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Emotional Quotient in Medical Students and its Influence on the Academic Performance A Cross Sectional Study

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Abstract **Original Research Article**

Background: During medical education students need various psychological constructs to sail through the course successfully. Emotional Intelligence is known for its influence on various aspects of life, especially in a trainee doctor, including claimed influence on academic performance. Very few studies have been done on medical students with these factors; in this background present study was planned. Method: Medical students who had cleared their final medical exam were included in the study. After consenting self-designed sociodemographic and academic performance scales were given along with EQ test by Chadha & Singh. Statistical analysis was done using IBM's SPSS software. Results: Sample consisted of 167 participants with mean age of 23 years. On EQ assessment students had high Total EQ, Sensitivity and Competency scores but low maturity. EQ didn't show any association with academic performance ($r = -0.03$, $p>0.05$). Males had lower academic performance than the female students ($t = -2.89$, $p<0.01$). Psychoactive substance users performed poorly in academics than non-users ($t = 3.74$, $p<0.01$). Multiple regression analysis predicted that substance use influences the academic performance significantly. Conclusion: EQ doesn't mediate academic performance especially in group with above average intelligence. Gender and psychoactive substance use can influence academic scores.

Keywords: Emotional Quotient, Medical students, Academic performance.

INTRODUCTION

Medical education is well known for being difficult, costly, lengthy and strenuous. The students have to assimilate vast knowledge, acquire fine clinical skills and learn communication skills along with developing one's own niche. Learning in medical schools is to a major extent self-motivated requiring high levels of self-management. Stress & emotional problems are common occurrence during the course which calls for psychological resources such as emotional intelligence. Emotional intelligence (EI) is an integral part of positive psychology and has a significant impact on human performance, satisfaction and overall well-being. It is claimed that individuals with a high level of emotional intelligence are capable of directing positive emotions to sustain the energy needed for high performance over long periods of time and to redirect negative emotions into productive behaviours suggesting that individuals with high emotional intelligence are academically successful. This theoretical explanation has not consistently transformed into a reality, as studies done previously gave contradictory findings [1-6]. With this background present study was planned in group of medical students to assess their emotional intelligence through Emotional Quotient (EQ) and its association with academic performance.

MATERIALS AND METHODS

Aims & Objectives

1. To assess the emotional quotient (EQ) of the sample
2. To look for the association between academic performance & EQ with other social correlates.

This is a cross sectional descriptive study. Sample consisted of medical graduates who had finished their final M.B.B.S. examination and currently posted in compulsory internship program. Consecutive sampling method was used. Sample collection was made from December 2011 to November 2012.

Tools Used

a. Self-designed proforma to elicit socio-demographic data
b. EQ test by N.K. Chadha and Dr. Dalip Singh.
c. Self-structured proforma to asses Academic performance

EQ test

Emotional Quotient (EQ) test used was developed by N.K. Chadha and Dr. Dalip Singh [7]. This test consists of three domains- Sensitivity, Maturity and Competency. The test has a total of 22 questions. Sensitivity domain has 5 questions, Maturity domain has 7 questions and Competency domain has 10 questions. Each question has four responses. Each response can be scored as 5, 10, 15 or 20. Responses to questions are placed in different orders to prevent stereotyped patterns of answering. Total scores were converted to percentile and then interpreted using norms of 'extremely high' to 'low EQ' Retest reliability for the test was found to be 0.94. The split half reliability in the case of odd-even items was 0.89 and for the first half and second half was 0.91. Validity was found to be 0.89.

Academic Performance

Proforma was devised to assess academic performance by self-report. The aggregate marks of final year were converted to percentage and were divided into three groups; percentage from 50 to 60, between 60 to 70 and more than 70. Scores below 50 percentages are considered as unsuccessful. Failures were recorded separately.

METHOD

A brief introductory script was given to all candidates explaining the concept of EI. It was made clear that participation is voluntary. They were assured that the responses and test results will be maintained confidential. After obtaining written consent, scales were given to them for self-administration. They were asked to provide honest answers about questions seeking personal information. Individual feedback was given to all candidates who participated.

There were no strict inclusion or exclusion criteria. As the method of inclusion into the study was opt in method, all those who agreed were given the test. Each candidate was given a numeric code, data was coded and tabulated. Some of the continuous data were converted into categorical ones.

STATISTICAL ANALYSIS

Analysis was done using IBM's SPSS 17 version of software. Spearman's correlation was done for continuous variables for not normally distributed sample. To compare between groups independent t test was done. One way ANOVA was used for more than two groups. Multiple regression analysis with simultaneous entry was done to predict the variables influencing the outcome. Statistical significance was set at 0.05 level.

