

Emotional intelligence and academic performance among medical students – a correlational study

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Abstract. – **OBJECTIVE:** Emotional intelligence is the ability to monitor one's emotions and feelings and those of others, to distinguish between them, and to use this information to guide one's thoughts and actions. A growing body of evidence suggests that highly emotionally intelligent student groups have better academic performance, better emotional awareness, and relationship management. We set forward to determine if any such positive relation exists among medical students.

MATERIALS AND METHODS: A descriptive cross-sectional study was conducted on undergraduate medical students of Majmaah University. Convenient sampling was done to enroll the consenting students. A self-administered questionnaire on emotional intelligence was adapted from a model by Paul Mohapel. The questions based on a 5-point Likert scale assessed the four domains of emotional intelligence i.e., emotional awareness, emotional intelligence; demographic details and grade-point averages (GPA) were also collected. The data was tabulated and analyzed using SPSS 22.0 (IBM Corp., Armonk, NY, USA).

RESULTS: Hundred and forty medical undergraduates enrolled in the study with a male-to-female ratio of 1:06. The median semester score was 4.47 (range 1.1-5.8) and the median cumulative score was 4.44 (range 2.8-5.0). The emotional management score was highest among those with a CGPA >4.50 ($p=0.048$). A significantly higher mean emotional awareness score ($p<0.001$), social-emotional awareness score ($p<0.001$), and relationship management score ($p=0.030$), and the mean EQ total was higher among males than for females ($p<0.001$). A small but significant

correlation was observed and also with EQ total score ($r=0.18$, $p=0.032$).

CONCLUSIONS: Emotional management affects the academic performance of medical students.

There should be more sessions to improve the emotional intelligence of the students so that it can aid in their academic performance.

Key Words:

Emotional Intelligence, Academic performance, Undergraduate medical, Correlation studies.

Introduction

Emotional intelligence is 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 actions¹.

The ability to reason, plan, solve problems, adapt, engage in abstract thought, comprehend concepts, utilize language effectively, and learn are just a few examples of the many cognitive capabilities that make up intelligence. Daniel Goleman suggested that individuals hold a limited perspective of intelligence, claiming that IQ is genetically established and cannot change with life experience, but can be taught, providing a greater chance to harness the intellectual capacity one is born with. Due to the difference in emotional intelligence, which includes self-control, ardor, and persistence, as well as the capacity to motivate oneself, people with high IQs occasionally strug-

gle while others with lower IQs perform unexpectedly well². In a study³ on Malaysian students, the highly emotionally intelligent student group was found to have higher (better) academic performance and were better in emotional awareness, management, and relationship management. A study⁴ conducted in Ethiopia identified several factors like age, educational status of families, substance use, and career development plan to be associated with the level of emotional intelligence.

A study⁵ among Saudi students showed that academic achievement enhances with increased emotional intelligence.

Emotionally intelligent students tend to utilize their emotions efficiently and can also manage both self and others' emotions. They can adapt to their immediate surroundings and control their negative emotions to achieve their goals⁵.

In the literature, it is suggested that emotional intelligence is important for improved academic performance. Very little literature exists regarding such a correlation in medical students. We set forward to determine if any such positive relation exists among medical students, which would help in reinforcing the importance of including sessions on emotional intelligence in their program to help the students perform better in their academics.

Materials and Methods

A cross-sectional study was carried out at the college of medicine, Majmaah University, Al Majmaah, Kingdom of Saudi Arabia. Data was gathered from undergraduate medical students at various levels. The study participants were composed of both male and female students. Data was collected after taking consent from the students. Institutional Ethical approval was taken from Majmaah University for Research Ethics Committee (MUREC) (HA-01-R-088) before conducting the study. The application was reviewed and referred to below and the ethical aspects approved with an approval ethics number: MUREC-Nov.18/COM-2021/ 12-3. A non-probability convenient sampling method was used. Emotional intelligence among the students was assessed with the help of a self-administered questionnaire, The Quick Emotional Intelligence Self-assessment test was adapted from a model, by Paul Mohapel, for the San Diego City College MESA programme¹. It consists of 40 items divided into four categories:

