Original Research Paper

Emotional Intelligence of medical students and its association with their Psychological health

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Abstract

Introduction: Emotional intelligence (EI) involves perception, expression and management of intrapersonal and interpersonal emotions. The potential role of EI in emotional health and professional success amongst various healthcare personnel has been reported recently. This study was conducted to evaluate psychological health and EI of newly admitted medical undergraduate students, explore association between the two and to determine their socio-demographic correlates.

Methods: It was a cross-sectional, self-reported, questionnaire-based study conducted on 224 undergraduate medical students who had completed their first week in the medical college. Psychological health was assessed by Depression Anxiety Stress Scale-21 (DASS-21) and EI was measured by Trait Emotional Intelligence Questionnaire-short form (TEIQue-sf).

Results: The prevalence of symptoms of depression, anxiety and stress amongst participants was 49.55%, 71.43% and 33.93% respectively. Significant negative correlation ($p<0.001$) of DASS-21 with global trait EI and its subscale scores was found. Females, metropolitan residents and participants who self-chose medical career scored significantly higher on global EI as compared to their counterparts. Females scored higher in wellbeing and emotionality subscale as compared to males. High sociability score was seen in day-scholars, metropolitan residents and students who self-chose medical career.

Conclusions: Results indicate a high prevalence of psychological morbidity amongst newly admitted medical undergraduate students. Moreover, the strong negative association seen between EI and psychological health indicates that high EI contributes towards better self-perception of psychological wellbeing. Furthermore, EI is also influenced by both personal and environmental factors.

Key-words: Emotional Intelligence, medical students, mental wellbeing, psychological health.

Introduction

Psychological health refers to a state of mental wellbeing in which an individual realizes one's own cognitive and emotional capabilities, maintain healthy relationships, function effectively with a sense of purpose in life (Huppert, 2009).

Over the past decades, a global increase in the prevalence of psychological morbidity amongst various medical and healthcare professionals has been observed (Chou *et al*., 2014). Significant numbers of studies have reported mild to severe cases of depression, anxiety, stress (Abdallah & Hala, 2014; Iqbal *et al*., 2015), addiction to alcohol or drugs (Melaku *et al*., 2015), burnout as well as suicidal tendencies in doctors (Dahlin & Runeson, 2007) and medical students in comparison to the general population and their peer groups (Dahlin *et al*., 2005).

Moreover, development of symptoms of mental distress has been reported to occur early even in the psychologically healthy students during their formative years in medical institutes (Yusoff *et al*., 2013). This, in

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turn, predisposes to decreased attention and learning ability in them during the student life and is potentially detrimental during their clinical practice in future (Cozens & Greenhalgh, 1997).

Recently, emotional intelligence (EI) is increasingly being discussed as having a potential role in medicine and other healthcare disciplines, both for personal psychological health and professional practice (Arora *et al*., 2010). EI refers to an ability to monitor intrapersonal and interpersonal feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions while adapting and coping successfully to deal with adverse situations and environmental demands (Brannick *et al*., 2009).

Early conceptualization of EI referred to it as ability, reflecting primarily the efficacy of cognitive ability related to emotions and its information processing (Salovey & Mayer, 1990). Ability EI was assessed mainly by maximum performance-based test (Mayer *et al*., 2008).

Subsequently, trait EI gained attention as a relevant EI measure because it measures the self-perception of emotions based on inherent personality of the individual using self-report questionnaire (Petrides *et al*., 2010). Beneficial role of EI on aspects of emotional health, relationships (Masood & Mazahir, 2015), self-motivation, work success (Nikolaou & Tsaousis, 2002), leadership (Cooper & Sawaf, 1997) and satisfaction in life (Palmer *et al*., 2002) are being reported suggesting that, without these skills or abilities, individuals will not be as successful.

However, this is not a universal finding and there have often been inconsistent results of EI on the variance in health. Researchers have found that individuals with higher EI may have maladaptive consequences and even reacted more strongly to adverse circumstances leading to greater psychological distress in them (Petrides & Furnham, 2003). Although, the research in this area is still in its incipient stage, these emerging links between EI and psychological health point towards the potential role of EI as a predictor of various life outcomes.

