

ORIGINAL ARTICLE

RELATIONSHIP OF EMOTIONAL INTELLIGENCE AND DEMOGRAPHIC CHARACTERISTICS WITH ANNUAL EXAM SCORE IN MEDICAL STUDENTS

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ABSTRACT

Objectives: To assess relationship between emotional intelligence and annual exam score in undergraduate medical students, and to determine demographic predictors of annual exam score in undergraduate medical students.

Methods: A cross-sectional study was conducted at Baqai Medical College, Baqai Medical University, Karachi from December, 2024 to August, 2025. Students of second to final year MBBS were included in the study. Data were collected by means of a study questionnaire that contained questions on demographic characteristics, Wong and Law Emotional Intelligence Scale and percentage obtained in the previous examination. Data were analyzed on SPSS version 21.

Results: The mean age of the students was 22.39 ± 1.57 years, 129 (53.5%) of them were male, 75 (31.1%) of the students were in 2nd year MBBS whereas 101 (41.9%) were in 3rd year MBBS while their mean passing percentage in the last examination was 68.24 ± 9.31 . The emotional intelligence of students was not found to be significantly correlated with their annual exam score. Moreover, multivariable analysis showed that gender of student (Male: $B = 0.058$, 95%CI 0.024-0.092, $p=0.001$) and education of father (Intermediate or less: $B = 0.098$, 95% CI 0.016 – 0.180, $p = 0.019$) were significant predictors of their annual exam score.

Conclusion: It was concluded that though the emotional intelligence of students was not significantly correlated with their annual exam score, certain demographic characteristics were indeed significant predictors of their annual exam score.

Keywords: Emotional Intelligence, Annual Exam Score, Demography, Risk Factors, Students, Medical

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INTRODUCTION

The word 'Emotional Intelligence' was first defined by Peter Salovey and John D Meyer [1]. According to Colman "Emotional intelligence is the key to both personal and professional success; it is the ability to monitor people's emotions, to discriminate between different emotions and label them appropriately and to use emotional information to guide thinking and behavior" [2]. High emotional intelligence involves adjusting emotions to adapt to environments [3]. According to a recently conducted systematic review it may have a protective effect against the emotional burden experienced in some professions [4].

Academic achievement represents the accomplishments by a student in an educational institute, be it a school, college, or university [5]. Academic achievements is valued as an important aspect of student life and future success, and policymakers recognize the significance of social and emotional factors including emotional intelligence, self-awareness and empathy affecting academic achievement. According to a meta-analysis published in 2021, the factors that have the most effect on academic achievement are socio-demographic and individual attributes, teaching methods and educational theories [6]. A recent systematic review reported age, gender, socioeconomic background and parental education as the main factors affecting students' academic performance [7]. All these factors are interconnected and play a vital role in shaping students' psychological growth and future success. By acknowledging the importance of these factors, a supportive learning environment can be created that fosters students' welfare and success [8].

Literature reports that a higher emotional intelligence leads to a better emotional wellbeing which in turn helps generate motivation and devise learning strategies that results in greater academic achievements [9]. Emotionally intelligent students tend to know how to cater their emotions regarding their needs which can be utilized for effective communication, stress management, and increased

resilience [10]. All these qualities in a student can immensely contribute towards academic success.

Though previous research has evaluated this association in management students [11], to the best of investigators' knowledge, relevant local evidence from medical students about this relationship is limited at best [12]. This study was therefore conducted 1) to assess the relationship between emotional intelligence and annual exam score in undergraduate medical students, and 2) to determine the demographic predictors of annual exam score in undergraduate medical students. It was hypothesized that students with higher emotional intelligence would have a better annual exam score than those with lower emotional intelligence, and that certain demographic characteristics of students such as gender and parental education would have a significant association with their annual exam score. The study results are expected to add to the limited local evidence base and aid in devising effective strategies for enhancing the academic achievement of medical students in Pakistani context.

METHODOLOGY

After taking ethical approval, a cross-sectional study was conducted at Baqai Medical College, Baqai Medical University, Karachi from December, 2024 to August, 2025. Students of second to final year studying at Baqai Medical College were included in the study whereas first year students because of not yet appearing in any annual exam and those refusing to provide verbal informed consent were excluded from the study.