emotional awareness (10 items), emotional management (10 items), social-emotional management (10 items), and relationship management (10 items). Each question was assessed on a 5-point Likert scale, which ranges from 0 to 4 (Never = 0 to Always = 4). Before conducting the survey, the scale was validated for the local context by one of the authors, a clinical psychologist. The questionnaire was given to the students in a pen-and-paper format during classroom hours. The questionnaire also included a few demographics including age, gender, year of study, and marital status. Their (Grade- Point Average) GPA was taken for assessing their academic performance. The data-collection process was carried out over the course of two months.

Statistical Analysis

After the data was tabulated, the collected data was analyzed using SPSS version 25 (IBM Corp., Armonk, NY, USA). Frequencies and descriptive statistical analysis were performed and reported. The association between the quantitative variables was assessed by applying an independent *t*-test or ANOVA and that between qualitative variables were assessed by the Chi-square test. The *p*-value less than 0.05 was considered significant.

Results

A total of hundred and forty undergraduate medical students at Majmaah University participated in the study. More than two-fifths, (61, 43.6%) belonged to the age group of 21 and 22 years, followed by 37.9% aged 19 and 20 years. Less than one-fifth were of age more than 23 years. The male-to-female ratio was 1.06. Table I depicts the semester-wise participation. Maximum participation was from 2nd year (45, 32.1%) and 4th-year students (47, 33.6%) (Table I).

Table II depicts the participants' academic performance in terms of the semester and cumulative scores. The median semester score was 4.47 (range 1.1-5.8) with two outliers while the median cumulative score was 4.44 (range 2.8-5.0) (Figure 1).

The academic performance was categorized into less than 3.50, between 3.50 and 4.50, and more than 4.50. The various components of Emotional Intelligence were cross tabulated against the academic performance categories to assess if any association exists. Those students with bet-

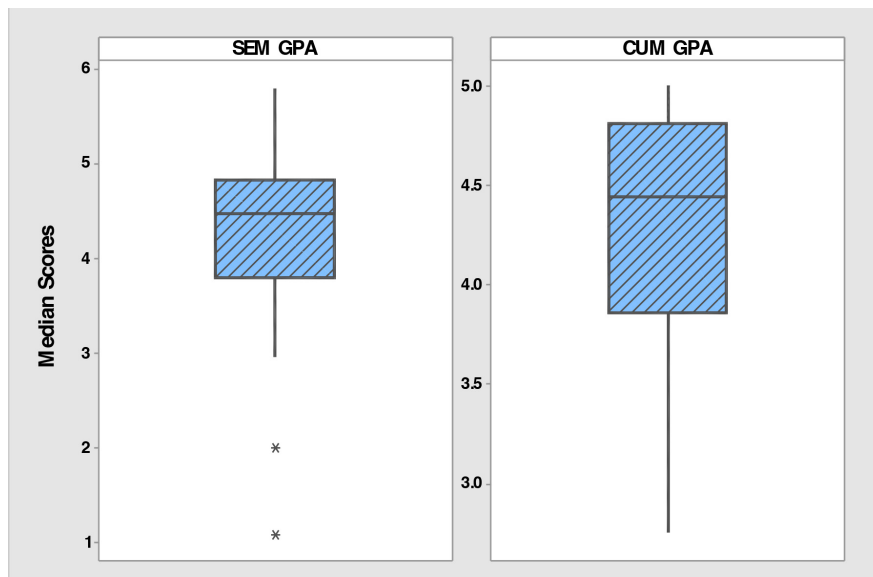


Figure 1. GPA Statistics.

ter academic performance also had higher mean Emotional management scores. Students who had GPA < 3.50, had a mean emotional management score of 23.4 which increased to 25.3 for those having emotional management scores between 3.50 to 4.50. Furthermore, students with cumulative scores of more than 4.50 were observed to have mean emotional management scores of 27.1 which is statistically significant ($p = 0.048$).