Recently few studies have shown that higher EI is associated with better doctor-patient communication, effective coping with work pressure and improved team work amongst doctors (Arora *et al*., 2010). Much less is known about the EI of medical students in their initial formative year and its relationship with their psychological wellbeing. Merging studies on EI and psychological health may provide valuable insights into the emotional traits of an individual and its implications on their mental wellbeing.

The present study was conducted on the newly admitted medical undergraduate students with the aim to

(i) Assess the psychological health (using DASS-21) and emotional intelligence (using TEIQue-sf)

(ii) Evaluate the inter-relationship between EI and psychological health as well as to determine their socio-demographic correlates.

Methods

The study was designed as a cross-sectional, self-administered questionnaire-based trial conducted on newly admitted medical students in the medical college. The approval of the Institutional Ethical Committee was obtained prior to conduction of the study.

Participants

Out of a total of 250 new medical undergraduate students, 232 students volunteered to participate in the study. The purpose of the study was fully explained to the participants and their informed signed consent was taken. Eight students who returned incomplete forms were excluded from the study. The total number of participants who were finally included in the study was 224. 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-designed and pre-tested questionnaires (in English language) at the completion of their first week in the medical college. Socio-demographic data was collected by using a structured form in which information regarding their gender, age, residence of student after admission to college; family location and income were obtained.

The participants were then asked to complete the paper-based version of self-report

questionnaires on psychological health and emotional intelligence. In completing these questionnaires, the individual was required to indicate on the given likert scale how, each statement applied to them over the previous week.

Measures

(i) Depression, Anxiety and Stress Scale (DASS-21):

DASS-21 measures prevalence and severity of symptoms of depression, anxiety and stress. It has 21 questions with seven items for each subscale. The items are responded on a 4-point likert scale ranging from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week). Scores for identified items of each subscale are summed. Because the DASS-21 is a short version of the DASS (the Long Form has 42 items), the final score of each item groups (Depression, Anxiety and Stress) is multiplied by two. The severity of the symptoms of Depression, Anxiety and Stress can be graded into normal, mild, moderate, severe and extremely severe based on the scores (Lovibond & Lovibond, 1995) (Table 1).

Table 1: DASS-21 subscales severity ratings

Severity	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Note: DASS-21 scale is from Lovibond & Lovibond (1995).

(ii) Trait Emotional Intelligence Questionnaire-short form (TEIQue-sf):

Trait EI measures EI by identifying emotions experienced by an individual related to his or her personality (Petrides *et al*., 2010). TEIQue-sf is a short version of trait EI scale used for rapid assessment of global trait EI. It also evaluates four factors namely well-being, emotionality, sociability and self-control. It is a sensitive instrument with good predictive validity, psychometric properties and adaptability across different countries (Cooper & Petrides, 2010). It has 30 questions including well-being (6 items), self-control (6 items), sociability (6 items), emotionality (8 items) and remaining 4 items contribute to global trait EI score only. Each item is responded on a Likert scale ranging from 1 (completely disagree) to 7 (completely agree). It yields global trait EI score by summing up all the item scores. The score ranges from 30 to 210. The four factors (subscales) of trait EI are evaluated by summing up item scores for each factor. The possible ranges of scores for each factor are wellbeing (6-42), self-control (6-42), emotionality (8-56) and sociability (6-42).

Statistical Analysis

The data was analysed using SPSS version 20.0 for Windows (SPSS, Inc., Chicago, Illinois, USA). All data collection forms were given serial numbers. A reliability analysis of all scales was done by calculating Cronbach's alpha internal consistency coefficients using the data from all participants. Any missing items not completed by the participants were replaced by median for that item.

Descriptive statistics in the form of mean, standard deviation (SD) was calculated for the DASS-21 and TEIQue-sf scores. A demographic characteristic, prevalence of depression, anxiety and stress in students was expressed in frequency and percentage.

