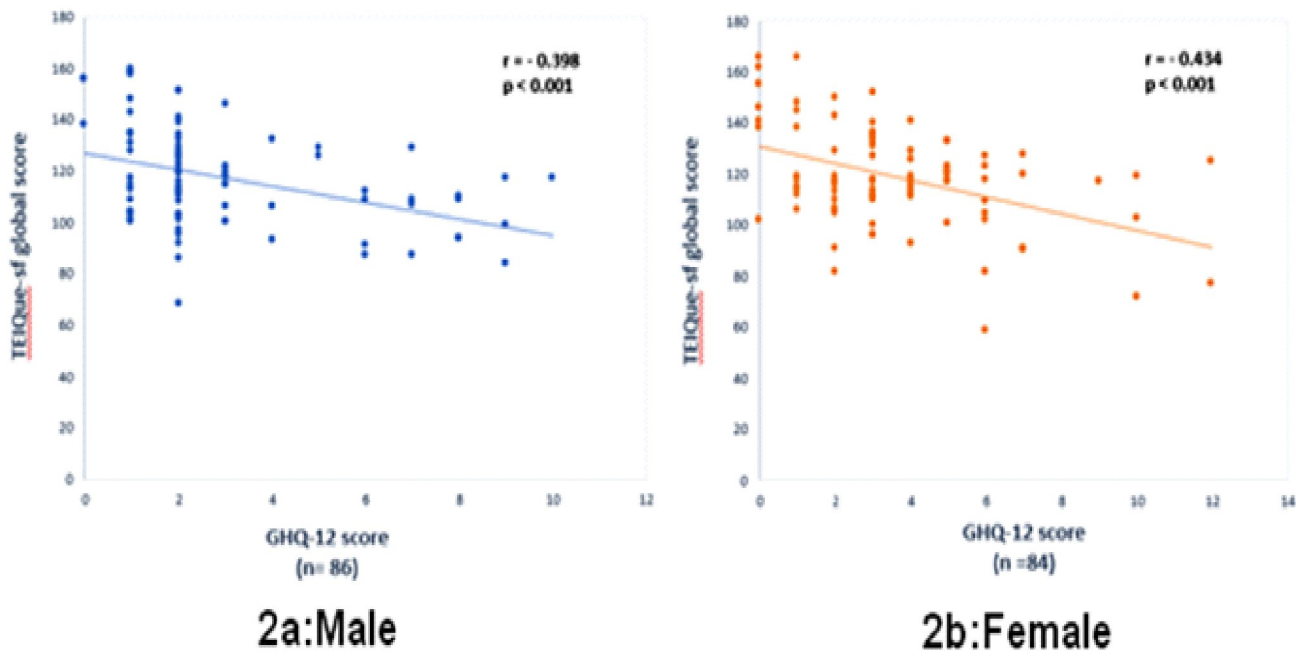
2a:Male

2b:Female

Fig. 2a-b : Relationship between GHQ -12 and TEIQue-sf global scores in male and female first year medical students respectively.
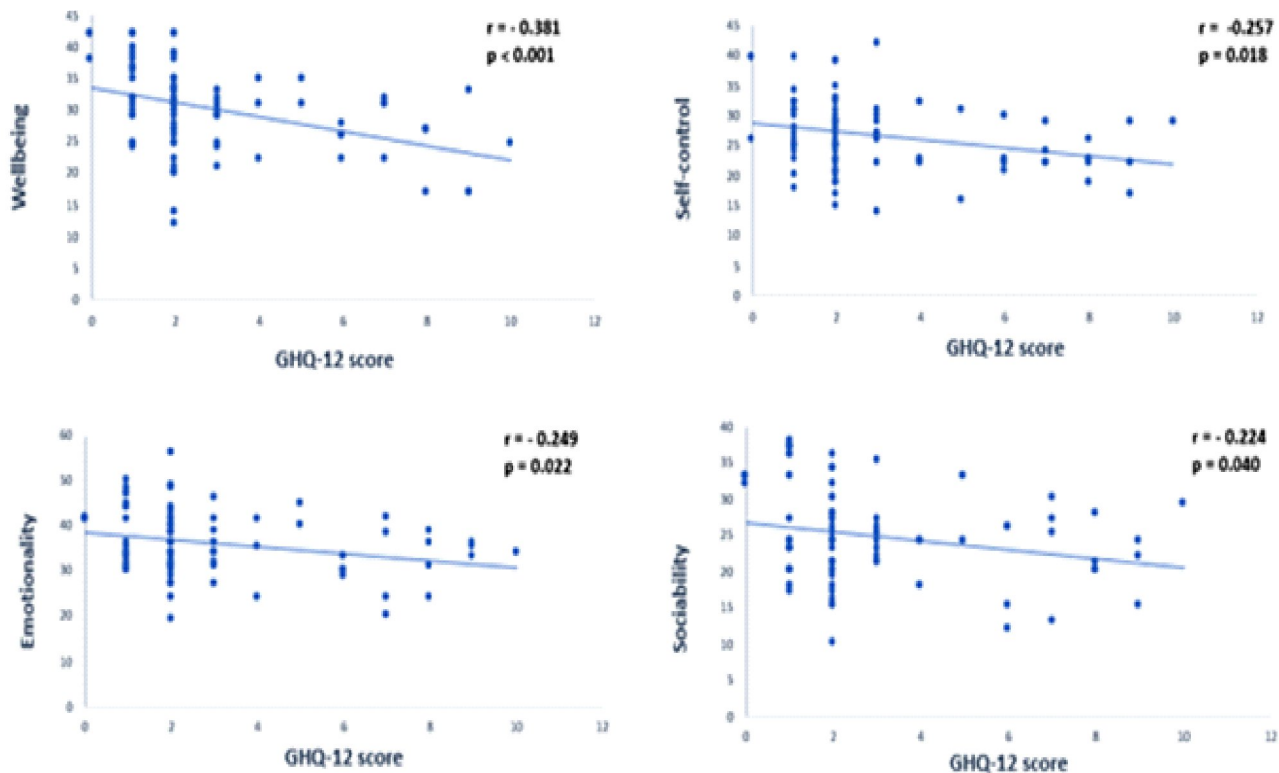