A similar increasing trend was observed with Emotional awareness ($p = 0.800$) and relationship management ($p = 0.680$). However, it was not statistically significant. Likewise, the total EQ score also showed an increasing trend with an increased academic score but statistically insignificant ($p = 0.190$) (Table III and Figure 2).

Table IV and Figure 3 report the gender-wise association between various domains of Emotion-

Table I. General Characteristics of the study participants.

| Variable | Category | Frequency | Percent |
|----------------|----------|-----------|---------|
| Age (in years) | 19-20 | 53 | 37.9% |
| | 21-22 | 61 | 43.6% |
| | ≥ 23 | 26 | 18.6% |
| Gender | Female | 68 | 48.6% |
| | Male | 72 | 51.4% |
| Year | 2 | 45 | 32.1% |
| | 3 | 15 | 10.7% |
| | 4 | 47 | 33.6% |
| | 5 | 33 | 23.6% |

Table II. GPA statistics.

| GPA | Mean | Std. Deviation | Median | Min | Max |
|----------------|-------|----------------|--------|-----|-----|
| Age (in years) | 19-20 | 53 | 37.9% | | |
| SEM | 4.27 | 0.69 | 4.47 | 1.1 | 5.8 |
| CUM | 4.27 | 0.61 | 4.44 | 2.8 | 5.0 |

Depicts the participants' academic performance in terms of the semester and cumulative scores. The median semester score was 4.47 (range 1.1-5.8) with two outliers while the median cumulative score was 4.44 (range 2.8-5.0).

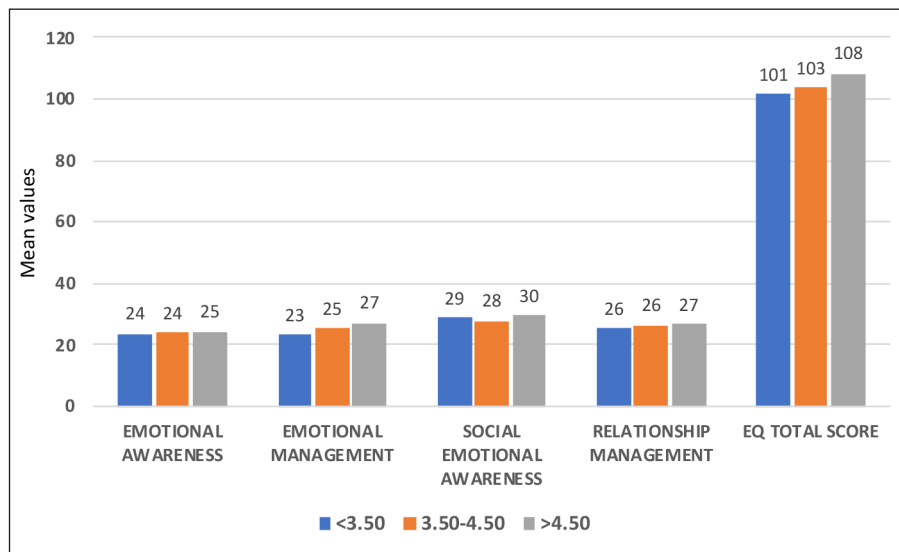


Figure 2. Emotional intelligence with different GPA scores.

al Intelligence, which shows, a significantly higher mean emotional awareness score ($p < 0.001$), social-emotional awareness score ($p < 0.001$), and relationship management score ($p = 0.030$) among males than females. Additionally, the mean EQ total score was also higher among males (110.8) than for females ($p < 0.001$).

Further, the linear correlation between academic performance and four domains of emotional intelligence was assessed (Table V and Figure 4). A preliminary analysis shows a linear positive correlation between all the pairs. A small but significant

correlation was observed between academic performance and emotional management ($r = 0.23$, $p = 0.006$) and with EQ total score ($r = 0.18$, $p = 0.032$).