ANOVA was used to analyse any difference in DASS-21 scores and TEIQue-sf scores among students according to their socio-demographic characteristics. A correlation between psychological health and EI was calculated using Pearson's correlation test. A p value of <0.05 was considered significant for all analyses.

Results

Demographic characteristics of the participants

The mean age of participants was 18.20±1.10 years. 138 participants were male (61.6%) and 86 were females (38.4%). Out of total

participants 97 (43.3%) were hostellers and approximately 12% belonged to either village or town. The family income of almost half (47.3%) of the participants was >1 lakh rupees per month. Almost 90% had self-chosen this career (Table 2).

Table 2: Table showing relation of socio-demographic characteristic of first year medical students with their psychological health (DASS-21)

	Variables	Frequency (%)	Depression	Anxiety	Stress
Gender	Males	138(61.6%)	10.75±7.845	11.23±6.413	13.54±7.173
	Females	86(38.4%)	9.02±7.048	10.84±7.574	12.67±7.270
Residence of students	Hostellers	97(43.3%)	11.09±7.360	11.90±6.522	14.27±7.022
	Day-scholars	127(56.7%)	9.32±7.685	10.46±7.083	12.39±7.229
Location of Family	Metro city	119(53.1%)	9.06±7.798	10.71±7.067	12.47±7.612
	Non-metro city	78(34.8%)	11.23±7.267	10.92±5.870	14.26±6.741
	Town/village	27(12.1%)	11.33±7.082	13.19±8.399	13.41±6.271
Family Income	<20,000 per month	22(9.8%)	9.27±6.065	11.36±6.514	13.27±5.539
	20,000-50,000 per month	49(21.9%)	10.41±7.035	11.92±5.582	12.94±6.521
	50,000-1,00,000 per month	47(21%)	11.66±9.309	13.23±8.220	14.51±7.940
	>1,00,000 per month	106(47.3%)	9.42±7.235	9.68±6.591	12.74±7.444
Choice of career	Self	198(88.4%)	9.74±7.355	10.80±6.677	12.86±6.882
	Parents	26(11.6%)	12.77±8.820	13.23±8.002	15.85±8.889 (p=0.046) *

*Note: Depression Anxiety Stress scale-21 (DASS-21) is from Lovibond & Lovibond (1995). Trait emotional intelligence questionnaire-short form (TEIQue-sf) is from Cooper & Petrides (2010). *p≤0.05–significant, **p≤0.01–very significant, ***p≤0.001-highly significant.*

Measures

The mean (SD) values and internal reliability (Cronbach's alpha) of questionnaire on psychological health (DASS-21) and emotional intelligence (TEIQue-sf) are presented in Table 3. Both the questionnaires used in the study showed an acceptable reliability with Cronbach's alpha value>0.7 (Tavakol & Dennick, 2011).

Table 3: The mean ± SD scores and reliability (Cronbach's alpha value) of psychological health scale (Depression, anxiety and stress subscales of DASS-21) and trait EI (TEIQue-sf) in first year medical students

Variables	Mean±SD	Cronbach's alpha
TEIQue-sf global score	116.2±19.5	0.86
Wellbeing total score	30.3±6.1	0.65
Self-control score	25.4±6.1	0.56
Emotionality score	35.7±7.4	0.59
Sociability score	24.8±6.2	0.63
Depression score	10.1±7.6	0.80
Anxiety score	11.1±6.9	0.62
Stress score	13.2±7.2	0.71

(i) Depression, Anxiety and Stress Scale (DASS-21)

The overall prevalence of symptoms of depression, anxiety and stress amongst the participants were 49.55%, 71.43% and 33.93% respectively. Severity of symptoms of anxiety was found to be the highest amongst the medical students with approximately one fourth (25.44%) of the participants perceiving severe or very severe anxiety. In the depression and stress subscales, symptoms of mild to moderate severity were predominantly reported by 40.54% and 26.79% participants respectively (Figure 1a-c). Univariate analysis showed that higher scores on stress subscale were associated with parental choice for opting medical career (Table 2).