Using value of correlation coefficient as 0.30 for medium effect size, with 5% alpha error and 20% beta error, the required sample size was calculated to be 85 respondents by using an online sample size calculator [13]. Against the calculated sample size, a total of 241 students were included in the study using non-probability convenience sampling technique.

The study questionnaire consisted of two sections.

Section A consisted of demographic information and percentage obtained in the previous examination whereas Section B comprised of Wong and Law Emotional Intelligence Scale [14,15]. The Wong and Law Emotional Intelligence Scale is 16 items, 7-point Likert scale that is divided into 4 sub-sections i.e. Self-emotion appraisal, Others' emotion appraisal, Use of emotion and Regulation of emotion. Self-emotion appraisal consisted of question 1-4, Other's emotion appraisal consisted of question 5-8, Regulation of emotion consisted of question 9-12 and Use of Emotion consisted of question 12-16.

The students were given all the relevant information about the study and their verbal informed consent was taken. The questionnaire was then distributed among them and was collected once everyone had filled it.

Ethical approval of the study was taken from Baqai Medical University [Ref: BMU-IREB/12-2024/012/ (FRREC-FM/11-2024/01)]. Moreover, verbal informed consent was taken from all the participants prior to collecting data from them.

Data were entered and analyzed in SPSS version 21. Categorical variables were reported as frequencies and percentages whereas continuous variables were summarized as means and standard deviations. After checking normality using Shapiro Wilk's test, inferential analysis was performed by calculating Spearman's correlation coefficients to check correlation between emotional intelligence and annual exam score. Moreover, a generalized linear model with B coefficients and 95% confidence intervals was also generated to determine association between demographic characteristics and annual exam score. The level of significance was kept at 0.05.

RESULTS

The response rate of the study was 98%. The mean age of the students was 22.39 ± 1.57 years, 129 (53.5%) of them were male, 77 (32.0%) of the fathers had bachelors whereas 101 (41.9%) had

master's education, 61 (25.3%) of the mothers had bachelor's education whereas 70 (29.0%) had master's education, 143 (59.3%) lived in a nuclear family, 75 (31.1%) of the students were in 2nd year MBBS whereas 101 (41.9%) were in 3rd year MBBS while their mean passing percentage in the last examination was 68.24 ± 9.31 (table 1).

Table 1: Baseline Characteristics of Participants

Student Characteristics (n=241)	Mean $\pm$ SD/Count (%)
Age (Years)	22.39 $\pm$ 1.57
Gender	
Male	129 (53.5)
Female	112 (46.5)
Father's Education	
Intermediate or less	44 (18.3)
Bachelors	77 (32.0)
Masters	101 (41.9)
PhD	19 (7.9)
Mother's Education	
Intermediate or less	99 (41.1)
Bachelors	61 (25.3)
Masters	70 (29.0)
PhD	11 (4.6)
Family Type	
Nuclear	143 (59.3)
Joint	98 (40.7)
Study Year	
2 nd	75 (31.1)
3 rd	101 (41.9)
4 th	39 (16.2)
5 th	26 (10.8)
Last Exam Percentage	68.24 $\pm$ 9.31

The correlation analysis between total emotional intelligence score, emotional intelligence subscale scores and annual exam score of students showed that none of them were significantly correlated with annual exam score of students ($p > 0.05$ for all) (table 2).

Table 2: Correlation Analysis between Emotional Intelligence and Annual Exam Score

Emotional Intelligence Scores	Annual Exam Score	
	p	p
Total Emotional Intelligence	-0.040	0.532
Self-Emotion Appraisal	-0.110	0.089
Others Emotion Appraisal	0.087	0.179
Regulation of Emotion	-0.009	0.889
Use of Emotion	-0.100	0.122

The multivariable analysis of association between participant characteristics and their annual exam score showed that gender of student (Male: B=0.058, 95%CI 0.024-0.092, p=0.001) and education of father (Intermediate or less: B=0.098, 95% CI 0.016-0.180, p=0.019) were significant predictors of their annual exam score (table 3).

