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RESEARCH

Relation between intelligence, emotional intelligence, and academic performance among medical interns

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Abstract

Background: There is a dearth of research on the correlation between emotional quotient (EQ) and intelligence quotient (IQ), and specifically among medical students and interns. So, we in our study aim to find out the correlation between these two variants of intelligence, and their relation to academic performance among medical interns as well as the gender differences between EQ, IQ, and academic performance.

Methodology: EQ Test Questionnaire developed by Chadha and Singh was used for testing the EQ of the participants (n=50; males=34, females=16; mean age=24.1 years). IQ was tested by an experienced clinical psychologist using Wechsler's Adult Intelligence Test. The academic achievement was determined from the percentage of marks secured in tenth standard, 12th standard, and Final MBBS. GraphPadInStat version 3.05 was used for data entry and analysis.

Results: A statistically high significant negative correlation was found between EQ and IQ of our total study sample as well as among the male participants. The mean EQ was higher among females and mean IQ was higher among males. The females were academically better than the males and this difference was statistically highly significant. No significant correlation of EQ and IQ to academic performance was found in the total sample group.

Conclusion: EQ and IQ are negatively correlated to each other, and there is no significant correlation of EQ and IQ to academic performance. Based on the current findings, further studies need to be built in larger samples. Limitation of the study is a small sample population.

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Background: The concept of emotional intelligence (EI) has roots in discussions that began as early as the late 1930s, when researchers began describing a non-intellective intelligence sometimes described as "social intelligence".[1] EI itself was first defined in the early 1990s by Salovey and Mayer as "a type of social intelligence that involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use this information to guide one's thinking and actions".[2] Salovey and Mayer expanded their definition to include "the verbal and non-verbal appraisal and expression of emotion, the regulation of emotion in the self and others, and the utilization of emotional content in problem-solving".[2] EI also depicts an amount of competence, which relates with the ability to control emotion in order to motivate, to feature, and to gain purpose in life.[3] Conversely, general intelligence has been defined as a person's overall capacity for adaptation through effective cognition and information processing. In simpler terms, EI might be defined as the set of skills people use to read, understand, and react effectively to emotional signals sent by others and oneself.[2] Salovey and Mayer[2] proposed a model that identified four different factors of EI: the perception of emotion, the ability to reason using emotions, the ability to understand emotion, and the ability to manage emotions.

Effective management of emotions is an important aspect of behaviour. Recent investigations in the field of personality indicate that emotional maturity and social skills, along with intelligence, bring adjustment and success in one's life. An emotionally intelligent person can manage his/her feelings in a better way and cope with stresses, with the effective ability to solve problems. It is said that an emotionally intelligent person is the one who is capable of managing one's feelings and emotions in various aspects of one's life. Such a person, consequently, is well-adjusted and is more successful in various areas of educational and other professional fields.[4]. Goleman[5]

defines EI as "managing feelings so that they are expressed appropriately and effectively, enabling people to work together smoothly toward their common goals". According to Goleman,[5] the four major skills that make up EI are: self-awareness, self-management, social awareness, and relationship management. EI refers to the capacity for recognising our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships.[6]

The construct of emotional quotient (EQ) was first developed by research psychologists in the early 1990's who have since continued to refine and empirically validate EQ models. Two predominant models of EQ have emerged: the "ability model", which is strictly a performance measure most analogous to intelligence quotient (IQ), and the "mixed model", which measures both performance and enduring personality characteristics such as optimism and extraversion.[7] Students joining the medical stream can be assumed to have high IQ. After completing MBBS, they start applying their theoretical knowledge into practice during internship period. In a profession where one deals with the suffering of fellow human beings on a daily basis, understanding of their EQ can be insightful. Inquisitiveness in these regards led us to undertake this study.

Objectives of the study

1. To find out EQ among the medical interns posted at psychiatry department.
2. To find out IQ amongst the medical interns posted at psychiatry department.
3. To find out the relation between EQ and IQ among medical interns.
4. To find out the difference between genders with respect to their EQ, IQ, and academic performance among medical interns.
5. To find out the relation of EQ and IQ to academic achievement.