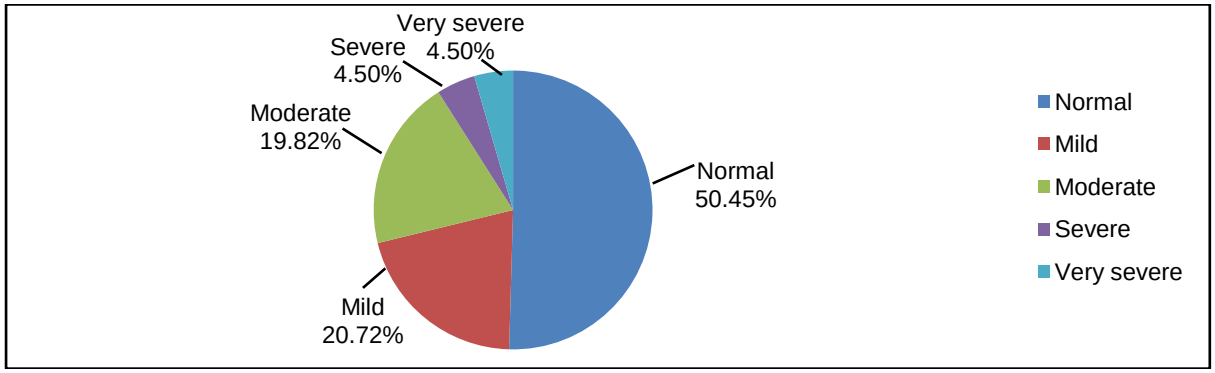

Figure 1(a): Severity of Depression in first year medical students

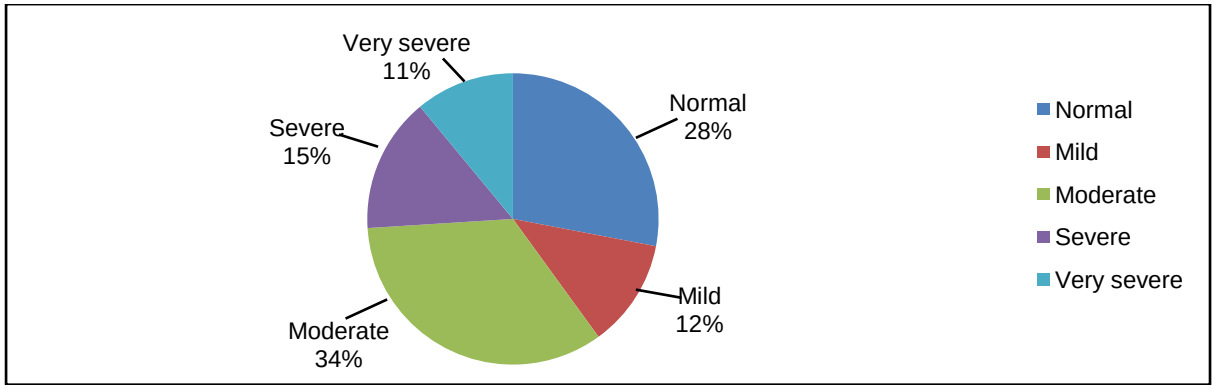

Figure 1(b): Severity of Anxiety in first year medical students

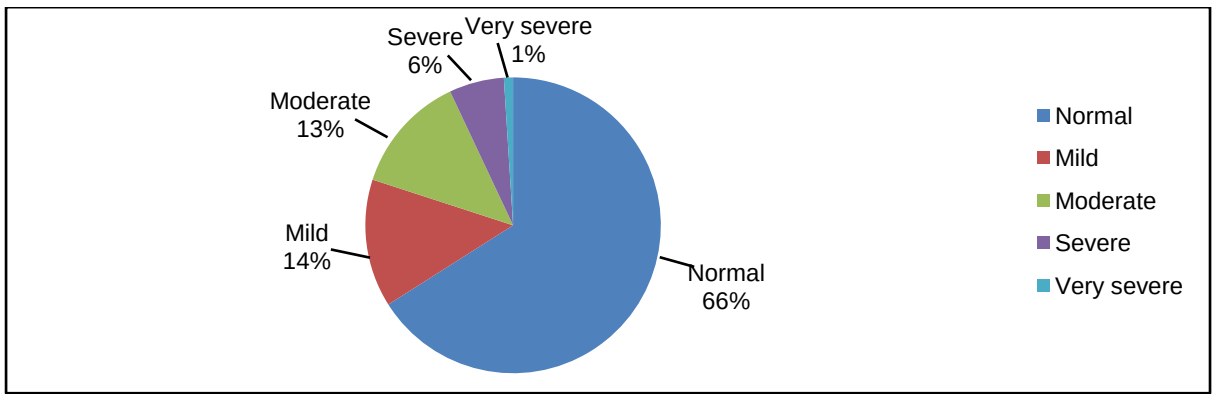

Figure 1(c): Severity of Stress in first year medical students

(ii) Trait Emotional Intelligence Questionnaire-short form (TEIQue-sf)

Univariate analysis (Table 4) showed that higher scores of global trait EI was associated with female gender, metro city residents and those who had self-chosen medical career. Female participants had significantly higher scores in wellbeing (p=0.021) and emotionality (p=0.015) subscales as compared to male students. Statistically significant difference was also observed in the sociability subscale based on the residence of student (p=0.025), location of their family (p=0.002) and choice of career (p=0.019), with day-scholars, metro city residents and students who self-chose medical career showing higher EI scores.

Table 4: Table showing relation of socio-demographic characteristic of first year medical students with their psychological health (DASS-210)

	Variables	Frequency (%)	TEIQue-sf global score	Well being	Self-control	Emotionality	Sociability
Gender	Males	138(61.6)	114.01±18.501	29.50±6.283	25.36±5.893	34.75±6.871	24.40±6.198
	Females	86(38.4)	119.60±20.599 (p=0.036)*	31.44±5.749 (p=0.021)*	25.42±6.331	37.24±8.08 (p=0.015)*	25.50±6.110
Residence of students	Hostellers	97(43.3)	13.35±18.943	29.92±5.488	24.64±5.971	35.03±7.857	23.76±6.118
