

Emotional Intelligence and Academic Performance Among Egyptian and Saudi Arabian Undergraduate Medical Students: A Cross Sectional Study

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Abstract

Objectives

The purpose of this study was to explore the domains of emotional intelligence among medical students and ascertain its relationship to academic achievement.

Method:

A cross-sectional study was conducted on 2340 undergraduate medical students from different Egyptian and Saudi Arabian universities using a semi-structured online abstract including two parts: Socio-demographic data and emotional intelligence questionnaire.

Results

The study was conducted on 2340 medical students aged (21.5 ± 1.9 , range = 17–24 years) from two countries, Saudi Arabia (28.8%) and Egypt (71.2%). Females represented 68.4%. Academic achievement was distributed as excellent 54.1%, very good (28%), good (14.5%) and accepted (3.4%). The total EI score reported that 63.9% of the students had strength while 35.9% needed attention. Managing emotion, motivating oneself and total EI score were significantly higher among Egyptian students in comparison to Saudi Arabia students ($P < 0.001$). Females showed significantly higher EI scores than males. Egyptian males showed significantly higher EI scores than Saudi Arabian males ($P < 0.001$). Self-awareness was significantly high in Saudi Arabian females while managing emotions was significantly high among Egyptian females ($P < 0.01$). Academic achievement showed that EI scores were significantly higher among very good and excellent achievement in comparison to good or accepted achievement except self-awareness which showed that those with accepted achievement had higher self-awareness than those with high achievement. Significant positive correlation was found between EI scores and academic achievement ($P < 0.001$)

Conclusion

Emotional intelligence domains relate significantly to academic achievements in medical students. Therefore, this study recommended the necessity of improving the students' emotional intelligence in the scientific and community environment with proper interventions strategies through developing program that enhances their academic achievement to play a pivotal role when transforming into business world and recently in academic study.

Background:

Emotional intelligence (EI) is defined as the ability to monitor one's own and other people's emotions, to discriminate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior and to manage and/or adjust emotions to adapt to environments or achieve one's goals [1]. This definition encompasses two subtypes of personal intelligence: intrapersonal and interpersonal intelligence. Intrapersonal intelligence, inner intelligence, is the ability to access one's own feeling life. This is important for self-awareness, self-regulation, and self-motivation. Interpersonal intelligence, outer intelligence, is the ability to read the moods, intentions, and desires of others. This is important for developing qualities like empathy and building up effective relationships [2,3].

The concept of EI was first described by Salovey and Mayer more than two decades ago. It is a relatively new construct compared with intelligence or personality, with the first academic article appearing in 1990 [4]. The concept was relatively unknown until it was popularized by science journalist Daniel Goleman in his 1995 book *Emotional Intelligence: Why It Can Matter More Than IQ*. This book aroused great interest from researchers and the general public in the late 1990s [4]. According to them, emotional intelligence can be categorized into five domains: self-awareness, emotional management, self-motivation, empathy, and interpersonal skills [4].

Academic achievement or performance is the extent to which a student, teacher, or institution achieves its short or long-term educational goals. Completion of educational standards such as completion of the school year examination represents an academic achievement.

These different dimensions of EI are likely to influence the academic and professional success particularly in the field of medicine. The medical students learn and doctors work in a high-stress environment created by multiple factors which include demanding workloads, long hours of work, and having to interact with different personnel ranging from patients to healthcare teams. High level of stress and psychological distress among medical students and doctors are well documented [6,8].

There are number of studies from different populations showing that EI is related to academic and professional success in many fields including medicine [2,5,9–12]. Their findings highlight that EI plays a critical role in making a balanced doctor who is competent in practicing

both the art and the science of medicine. Moreover, the doctors and medical students with higher EI are likely to be more competent regarding self-care, which prevents them from becoming victims of the inevitable stress associated with the medical profession [2].

In the Middle East and African region, to the best of our knowledge, data regarding the effect of EI on the academic performance of medical undergraduates is limited. Therefore, this study was conducted to explore the association between EI and academic performance among medical students and demonstrate the elements that interfere with medical students' emotional intelligence in different areas of the Middle East and Africa region.