Discussion

The present study was undertaken to assess the relationship between academic performance and emotional intelligence among medical undergraduates. The age of the students in our study ranges from 19 to 25 years with a mean age of 21.16

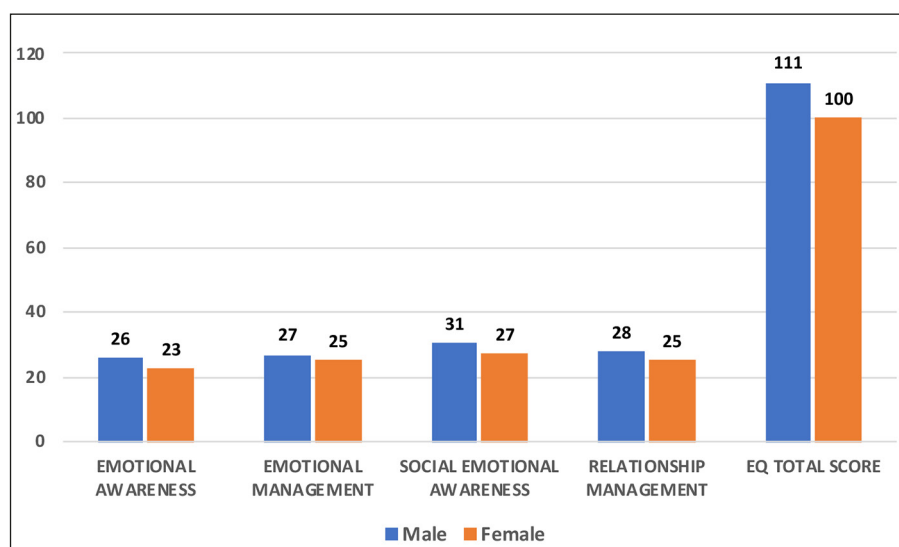


Figure 3. Emotional intelligence with gender.

Table III. Comparison of emotional intelligence with different GPA scores.

| Factors | Cum GPA | N | Mean | Std. Deviation | F | p-value* |
|----------------------------|-----------|----|-------|----------------|-------|----------|
| Emotional awareness | <3.50 | 19 | 23.6 | 5.2 | 0.223 | 0.800 |
| | 3.50-4.50 | 52 | 24.1 | 5.4 | | |
| | >4.50 | 69 | 24.5 | 5.4 | | |
| Emotional manage-ment | <3.50 | 19 | 23.4 | 7.9 | 3.100 | 0.048 |
| | 3.50-4.50 | 52 | 25.3 | 5.2 | | |
| | >4.50 | 69 | 27.1 | 6.4 | | |
| Social-emotional awareness | <3.50 | 19 | 28.9 | 7.4 | 1.602 | 0.205 |
| | 3.50-4.50 | 52 | 27.8 | 5.2 | | |
| | >4.50 | 69 | 29.7 | 5.6 | | |
| Relationship manage-ment | <3.50 | 19 | 25.5 | 8.3 | 0.387 | 0.680 |
| | 3.50-4.50 | 52 | 26.3 | 7.1 | | |
| | >4.50 | 69 | 27.0 | 5.9 | | |
| Eq total score | <3.50 | 19 | 101.4 | 22.2 | 1.681 | 0.190 |
| | 3.50-4.50 | 52 | 103.5 | 17.3 | | |
| | >4.50 | 69 | 108.2 | 16.3 | | |

*p-values based on ANOVA test.

Table IV. Comparison of emotional intelligence between gender.

| Factors | Sex | N | Mean | Std. Deviation | F | p-value* |
|----------------------------|--------|----|-------|----------------|--------|----------|
| Emotional awareness | Female | 68 | 22.6 | 5.1 | 13.180 | <0.001 |
| | Male | 72 | 25.8 | 5.1 | | |
| Emotional management | Female | 68 | 25.0 | 6.1 | 2.734 | 0.100 |
| | Male | 72 | 26.8 | 6.4 | | |
| Social-emotional awareness | Female | 68 | 27.0 | 6.0 | 15.043 | <0.001 |
| | Male | 72 | 30.6 | 4.9 | | |
| Relationship management | Female | 68 | 25.3 | 7.1 | 4.823 | 0.030 |
| | Male | 72 | 27.7 | 6.1 | | |
| EQ total score | Female | 68 | 99.9 | 17.7 | 14.745 | <0.001 |
| | Male | 72 | 110.8 | 15.9 | | |

*p-values based on ANOVA test.