Materials and methods

Place of study: Department of Psychiatry, Silchar Medical College Hospital, Silchar, Assam, India.

Sample: Medical interns posted at psychiatry department during a period of thirteen months from April2010 to May 2011.

Method of sampling: Consecutive samples were taken. Those who were not willing to go for the tests were left out.

Sample size: Fifty (34 males, 16 females).

Informed consent: An informed consent was taken from each of the participants included in the study.

Ethical clearance: The study was cleared by the ethical committee of the institution.

Tools used:

i. A socio-demographic proforma was prepared in the department for collecting information on socio-demographic variables.

ii. EQ Test Questionnaire developed by Chadha and Singh[8] was used for testing EQ of the participants. This EQ test has a test-retest and split half reliability of 0.94 and 0.89 respectively, and validity of 0.89.

iii. IQ was tested by an experienced clinical psychologist using Wechsler's Adult Intelligence Test.[9]

Procedure of study: All the medical interns were given the EQ Questionnaire to find out the EQ. The IQ was determined using Wechsler's Adult Intelligence Test. The academic achievement was determined from the percentage of marks secured in tenth standard, 12th standard, and Final MBBS. In this way academic achievement was seen in two categories - (a) Overall academic achievement (average percentage of marks secured in tenth standard, 12th standard, and Final MBBS), (b) Academic achievement in Final MBBS (percentage of marks secured in Final MBBS). The means of EQ, IQ, and the means of overall academic achievement and academic achievement in Final MBBS were first calculated for the entire sample. Then these were calculated in males and females separately. Likewise the correlations of EQ to IQ, EQ to academic achievements, and IQ to academic achievements were first seen in the total sample and then in the two genders separately.

Statistical tools and data analysis: GraphPadInStat version 3.05 was used for data entry and analysis. Descriptive statistics were used for demographic characteristics and for calculating the means of EQ, IQ, and academic achievements. Unpaired t test was then run to find the significant difference between the mean scores in the two genders. Pearson correlation test was used to see the correlations between EQ, IQ, and academic achievements.

Results and observation

Socio-demographic characteristics of the study sample are shown in table 1. Mean age of the sample was found to be 24.1±1.24 years. Majority of our sample were males (68%) and Hindu (74%) by religion.

Table 2 shows the mean EQ and IQ amongst the medical interns and their correlation to each other. The mean EQ and mean IQ were both calculated for the total sample group as well as in males and females separately. Same was done while finding the correlation between EQ and IQ. The mean EQ in the total sample was found 344 and mean IQ 101. The mean EQ and IQ in males were 343.970 and 101.0588, and in females 344.0625 and 100.875, respectively. On applying Pearson correlation test, it was found that EQ and IQ were negatively correlated to each other. Pearson correlation coefficient is 'r' (r=-0.3674). This correlation was statistically significant in the total sample group and in the male group as seen from the r values and p values. However, in the female group, this correlation was not so strong and statistically not significant.

Figure 1 demonstrates the correlation between EQ and IQ

Table 1: Socio-demographic data of the study sample (n=number of samples)	
Mean age (in years)	**24.1±1.24**
Gender	
Male, n (%)	34 (68)
Female, n (%)	16 (32)
Religion	
Hindu, n (%)	37 (74)
Muslim, n (%)	9 (18)
Christian, (%)	4 (8)

in the total sample group. The correlation is negatively

Table 2: EQ and IQ in the medical interns, and the correlation of EQ to IQ				
	Mean	**SD**	**r alue**	**p value**
EQ (total sample)	344	22.36	-0.3674	0.0087*
IQ (total sample)	101	1.94		
EQ (male)	343.97	24.86	-0.4534	0.0071*
IQ (male)	101.06	1.89		
EQ (female)	344.06	16.55	-0.1479	0.5847
IQ (female)	100.87	2.09		
*EQ=emotional quotient, IQ=intelligence quotient, SD=standard deviation, r=Pearson correlation coefficient, *p value<0.01*				

slanted to show that the EQ score decreases with increasing IQ score, and the relationship is very strong as we can see that the data-points follow the lines closely.