RESULTS

There were total 167 participants. Mean age of the sample was 23 years with SD of 0.95. The sample had marginally more female participants (51%). Majority were from urban nuclear families, belonged to Hindu religion and were unmarried. About four-fifth of the sample did not report any substance use; the one-fifth used one or more psychoactive substances. Of all substance users, 18% reported alcohol use, 7% used nicotine and only 1 person reported using Cannabis (marijuana). Substance use was recorded as per participants report and no objective validation of substance use was done. Details are presented in Table-1.

Table-1: Sociodemographic details

Characteristics		Frequency (N=167)
Age in years	Mean ± SD	23 ± 0.95
Sex	Females	86 (51)
	Males	81 (49)
Locality	Urban	145 (87)
	Rural	22 (13)
Religion	Hindu	156 (93)
	Others	11 (7)
Type of family	Nuclear	135 (81)
	Extended	8 (5)
	Joint	24 (14)
Substance use	No	133 (80)
	Yes	34 (20)

Figures in the parenthesis are percentages

Total EQ score in the study sample ranged from 160-440 with mean of 343, Sensitivity from 35 - 100 with mean 86, Maturity from 50-140 with mean 103 and Competency from 70-200 with mean 154. According to norms of the scale; the sample as whole had high Total EQ, high Sensitivity and Competency

but low Maturity. A large proportion (73%) of the sample had academic scores between 60-70 percentages of marks.

Table-2: Comparison of Academic performance with the factors

		Mean	SD	t/ F/ r	p
Gender*	Male (81)	1.72	0.56	-2.89	0.00
	Female (86)	1.94	0.42		
Locality*	Urban (145)	1.84	0.52	0.40	0.69
	Rural(22)	1.80	0.40		
Psychoactive Substance use*	No (133)	1.91	0.47	3.74	0.00
	Yes (34)	1.56	0.53		
Parent's Education#	Fathers education			0.41	0.84
	Mothers Education			0.53	0.75
EQ@	Sensitivity	343	29	0.04	0.61
	Maturity	86	8	-0.10	0.21
	Competency	103	13	0.02	0.82
	Total EQ	154	19	-0.03	0.71

*- Independent t test, #- ANOVA, @- Spearman's Correlation

Academic scores were compared across multiple variables, shown in Table-2. Gender difference in academic scores was statistically significant with females performing academically better. There was no gender difference in EQ and its domains. Psychoactive substance use had significant impact on academic scores with users having poorer academic scores than non-users. Substance users also had significantly lower Total EQ than non-users ($t = 2.17$, $p<0.05$). Parent's education & Locality of students had no significance in determining the academic scores of the students. Emotional Quotient with its sub components: sensitivity, maturity and competency had no association with academic scores.

Multiple regression analysis was done with simultaneously entered variables: age, gender, locality, father's education & mother education, substance use and Total EQ as predictors of academic achievement. This combination significantly predicted academic achievement, $F(7,159)= 3.39$, $p <0.01$, with only Substance use significantly contributing to the prediction. Not using any psychoactive substance predicted better academic performance. The adjusted r square value was 0.09 indicating 9% of the variance was explained by this model. Details are shown in Table-3.

Table-3: Multiple Regression Analysis

	beta	F	p
Substance abuse	-0.203	-2.39	0.02
Total EQ	-0.088	-1.16	0.25
Age	-0.137	-1.69	0.09
Gender	0.098	1.14	0.26
Father's Education	-0.115	-1.33	0.19
Mother's Education	0.079	0.89	0.37
Locality	0.022	0.27	0.78

DISCUSSION

Academic success is classically attributed to the individual's intellectual ability solely. Intelligence is the necessary component that decides academic success in major proportion. In our study intelligence assessment was not considered as medical students were considered to be intellectually above average by default. Medical students while entering medical education go through thorough intellectual scrutiny. Intellectual assessment in this creamy sample would have not have varied widely. However intelligence alone is not the deciding factor, various other factors are known to exert the confounding effect on academic performance. Emotional Intelligence has been long been claimed to contribute to the success in various spheres of life including academics. Though higher EI had been positively related to academic performance [1] in earlier studies, but the findings were inconsistent as some studies failed to find the association [2, 3, 8-12] while few found negative correlation [13, 14]. Our study found no association between academic performance and emotional intelligence in medical students. Our findings are consistent with studies done earlier on medical students which also had shown poor association between emotional intelligence and academic success [12, 15]. Probable reason for poor association between EI and academic performance could be due to the assessment sample. As intelligence in medical students will be higher than general population and at this level EI may fail to mediate the academic success. Above average intelligence can easily lead the students to success and they may not need to utilise EQ for it [14]. It appears that, the effects that EI might have on academic performance are likely to assume prominence when the demands of a situation tend to outweigh a pupil's intellectual resources [13].