	Day-scholars	127(56.7)	118.30±19.685	30.50±6.612	25.94±6.074	36.23±7.100	25.63±6.118 (p=0.025) *
Location of Family	Metro city	119(53.1)	119.75±19.786	30.86±6.427	26.21±6.170	36.54±7.217	26.14±6.305
	Non-metro city	78(34.8)	112.96±19.278	29.65±5.727	24.60±6.087	35.05±7.949	23.65±5.897
	Town/village	27(12.1)	109.56±15.567 (p=0.009)**	29.26±5.946	23.96±4.950	33.96±6.648	22.37±5.024 (p=0.002) **
Family Income	<20,000 per month	22(9.8)	113.14±16.042	28.50±5.771	25.27±5.824	34.27±6.699	25.09±4.374
	20,000-50,000 per month	49(21.9)	114.63±17.710	29.24±6.441	25.78±5.273	35.96±7.106	23.65±5.547
	50,000-1,00,000 per month	47(21)	114.21±21.454	29.66±6.312	25.38±6.131	35.13±8.451	24.04±6.400
	>1,00,000 per month	106(47.3)	118.35±19.997	31.33 5.886	25.22±6.457	36.15±7.317	25.65±6.596
Choice of career	Self	198(88.4)	117.37±19.55	30.75±5.955	25.56±6.058	35.89±7.447	25.17±6.201
	Parents	26(11.6)	106.88±16.408 (p=0.01)**	26.38±6.306 (p=0.001)***	24.00±5.926	34.35±7.424	22.15±5.349 (p=0.019) *

*Note: Trait emotional intelligence questionnaire-short form (TEIQue-sf) is from Cooper & Petrides (2010). *p≤0.05–significant, **p≤0.01–very significant, ***p≤0.001-highly significant.*

Correlations

As shown in Table 5, there was a significant negative correlation between global TEIQue-sf and DASS-21 scores with r values between-0.41 to-0.54, p<001. Depression, anxiety and stress subscales of DASS-21 were also found to be correlated significantly with all factors of TEIQue-sf (r=0.23 to-0.56; p<0.001).