It can also be seen that the mean EQ was higher among females and mean IQ among males. However, on applying unpaired t test, this difference was found not to be statistically significant as shown in table 3. Table 3 also demonstrates that the females were academically better than the males and this difference was statistically highly significant.

Table 4 shows the correlation of EQ and IQ to academic performance in the total sample group. No significant correlation of EQ and IQ to academic performance was found in the total sample group as obvious from the Pearson correlation coefficient r values and p values. The correlation of EQ and IQ to academic performance was also seen separately in the two genders. On doing so, a significant negative correlation of EQ to overall academic performance in females (r=-0.5458, p<0.05) and a significant positive correlation of IQ to overall academic performance in males (r=0.4021, p<0.05) was found.

Discussion

In our study, males constituted the majority (68%) of the sample. The mean EQ of our sample was 344 and the mean IQ 101. Statistically, there was a strong negative correlation between EQ and IQ of the total sample as well as among the males. However, among the females, this negative correlation was not so strong and statistically not significant. This is in contrast to the finding of Sitaram's study,[10] where a positive correlation between EQ and IQ was found. However, in that study, the correlation has a mild correlation percentage.

In the present study, no significant difference was found between the mean EQ scores of males and females, similar to the findings of Choudhry and Gujjar,[4] and Mishra and Mohapatra.[11] This is in contrast to the findings of Kattekar[3] and Tabassum*et al.*[12] who found a significantly higher EQ among males than females.On the other hand, Schutte*et al.*[13] found that females rate higher than males on measures of EI. Petrides and Furnham[14] also reported that females seem to be more socially skilled than males on EI.

Similarly, no significant differ-ence was found between the mean IQ scores of the two genders in the present study. This simulates the find-ing of some earlier authors.[3,15,16] This, however, refutes the findings of some other authors who had reported a male advantage in IQ points.[17-20]

However in the present study, the females were significantly better academically than the males. The finding is consistent with numerous other reports of male educational under-achievement.[21-24]