In our study females had significantly better academic scores than males. Similar findings were reported in an early study that female students performed well academically [16]. Our study also found that Students using psychoactive substances had lower academic excellence than who didn't use the substance. This could be due to multiple reasons, the first and

obvious reason could be that the students who are using such substances were distracted by the effects of the drug and hence weren't able to focus on academics. Student starting the drug(s) due to some reason wasn't giving enough time to his studies but instead was most of the time in intoxicated or withdrawal phase of the drug. On the other hand it could also be possible that students scoring poorly in academics might be using drug to forget or postpone or overcome the negative mood state resulting from it. Drug probably is working as a distractive coping mechanism or self-medication to the negative mood state. The third probable explanation for this association could be a common factor, which could be leading to both: affecting the academic performance and compelling drug seeking by student. The common factor could be an underlying mental illness. There could be possible underlying subclinical depression, attention deficits or impulsivity which was influencing the results. Our study also didn't find any relationship between locality of students' residence or their parent's education with students' academic performance.

In a study including 650 participants studying in grade 11 with mean age of approximately 16.5 years were assessed by Petrides *et al*., [13] using Trait Emotional Intelligence Questionnaire, Eysenck Personality Questionnaire—Revised, Verbal Reasoning Test and General Certificate of Secondary Education A–C marks. The results for the English composite and overall GCSE performance revealed significant interactions between IQ and trait EI. Association of academic performance and EI was complex. In students with below the mean IQ, academic performance increased with EI. In those with IQ at mean, EI had no relevance on academics. Those having above the mean IQ higher EI had poor academic performance. It appears that, effects trait EI might have on academic performance are likely to assume prominence when the demands of a situation tend to outweigh a pupil's intellectual resources. In contrast to their high IQ classmates, low IQ pupils are more likely to be forced to draw on resources other than their cognitive ability in order to cope with the demands of their courses. Subject wise assessment showed that scores in English and overall scores had positive significance with EI but for science and mathematics there was no relation between the two.

Zeidner *et al*., [17] studied 125 high school students from Israel using the Mayer–Salovey–Caruso Emotional Intelligence Test, the Schutte Self-Report Inventory and the Vocabulary subtest of Hebrew version of the Wechsler Intelligence Scale for Children-Revised. It was observed that academically gifted students scored higher in EI scale than less gifted peers.

In a study done by Newsome *et al.*, [3] 180 college students were assessed, using Emotional Quotient-inventory and Grade Point average (GPA). No significant relationships were found between trait EI and academic achievement.

Mavroveli *et al.*, [11] studied 140 children with Trait EI Questionnaires Child Form, End-of-year teacher assessment scores in maths and English. Correlations between trait EI and English & maths scores were significant in the total sample. However, when controlling for age and non-verbal IQ, these correlations lost their significance.

In a study on 367 medical students by Libbrecht *et al*., [15] using the Situational Test of Emotional Understanding and the Situational Test of Emotion Management, academic performance was assessed by averaging the grades in each of these courses across years. Emotional intelligence did not predict performance on courses on medical subject domains. The results suggest that medical schools may better predict who will communicate effectively and show interpersonal sensitivity if they include measures of emotional intelligence in their admission systems.

Chew *et al*., [12] assessed 163 medical students, academic performance was measured by the total continuous assessment and the final examination marks and the MSCEIT for EI. There was no correlation between EI and academic scores assessed in the form of 'Continuous Assessment' and 'Final Examination'. But after adjusting for gender, ethnicity as well as socialization, the total EI score was a predictor of a good result in the 'Continuous Assessment' and 'Final Examination'.

There were certain limitations to the study. As already mentioned Intelligence assessment was not done in this study, many similar studies also have not included IQ assessment as a part of study. Academic score considered in the study was of recent examination. Scores from multiple examinations could be better than single examination in assessing academic performance. Baseline mood could influence some of the results directly and indirectly. Though it was taken care that fleeting mood doesn't affect the answers by ensuring students take the test in a self-chosen comfortable time and place, yet pervasive mood state couldn't be overcome & can still influence the results.

CONCLUSION

In conclusion, medical students had high Total EQ, sensitivity & competency but low maturity in emotional quotient. EQ had no relationship with academic performance. Males and substance users had lower academic performance than their respective counterparts. Substance users also had lower EQ than non-users.

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