Table 5: Correlation of psychological health (GHQ-12 and DASS-21) with emotional intelligence (TEIQue-sf) of first year medical students.

Variables	TEIQue-sf	Wellbeing	Self-control	Emotionality	Sociability
Depression	r=-0.54 p<0.001***	r=-0.56 p<0.001***	r=-0.44 p<0.001***	r=-0.28 p<0.001***	r=-0.38 p<0.001***
Anxiety	r=-0.41 p<0.001***	r=-0.33 p<0.001***	r=-0.42 p<0.001***	r=-0.23 p<0.001***	r=-0.28 p<0.001***
Stress	r=-0.49 p<0.001***	r=-0.49 p<0.001***	r=-0.47 p<0.001***	r=-0.29 p<0.001***	r=-0.32 p<0.001***

*Note: TEIQue-sf-Trait Emotional Intelligence Questionnaire-short form. *** p value≤0.001–highly significant*

Discussion

The present study is different from earlier studies which assessed either psychological health (Abdallah & Hala, 2014; Iqbal *et al*., 2015) or emotional intelligence (Brannick *et al*., 2009) in the medical students. In our study, we assessed both, the psychological health and EI of new entrants to medical undergraduate course who had just completed their first week in the college. It has been postulated that generally the psychological health of students at the start of medical studies is similar or almost similar to their non-medical peers and tends to worsen during the course of medical training (Jafari *et al*., 2012). Thus, we reasoned that, assessment of the students by self-reported questionnaires at the very beginning of their professional studies would enable us to discern the inherent psychological and emotional characteristics of these students.

Our DASS-21 data illustrated a high prevalence of psychological morbidity amongst fresh medical undergraduate students of the institute. The scores for psychological distress symptoms (i.e. depression, anxiety and stress) were above the threshold values in more than one-third of the participants. Furthermore, maximum percentage of participants (71.43%) reported having symptoms of anxiety. The severity of symptoms of anxiety was also highest with more than one-fourth of the participants who perceived severe or very severe anxiety.

These findings are consistent with studies that have shown higher prevalence of symptoms of anxiety as compared to depression and stress symptoms in participating students (Abdallah & Hala, 2014; Iqbal *et al*., 2015). Increased anxiety in students may be attributed to their apprehension to settle in unknown new environment of college and hostel, fear of ragging and making new acquaintances.

However, it is noteworthy that the overall prevalence of symptoms of depression and stress observed in our study is much lower as compared with previously published data using DASS subscales (Abdallah & Hala, 2014; Iqbal *et al*., 2015).

One plausible reason for the relatively low prevalence of psychological distress symptoms in our study as compared to others could be that our participants had just entered the course one week prior and may have still been experiencing the stages of novelty and euphoria. In addition, during this time period, they had yet to face difficult subjects because most of the subjects studied during the initial months are the ones that they have learned during their schooling.

Result of univariate analysis showed that the students who had chosen medical career on their parents' behest had significantly higher scores on stress subscale of DASS-21, thereby, suggesting poor psychological health in them. Lack of enthusiasm and motivation amongst students who had not self-chosen the career could have contributed to significantly higher stress levels in them as compared to students who had come by their own choice. These results of ours are in conformity with previous research works that have shown that the students who joined medical field due to parental pressure were more stressed and afraid to face failure as compared to the ones who join the course by their own will (Acharya, 2003). No significant difference was seen in psychological health based on gender, family location and income.

These observations in our study corroborate with earlier works done in various other Asian countries including India (Iqbal *et al*., 2015; Jafari *et al*., 2012), that reported no difference in mental wellbeing of participants based on gender or any other socio-demographic characteristics. However, few studies have reported higher prevalence of self-reported psychological morbidity in females as compared to their male counterparts (Abdallah & Hala, 2014; Grant *et al*., 2002). This difference could be real or it could be due to the fact that females are more likely to report or express concerns about the presence of symptoms of stress in them (Bayaram & Bilgel, 2008).