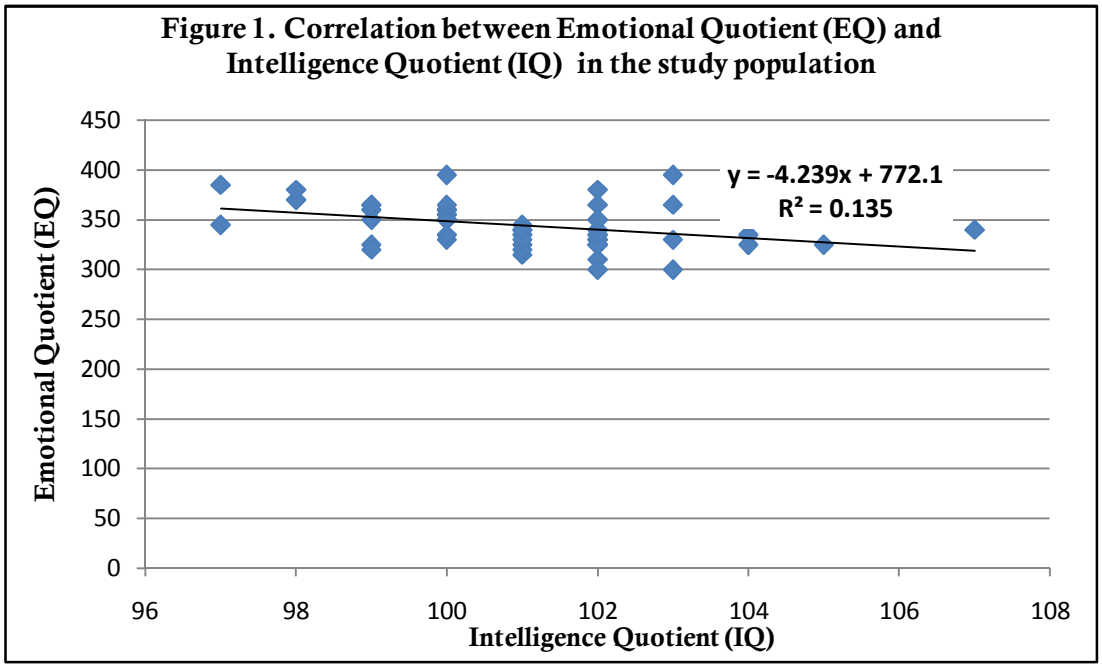

Table 3: Gender differences with respect to EQ, IQ, and academic achievement

	Mean ± SD	t value	p value
EQ (male)	343.97 ± 24.85	0.013	0.989
EQ (female)	344.06 ± 16.55		
IQ (male)	101.05 ± 1.89	0.309	0.757
IQ (female)	100.87 ± 2.09		
Academic achievement (AA)			
Overall AA (male)	67.91 ± 5.48	2.702	0.009*
Overall AA (female)	72.30 ± 5.07		
AA in Final MBBS (male)	58.44 ± 3.08	2.702	0.006*
AA in Final MBBS (female)	61.56 ± 3.05		

*EQ=emotional quotient, IQ=intelligence quotient, SD=standard deviation, *p value<0.01*

Table 4: Correlation of EQ and IQ to academic achievement in total sample and in each gender

Total sample	Mean ± SD	r value	p value
EQ	344 ± 22.36	-0.1103	0.4457
Overall AA	69.32 ± 5.69		
EQ	344 ± 22.36	0.1334	0.3557
AA in Final MBBS	59.44 ± 3.84		
IQ	101 ± 1.93	0.2392	0.0943
Overall AA	69.32 ± 5.69		
IQ	101 ± 1.94	0.06026	0.6776
AA in Final MBBS	59.44 ± 3.84		
Male			
EQ	343.97 ± 24.85	-0.00094	0.9958
Overall AA	67.91 ± 5.48		
EQ	343.97 ± 24.85	0.1859	0.2926
Final MBBS	58.44 ± 3.08		
IQ	101.05 ± 1.89	0.4021	0.0184*
Overall AA	67.91 ± 5.48		
IQ	101.05 ± 1.89	0.1268	0.4748
Final MBBS	58.44 ± 3.08		
Female			
EQ	344.06 ± 16.55	-0.5458	0.0287*
Overall AA	72.30 ± 5.08		
EQ	344.06 ± 16.55	-0.02843	0.9168
Final MBBS	61.56 ± 3.05		
IQ	100.87 ± 2.09	0.003872	0.9886
Overall AA	72.30 ± 5.08		
IQ	100.87 ± 2.09	-0.01955	0.9427
Final MBBS	61.56 ± 3.05		

*EQ=emotional quotient, IQ=intelligence quotient, AA=academic achievement, SD=standard deviation, r=correlation coefficient, Overall values are summation of tenth, 12th, and Final MBBS, *p value<0.05*

Certain other studies found that there was no gender difference in achievement.[3,25].

The significant underachievement in the males in the present study despite no significant difference between EQ and IQ scores of the two genders matches our finding of no significant correlation between these two variants of intelligence and academic achievement. Interestingly, on considering the two groups separately, the EQ was found to be significantly negatively correlated to academic performance in females and the IQ to be significantly positively correlated to academic performance in males. Several other earlier researchers have found a significant positive correlation between EQ and academic performance,[13,26] while some others have not.[27,28] Similarly, some earlier researches support a significantly positive correlation between IQ and academic achievement,[29,30] while others do not.[31] These varied findings indicate that besides IQ and EQ, several other additional factors may be influencing academic achievement. Over the past few decades, extensive researches have been conducted on variables predicting academic performance. Researchers who have sought to discover factors associated with high academic performance have examined an array of variables such as social behaviour,[32] academic self-concept,[33,34] achievement motivation,[26] parenting styles,[35] and socioeconomic status.[36]

Conclusion

As the current study was an institution based study on a limited number of samples, the findings cannot be generalised to the general population. However, the importance of these two variants of intelligence, their correlation to each other, and the multiple other associated factors influencing academic achievement cannot be ruled out. Hence, further research involving larger and varied population groups needs to be carried in this field.

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