Fig. 3a-d : Relationship between GHQ -12 and four factors of TEIQue-sf in male first year medical students (n=86).
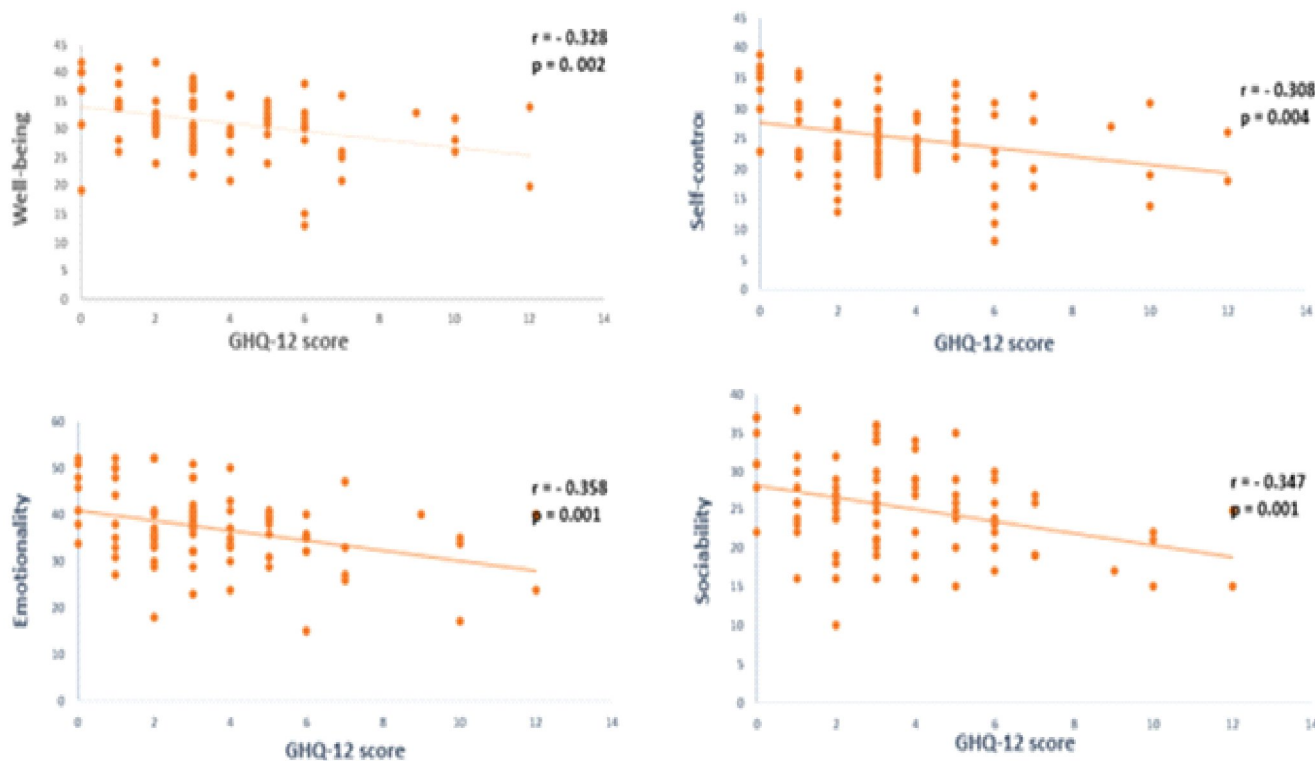
Fig. 4a-d : Relationship between GHQ -12 and four factors of TEIQue-sf in female first year medical students (n=84).

morbidity in female medical students as compared to their male counterparts. However, EI was found to be comparable in both the genders. There was a significant negative correlation between the GHQ-12 with both the global TEIQue-sf scores as well as with all its four subscales, thereby suggesting that higher EI in medical students is associated with better mental health in both the genders.