Salovey and Mayer introduced the concept of EI more than two decades ago. In comparison to IQ or personality, it is a relatively new construct, with the first academic article published in 1990 [4]. Until science journalist Daniel Goleman popularized the concept in his 1995 book *Emotional Intelligence: Why It Can Matter More Than IQ*, the topic was virtually unknown. [5]

The concept of EI refers to "the ability to accurately perceive, evaluate, and express emotions; the ability to access and/or generate feelings when facilitating thought 1; the ability to comprehend feelings and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth." EI is categorized into five domains: self-awareness, emotional management, self-motivation, empathy, and interpersonal skills [4].

These difference of EI dimension are likely to have an impact on academic and professional achievement, especially in the medical field. The medical students learn and doctors work in a high-stress environment created by multiple factors which include demanding workloads, long hours of work, and having to interact with different personnel ranging from patients to healthcare teams. Therefore, the medical students and professionals are known to experience high levels of stress and psychological anguish.

Emotional intelligence (EI) is a key determinant in academic success, and it encompasses vital components of interpersonal and intrapersonal relationships, flexibility, moods, and stress management skills, all of which have a significant impact on students' academic performance. People and college students with higher emotional intelligence perform better in interpersonal relationships and are seen as more pro-social, less aggressive, and conflicted by their peers.

EI, in a more direct approach, aids in the prioritization of thoughts, as well as the right regulation of behavior and lifestyle choices that improve academic achievement. In medical education, emotional intelligence, one of the psycho-emotional domains, has also been linked to better clinical outcomes and academic progress. This relationship has also been linked to enhanced empathy in medical advice, physician-patient interactions, clinical performance, and patient satisfaction in clinical practice. EI is important in developing a well-balanced practitioner who can practice both the art and science of medicine. Furthermore, doctors and medical students with greater EI are more likely to be proficient in self-care, preventing them from becoming victims to the inevitable stress of the medical profession [2]. So, many medical schools programmed emphasize, preserve, and develop these character attributes as part of their admissions process, and medical education in medical schools is focused on ensuring that these qualities and talents are respected, kept, and cultivated.

Methods:

A cross-sectional study was conducted on a convenience sample of 2340 undergraduate medical students, from different universities of Egypt and Saudi Arabia, during the academic year 2020–2021. Students in the college come from various backgrounds, rural, urban, and even from different socio-economic backgrounds.

The students who were at the first academic year, refused to participate, and ever diagnosed to have psychiatric disorders, were excluded from the study.

Data were collected from February to April 2021, using an online quantitative survey. The survey was prepared on Google form (<https://forms.gle/GWi1Q2Eko6HnARU49>) and sent to the students via institutional emails, university-affiliated websites, and various social media platforms, whether official or non-official groups. Students who agreed to participate in the study, after the explanation of objectives, procedures, voluntary nature of participation and declarations of confidentiality, were asked to complete the online questionnaire.

There was a plan number to reach a sample size of 377 participants as there is no previous study in the Arabic region studying the topic the relation between EI and academic achievement among medical students so the probability to occur equals probability of not to occur ($p = q = 50\%$). The number of persons who answered the questionnaire was 2340. The time required to complete the questionnaire was about nine minutes.

The questionnaire is composed of two parts: part (I) Socio-demographic characteristic and part (II) Emotional intelligence questionnaire [13]. Socio-demographic characteristics included questions about age, sex, country and academic achievement. Academic achievement of each student had been obtained from the examination department after proper written permission from the controller of examinations with

maintenance of full confidentiality. Students with cumulative percentage of marks in all professional examination in the first attempt of 85 or above were classed as excellent achievers, less than 85–75% were classified as very good, less than 75–65% were classified as good achievers, less than 65–60% were classified as accepted and below 60% was set as a level of failure.