Table V. Correlation between academic performance (GPA) and emotional intelligence.

| Factors | Correlation* | p-value* |
|----------------------------|--------------|----------|
| Emotional awareness | 0.09 | 0.273 |
| Emotional management | 0.23 | 0.006 |
| Social-emotional awareness | 0.11 | 0.181 |
| Relationship management | 0.09 | 0.294 |
| EQ total score | 0.18 | 0.032 |

*Pearson's correlation coefficient.

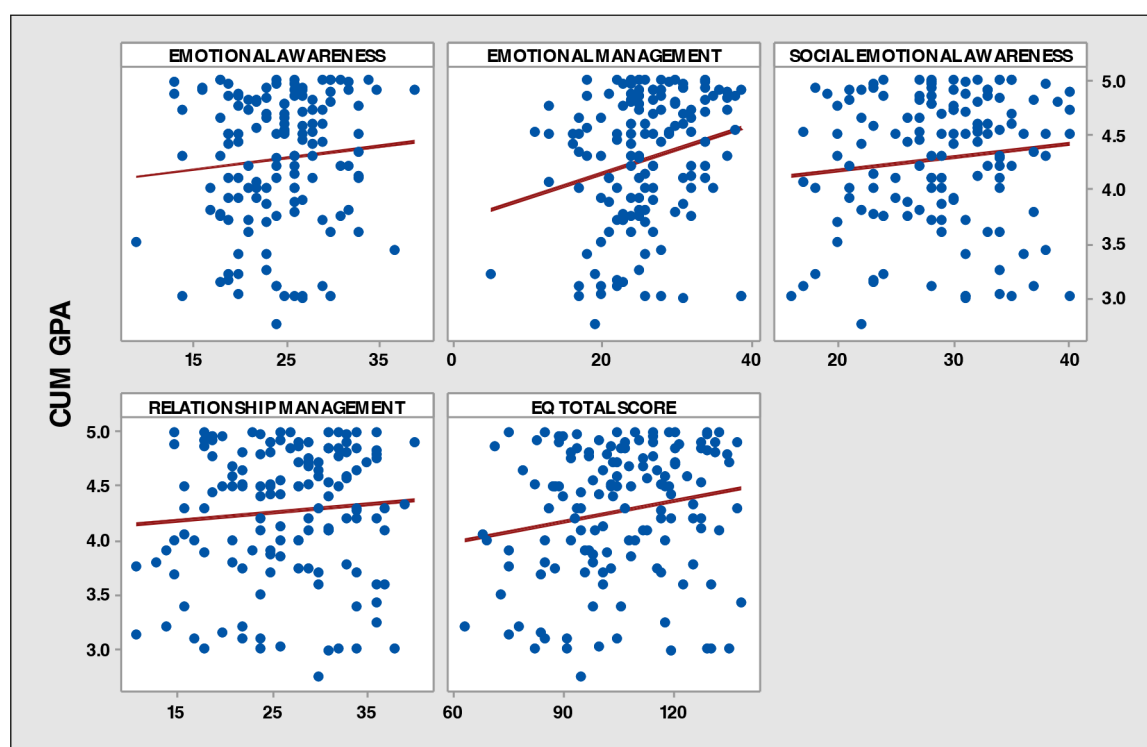


Figure 4. Correlation between academic performance and emotional intelligence.

years with maximum students belonging to the age group of 21-22 years (43.6%). Similarly, a study by Suleman et al⁶ with the same objectives had maximum participants of aged 20 years (41%). The mean age was 26.3 ± 1 years in a study by Wijekoon et al⁷. While a study by Talarico et al⁸ that involved residents (Anesthesia) had an average age of 30.4 years. Our study had almost equal male and female participants (51.4% and 48.6% respectively) while males were 64% in the study by Suleman et al⁶. In our study, the median semester score was 4.47 (range 1.1- 5.8) with two outliers while the median cumulative score was 4.44 (range 2.8-5.0). However, it was a little lower in a study done in Pakistan (Mean CGPA 3.26 ± 0.783 , range 1.8-4.0)⁶.