The reliability analysis of both GHQ-12 and TEIQue-sf showed that they had a high internal consistency as their Cronbach's alpha value was > 0.7 (18). Although the reliabilities for the subscales of TEIQue-SF were lower than the global TEIQue-SF, but still, they were comparable to reliability values reported in other studies (19).

Mental health data of the present study reveals that, female participants scored significantly higher (p=0.001) in comparison with the male participants on GHQ-12 scale. Moreover, the prevalence of symptoms of psychological morbidity was also found to be almost double in females than in males. Our results are in conformity with various studies

conducted in India (20) and abroad (12), in which the researchers reported higher prevalence and severity of psychological morbidity in females as compared to male medical students. At this point, it is worth noting that prevalence of symptoms of poor general mental health was alarmingly high in our participants, despite having completed merely a fortnight in medical college. We had included the participants at the very beginning of their medical career to enable us to tap in their inherent mental and emotional well-being. Hence, it raises a pertinent question as to whether, the medical studies had contributed to the development of symptoms of psychological morbidity in them in such a short span, or if, they typically possessed such traits. Since individual stress levels can be subjected to rapid fluctuations, it is plausible that apprehensions about the vast curriculum of medical training, competitive environment, lack of time for social and personal recreation, dearth of peer support, financial problems or adjusting in the hostel could have contributed to this early deterioration in mental health of our participants (21). The very high response rate of almost 95% is also a pointer towards this

apprehension, and, reflects that these students are indeed skeptical and concerned about their psychological well-being.

In the present study, we observed that male and female medical students had similar scores in both global TEIQue-sf scale as well as in all its four subscales, thereby indicating that the emotional intelligence in the two genders was comparable. Similar findings were reported in a study conducted on multidisciplinary health professionals, where no gender difference was found in their EI scores (22). Contrary to this, some studies have found higher EI in female students (23), while still others have demonstrated a higher EI in male medical students (24). These conflicting results seen in various studies may be attributed to a number of confounding factors including the use of different methodologies and scales for assessing EI. Although, in our study, significant gender difference in the EI scores could not be ascertained, but overall, females had a higher global TEIQue-sf score as compared to their male counterparts and they also scored more than males in all the trait EI subscales except self-control. Apart from gender, another critical determinant for EI is the age of an individual. Age has been shown to account for 13% variance in EI as compared to gender, which taken alone is responsible for only 4% variance in EI (25). Since the current sample is rather narrow in terms of age and educational status, it could have probably contributed to the comparable EI scores observed in both the genders in our study.

The result of correlational analysis showed a significant negative relationship between EI and mental health in both male and female medical students. The four factors of EI namely well-being, emotionality, self-control and sociability were also negatively correlated with general health. The present findings reflect that, individuals with higher EI are better able to regulate and understand emotions in self and others and experience better mental health. These findings are in concurrence with earlier works where higher EI has been found to be associated with reduced levels of stress and better coping with stressors, not only amongst medical students (16), but also in various other health care professionals

(26). The present set of findings are important because EI skills are modifiable and can be enhanced with deliberate practice and training, unlike Intelligence Quotient, which does not change significantly over a persons' lifetime (5). Studies have shown that the mental health of medical students at the time of entry into a medical college is identical to their non-medical peers (27). It tends to deteriorate during the course of studies primarily, in the initial years of medical training having the highest predilection for development of psychological distress during the first year (28). The observation of higher EI scores in participants with better self-reported psychological well -being indicates that EI provides a buffering effect in handling stressful situations. Better intrapersonal EI assumes even more relevance in our country, where, the doctors are continuously exposed to working under extremely stressful environment, both in terms of duty hours and patient load. Hence, if sufficient measures in the form of holding EI training workshops or imparting education about EI skills to medical students in the formative years of their career are adopted, it might enable them to be emotionally more competent and cope better in stressful conditions. This would go a long way in promoting psychological well-being amongst future medical professionals.

Limitations

The primary limitations of our study included its cross-sectional design, which restricts analysis across time. Moreover, for questionnaire-based study, the sample size was relatively less. However, since our primary objective was to evaluate the gender difference in inherent mental and emotional status of medical undergraduate students, we had to choose participants from the batch of the newly admitted entrants to medical college. Multi-centric studies with larger sample sizes may be conducted in the future for obtaining further statistical validation. Secondly, we evaluated the mental health and EI of the participants using self-reporting questionnaires, which may have led to subjective bias.

Conclusions

There was a significant gender difference in mental health of newly admitted, first year medical students

with higher prevalence of psychological morbidity in female participants as compared to their male counterparts. Emotional intelligence was comparable in both the genders. Moreover, there was a significant negative correlation of GHQ-12 with trait EI as well as, with its four factors, thereby suggesting that higher EI moderates psychological distress in both male and female medical students leading to better mental health in them. The medical undergraduate curriculum in India, specially needs to be sensitive to the requirement for EI based education, which may prove helpful in inculcating better communication skills and fostering professionalism among future doctors.

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