Table 3: Multivariable analysis of association between Participant Characteristics and Annual Exam Score

Participants Characteristics (n=241)	B	95% CI		p
		Lower	Upper	
Gender				
Male	0.058	0.024	0.092	0.001
Female				Reference
Father Education				
Intermediate or less	0.098	0.016	0.180	0.019
Bachelors	0.054	-0.020	0.129	0.154
Masters	0.034	-0.035	0.103	0.336
PhD				Reference
Mother Education				
Intermediate or less	-0.003	-0.096	0.090	0.950
Bachelors	0.006	-0.087	0.099	0.899
Masters	0.014	-0.074	0.102	0.750
PhD				Reference
Type of Family				
Nuclear	0.017	-0.019	0.052	0.362
Joint				Reference

DISCUSSION

The study results showed that total emotional intelligence score was not significantly correlated

with annual exam score of students. Unlike the study results, previously published literature reports a positive relationship between emotional

intelligence and academic achievement of students [9,12,16-18]. Though not found in this study, it can be argued that students who possess a higher emotional intelligence are better equipped emotionally to successfully meet the academic challenges presented to them and thus fare better academically.

The study results further showed that among the sub scales of emotional intelligence, self-emotion appraisal score was negatively correlated with annual exam score of students, though the correlation was marginally insignificant. Contrary to the study result, two earlier studies reported self-emotion appraisal to be positively associated with academic achievement of students [19,20]. Though not found in this study, students with higher level of emotional awareness may regulate their stress levels more effectively which make them tackle academic challenges with a positive mindset. Moreover, students who have high self-emotion appraisal may have greater understanding of their limitations and thus can use this knowledge to effectively handle them and excel academically.

Moreover, gender of the student being male was a significant predictor of better annual exam score by students. In line with the study results, an earlier study also reported male gender to be significantly associated with better academic performance in medical students [21]. It should be borne in mind though that due to the cultural differences in upbringing of genders and different societal expectations and pressures on them, their academic motivation can vary in different populations.

Interestingly, father's education being intermediate or less was found to be a significant predictor of students' better annual exam score. Though it could be expected that students whose father had a higher educational degree would have fared better in their exam, it is likely that this relation is a complex one and may be influenced by other related factors such as father child interaction, presence of other highly educated members or older siblings in family and the level of self-interest of a student in his or her studies. Nevertheless, further research is needed to draw any meaningful conclusion about this

relationship.

The study results further showed that maternal education was not significantly associated with annual exam score of students. Likewise, an earlier study also reported no significant association between maternal education and academic performance of students [22]. Maternal educations are unlikely to directly influence the performance of children getting higher education nowadays because of the increased availability of external support systems such as group studies and online learning tools. Moreover, as students increasingly grow independent of their parents for academic support in higher education, such a finding was not unexpected.

Moreover, the study results showed that type of family was not a significant predictor of annual exam score of students. The authors recommend further exploration of this finding as due to non-availability of comparable literature, a meaningful comparison could not be made with previous studies.

Limitations

The investigators acknowledge that being a single center study, the study findings have limited generalizability. Moreover, only the percentage obtained in the previous examination was used to assess the annual exam score of students.

CONCLUSION

It was concluded that though the emotional intelligence of students was not significantly correlated with their annual exam score, certain demographic characteristics were indeed significant predictors of their annual exam score.

Based on study findings, it is recommended that medical students with personal or family traits that predispose them to perform poorly in academics should continuously be monitored and facilitated if the need arises during their educational years by their parents and teachers alike. This may take the form of formal or informal one to one interactions or special counseling sessions. This will ensure timely

identification of educational difficulties and challenges and will facilitate successful achievement of desired educational outcomes by these students.

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Authors' Contribution:

RS, SS & RK: Substantial contributions to the conception of the work; and the acquisition of data for the work; AND drafting the work

SAH & AS: Substantial contributions to the conception of the work; and the acquisition of data for the work; AND Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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SMZHN: Substantial contributions to the design of the work; and the analysis and interpretation of data for the work; AND drafting the work and revising it critically for important intellectual content; AND Final approval of the version to be published

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