The mean EI score in females (123.5) was higher than the mean EI score in males (120.7, $p = 0.014$) in a study by Ranasinghe et al⁹. In contrast to this, the mean EI score in our study was higher (110.8) among males than in females (99.9).

When analyzing the individual domains, the current study revealed a strong association between the emotional awareness, social-emotional awareness, and relationship management domains and the male gender (higher mean in males) with a significant statistical difference. Although ac-

ording to a study on the overall French population, women have much more emotional awareness than men do¹⁰.

The positive correlation that has been shown between emotional intelligence and gender in most of the studies, has been attributed to the understanding that the female gender experiences emotions more intensely than the male gender. This also has been attributed to the biased priming of the female gender towards emotions as men are prepared to curtail certain emotions such as sadness, guilt, and vulnerability¹¹. Our study shows the contrast and reveals the same. It is also suggested that the cognitive and behavioral systems of men and women functionally differ^{12,13}.

Our study shows that the students who had cumulative GPA scores of more than 4.50 were observed to have mean emotional management scores of 27.1 which is higher compared to those with less cumulative GPA scores (statistically significant $p = 0.048$).

Our study found that those undergraduate students with better academic performance had higher mean emotional management scores too. Similarly, the study by Suleman et al⁶ reports that in terms of Cumulative Grade Point Average

(CGPA), there is a significant positive relationship between academic success and emotional intelligence among undergraduate students. In contrast to this, a study¹⁴ done at Puducherry shows a weak positive correlation ($r = 0.09$), between emotional intelligence and academic performance which was statistically significant too ($p = 0.02$). A study⁷ done among Sri Lankan students shows that total EI was an independent predictor of academic performance in the final MBBS exam ($\beta = 0.018$; $p = 0.006$). Likewise, a cross-sectional study¹⁵ done in a medical college in Riyadh was conclusive of a significant relationship between Emotional intelligence and academic performance ($r = 0.197$; $p < 0.001$). A similar suggestion of a positive correlation was also found in another study¹⁰. Pearson correlation found a significant relationship between mean EI scores and mean GPA mean ($p = 0.001$, $r = 0.53$)¹⁰.

Thus, the current study suggests that the academic performance of a student is not only dependent on cognitive intelligence but also emotional intelligence, that is how a student applies his knowledge to the current situations.

Limitations

The study is cross-sectional in design and could not ascertain the association between academic performance and emotional intelligence. A longitudinal study is known to be more conclusive to find a definite relationship. But, despite this limitation, it still paves the way to extend the literature on gender and academic differences in emotional intelligence.

Conclusions

The study concludes that emotional intelligence and precisely emotional management affect the academic performance of medical students. The study also focuses on the higher emotional intelligence score among males. This warrants the requirement of including more sessions to improve the emotional intelligence of the students so that it can aid in their academic performances.

Conflict of Interest

We, the authors hereby declare that the research was conducted in the absence of any financial or commercial relations that could be a cause of a potential conflict of interest. All claims expressed in the article are the sole of the authors and do not represent those of their affiliated institutions.

Authors' Contributions

The study was conceived by TA and RL, and it was conducted by RL and AA. A literature search was conducted by all the authors. Data entry was done by RL and Data analysis was done by TA, THA, MSA, and SA. The draft was screened by TA, THA, MSA, and SA. All the authors contributed to the revisions and approved the final draft for submission.

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Data Availability

The original contributions presented in the study are included in the article and appendages submitted. Further inquiries can be directed toward the corresponding author.

Informed Consent

Data was collected after taking consent from the students.

Ethics Approval

Institutional Ethical approval was taken from Majmaah University for Research Ethics Committee (MUREC) (HA-01-R-088) before conducting the study. The application was reviewed and referred to below and the ethical aspects approved with an approval ethics number: MUREC-Nov.18/COM-2021/ 12-3.

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