The TEIQue-sf results of the present study reveal that females, metropolitan city students and students who self-chose medical profession, had higher global trait EI scores, thereby, suggesting that they had higher EI compared to their respective counterparts. Moreover, the relatively greater scores achieved by the female participants on emotionality and wellbeing factors indicates that they were more in touch with their own and people's feelings and were happier, optimistic and more fulfilled in life as compared to the male participants.

Emerging bodies of studies that have been conducted in the last decade have also reported higher EI in female college students

(Austin *et al*., 2005; Harrod & Scheer, 2005). However, contradictory findings have also been reported. Few studies have shown that males have better emotional intelligence as compared to females (Yelkikalan *et al*., 2012) whereas; still others have failed to find any gender difference in EI (Sanchez-Ruiz *et al*., 2010). Considering the fact that in the current sample, number of male participants far exceeded those of female participants, it raises the possibility that part of the findings was influenced by this characteristic. Furthermore, significantly lower sociability scores were observed in hostellers in comparison to day-scholars, in students belonging to town/villages compared to those from metro & non-metro cities as well as in students who opted medical profession due to their parent's choice.

The sociability factor of trait EI scale is a combination of emotion management, assertiveness and social awareness traits and the lower sociability scores in these students suggest that they were less confident in dealing with diverse sorts of people, were shy and reserved and felt less comfortable in social contexts as compared to other participants (Petrides & Furnham, 2001). Earlier researches have also has shown that EI in students, particularly wellbeing and sociability factors are significantly associated with social and cultural environment of the place they are born and brought up in (Yelkikalan *et al*., 2012). Our study lends also supports this notion that, EI is not only influenced by the personal characteristics of a person such as gender but is affected by the environmental factors as well.

In the present study, we found a significant negative association between emotional intelligence and psychological health, thereby indicating that the participants who had higher global trait EI scores were emotionally healthier and coped better in the face of adversity as compared to those who had lower global trait EI scores. It is noteworthy that this strong negative association was observed between all the four factors of TEIQue-sf with the three subscales of DASS-21.

This echoes previous relevant findings from studies showing that high trait EI scores are associated with less burnout and higher job and patient satisfaction (Weng *et al*., 2011) and lends support to the view that, "EI is good for you". However, our results are in contradiction to previous reports where individuals with higher EI reacted more strongly under adverse circumstances leading to greater psychological distress and maladaptive consequences in them (Petrides & Furnham, 2003; Arora *et al*., 2011).

Our finding that students with higher EI reported less symptoms of psychological illness than those with low EI, suggests that EI helps to cope with stressful situations and contributes to better psychological health. Thus, it appears, high EI may be a factor abating symptoms of stress in medical students. It can be due to fact that higher emotional intelligence results in better understanding and management of emotions in self and others which helps to adapt and cope with adverse situations. Few studies have also shown that mental health workshops are helpful to develop EI in medical students (Abe *et al*., 2013; Nelis *et al*., 2009).

So, enhancing emotional intelligence by training and workshops can enable the students in managing stress as well as promoting mental wellbeing amongst them. Although recently EI has been studied as a tool for success in job and leadership qualities, but application of EI in betterment of mental wellbeing has been less explored. Therefore, more focused studies are required to substantiate beneficial role of EI in psychological wellbeing of medical students and to further support incorporation of evaluation of EI and its enhancement via counselling and workshops in medical curriculum to improve psychological health, academic performance, patient care and life satisfaction of future doctors.

Limitations

This study was questionnaire based cross-sectional in design which may have caused bias due to self-reporting by students and represents observations only at a specific period in time. Moreover, before extrapolating the above findings to the general population, further statistical validations are required as our participants had almost similar socio-demographic characteristics.

Conclusions

In conclusion, our results indicate a high prevalence of psychological morbidity amongst newly admitted medical undergraduate students. The results also show that there was a significant negative correlation of psychological health scales with global trait EI scores as well as to all the four factors of trait

EI scores, further suggesting that people with higher EI are more likely to have a better psychological health as compared to the people with lower EI. Moreover, our study further shows that mental wellbeing and EI are also affected by the environmental factors as depicted by the socio-demographic correlates.

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