Emotional intelligence questionnaire is self-assessment tool designed to enable students thinking about the various competences of emotional intelligence as they apply to them. The questionnaire focused on exploring five competencies involving:

- i. Self-awareness is the self-observation and identification of a feeling when it appears.
- ii. Emotional management is the feeling that it is sufficient to handle the behavior, recognizing the feelings behind.
- iii. Self-motivation is a move to the goal of positive emotions, better self-control and to delay gratification and impulse weakens.
- iv. Empathy is sensitive to the feelings of others, caring and accepting their perspective and appreciate the differences that exist in the feelings of others.
- v. Interpersonal skills to control the emotions of other people, have social competence and social skills

Each of the five competencies was asked about using ten questions. Emotional intelligence questions used a 5-point Likert scale (as the chosen number means how strongly the statement applies to the student) based on the following guide: one for 'Does not apply', three for 'Applies half the time'; and five for 'Always applies'. The total score of each emotional competency was calculated. For each competency the score was interpreted as: score of 35–50 indicates it is area of strength for the student, 18–34 means that giving attention to where the student feel weakest will pay dividends, 10–17 indicates there is a need to make this area a development priority.

A pilot study on twenty participants (about 6%) was applied to validate the translated questionnaire. Experts in public health and family medicine specialties measured the questionnaire relevancy and ability to correctly perform the self-assessment of various competences of emotional intelligence and relates it to the academic achievement of the students. The questionnaire has a good reliability as Cronbach's alpha was calculated, and it was 0.83.

Statistical analysis:

The collected data has revised, coded, tabulated, and analyzed PC using the Statistical Package for Social Sciences software (SPSS version 20). Data were expressed as number, percent, mean, SD and range. Tests of normality were applied. Unpaired t test and one-way ANOVA were used for normally distributed quantitative variables. Spearman correlation was used to detect association between ordinal and quantitative variables. A $p < 0.05$ was set to be the level of significance.

Ethical Considerations:

Ethical approval for the study was obtained from the relevant IRB with an informed consent applied for the questionnaire and was obtained electronically from those who voluntarily accepted to take part in answering the anonymous dissemination of information in the questionnaire. The students were notified of the study purpose and its significance to the medical education field. Only those who agreed to take part in the research were included. Any data included in the survey by the students was addressed merely anonymously.

Results:

The study was conducted on 2340 medical students aged (21.5 ± 1.9 , range = 17–24 years) from two countries, Saudi Arabia (28.8%) and Egypt (71.2%). Females represented 68.4%, almost 2/3 the sample. Academic achievement was distributed as excellent 54.1%, very good (28%), good (14.5% and accepted (3.4%) (Table 1)

Table 1
General characteristics of study
participants (n = 2340)

	no	%
Age (Y)	21.5 ± 1.9	
Mean ± SD.	17–24	
Range		
Country	1665	71.2
Egypt	675	28.8
KSA		
Sex	738	31.5
Male	1602	68.5
Female		
Academic achievement	1265	54.1
Excellent	655	28.0
Very good	340	14.5
Good	80	3.4
Accepted		

Distribution of emotional intelligence domains and their interpretation was demonstrated in (Table 2) where Self-awareness (37.5 ± 5.9) showed strength in 70.3% of the students while 29.5% needs attention, Managing emotions (35.4 ± 5.8) showed strength in 56.2% of the students while 43.8% of them need attention, Motivating oneself (34.9 ± 5.9) showed strength in 53% of the students while 46.2% of them need attention, Empathy (37.0 ± 4.7) showed strength in 70.3% of the students while 29.5% of them need attention and Social Skill (37.9 ± 4.5) showed strength in 76.7% of the students while 23.1% of them need attention. The total EI score showed that 63.9% of the students showed strength while 35.9% need attention.

Table 2
Emotional intelligence domains and their interpretation among study participants (n = 2340)

Emotional intelligence domains		Strength		Needs attention		Development priority	
		no	%	no	%	no	%
Self-awareness	37.5 ± 5.9	1645	70.3	690	29.5	5	0.2
Mean ± SD.	10–50						
Range							
Managing emotions	35.4 ± 5.8	1315	56.2	1025	43.8	0	0
Mean ± SD.	18–50						
Range							
Motivating oneself	34.9 ± 5.9	1240	53.0	1080	46.2	20	0.9
Mean ± SD.	10–50						
Range							
Empathy	37.0 ± 4.7	1645	70.3	690	29.5	5	0.5
Mean ± SD.	14–50						
Range							
Social Skill	37.9 ± 4.9	1795	76.7	540	23.1	5	0.2
Mean ± SD.	10–50						
Range							
Total score	36.5 ± 4.5	1495	63.9	840	35.9	5	0.2
Mean ± SD.	12.4–50						
Range							

Managing emotion, motivating oneself and total EI score were significantly higher among Egyptian students in comparison to Saudi Arabia students ($P < 0.001$). Females showed significantly higher EI scores than males. Egyptian males showed significantly higher EI scores than Saudi Arabian males ($P < 0.001$). Self-awareness was significantly high in Saudi Arabian females while managing emotions was significantly high among Egyptian females ($P < 0.01$). Academic achievement showed that EI scores were significantly higher among very good and excellent achievement in comparison to good or accepted achievement except self-awareness which showed that those with accepted achievement had higher self-awareness than those with high achievement. Significant positive correlation was found between EI scores and academic achievement ($P < 0.001$) (Table 3)

Table 3

Relationship between Emotional intelligence (EI) domains and country, sex and academic achievement among studied participants (n = 2340):

	Self-awareness	P value	Managing emotions	P value	Motivating oneself	P value	Empathy	P value	Social Skill	P value	Total	P value
Country	37.6 ± 5.7	0.143	35.7 ± 5.7	< 0.001	35.4 ± 5.5	< 0.001	37.0 ± 4.6	0.500	38.0 ± 4.7	0.064	36.7 ± 4.4	< 0.001
Egypt	37.2 ± 6.2		34.4 ± 5.6		33.3 ± 6.4		36.8 ± 4.8		37.5 ± 5.3		35.8 ± 4.6	
Saudi Arabia												
Sex	36.1 ± 6.8	< 0.001	34.9 ± 6.5	0.039	33.8 ± 6.8	< 0.001	36.3 ± 5.4	< 0.001	37.5 ± 5.5	0.049	35.7 ± 5.4	< 0.001
Male	38.0 ± 5.2		35.5 ± 5.3		35.3 ± 5.3		37.2 ± 4.3		38.0 ± 4.6		36.8 ± 3.9	
Female												
Male	37.3 ± 6.7	< 0.001	35.7 ± 6.7	< 0.001	34.8 ± 6.5	0.002	36.7 ± 5.4	< 0.001	38.3 ± 5.4	< 0.001	36.6 ± 5.5	< 0.001
Egypt	34.5 ± 6.7		33.6 ± 6.1		31.9 ± 6.9		35.5 ± 5.2		36.2 ± 5.5		34.3 ± 5.0	
Saudi Arabia												
Female	37.6 ± 5.2	< 0.001	35.7 ± 5.3	0.006	35.7 ± 5.0	< 0.001	37.1 ± 4.3	0.009	37.8 ± 4.4	0.040	36.8 ± 3.9	0.878
Egypt	38.9 ± 5.1		34.9 ± 5.2		34.2 ± 5.9		37.7 ± 4.4		38.4 ± 5.0		36.9 ± 4.0	
Saudi Arabia												
Academic achievement	32.6 ± 9.6	< 0.001	30.2 ± 8.2	< 0.001	30.0 ± 8.6	< 0.001	33.3 ± 7.3	< 0.001	33.3 ± 8.0	< 0.001	31.8 ± 7.9	< 0.001
Excellent	36.4 ± 5.5		35.0 ± 6.0		34.3 ± 5.4		35.9 ± 4.7		37.7 ± 4.6		35.9 ± 4.3	
Very good	37.5 ± 6.4		35.6 ± 5.9		35.7 ± 5.5		37.4 ± 4.7		38.4 ± 4.9		36.9 ± 4.6	
Good	38.0 ± 5.1		35.7 ± 5.3		34.9 ± 5.8		37.3 ± 4.3		37.9 ± 4.6		36.7 ± 4.0	
Accepted												
Correlation	0.980	< 0.001	0.630	< 0.001	0.030	0.153	0.860	< 0.001	0.037	0.077	0.620	< 0.001

Discussion:

Higher EI is associated with better academic achievement among the studied medical students in Egypt and KSA universities. Similar results have been observed in other smaller studies conducted elsewhere, not only among medical students, but also among nursing students in different countries [2,14–17]. There could be explained by that higher EI scorers could get adjusted to the emotionally demanding medical curriculum more easily and thus perform better.

The mean total EI score of our study sample was 36.5 out of 50; the maximum possible score. Different domains of EI reported that the highest scores were for social skills and the lowest scores were for self-motivation skills. This agrees with Wijekoon et.al. [2]

The current results indicated that female medical students have higher EI than their male counterparts. In agreement, studies from the United Kingdom [19], Malaysia [20]. and India [21] have shown that female physicians as well as medical and dental students have higher EI than males. Other studies report few or no differences in EI among males and females [16,18,22,23]. Females tend to be more skillful at understanding and dealing with their emotions, whereas males demonstrate better regulation of emotions [19,24,25]. Evidence also suggests that women tend to have lower self-perceptions of EI than their male counterparts [26,27].

There were significant differences between overall EI scores among Egyptian and Saudi-Arabian medical students with the higher scores among the Egyptians participants. Although, outsiders usually view the Arab world as a homogenous entity, closer examination reveals important cultural, political and economic differences. For example, the GLOBE cross cultural leadership study showed that Arabic countries scored differently on a number of cultural dimensions [28]. Such differences may have a significant impact on EI.

To our knowledge, this is the first study to assess the relationship between EI and academic performance in a large cohort of medical students from different years of the undergraduate Arab medical curriculum medical students. However, there is a similar study on non-medical

professionals among four Arab countries Egypt, Kuwait, the UAE, and Saudi Arabia using an Arabic language emotional intelligence scale [29], which found that there are no significant differences between overall EI scores among the four Arab countries. However, using post hoc analysis, the authors could discern that Egypt has the lowest score on two factors; emotion regulation and utilization. They explained the differences in these two sub-dimensions between Egypt on one hand and Kuwait, the UAE, and Saudi Arabia on the other may be attributed to the national emotional climate in these countries.

Male Egyptian medical students have higher EI than their Saudi-Arabian counterparts. However, there is no significant difference in total EI between Egyptian and Saudi-Arabian female medical students. Although Egyptian female participants show significantly higher scores in self-motivation and managing emotions, their Saudi-Arabian counterparts show significantly higher scores in self-awareness with no significant difference in other EI domains.

Conclusion:

This study figures out the relationship between emotional intelligence and academic achievement among medical students in Arab region. These findings illustrate the importance of involving certain emotional competencies in medical education to graduate physicians who can deal with the problem they may face through their career and their life. Therefore, this study recommended that medical students should understand the concept of emotional intelligence by integrating related topics in mentoring programs and intervention strategies to help them develop their emotional intelligence skills through in-depth training leading to improvement in their personal character, interpersonal relationships and communication and hence rising their academic achievement. Also, for academic view Curriculum developers should also consider incorporating emotional intelligence skills to the curriculum.

Abbreviations

EI
Emotional intelligence; UAE:United Arab Emirates; KSA:Kingdom of Saudi Arabia

Declarations

Acknowledgements

Not applicable.

Authors' contributions

SA, ZKh, ZK were all actively involved in the design of the study. ZK, AE were analyzed and interpreted the data. AB did the primary revision. All authors were major contributors in writing the manuscript and all read and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical approval and consent to participate:

Ethical approval for this study was obtained from the Institutional research board at Menoufia faculty of medicine (3/2021FAML). The informed consent was electronically submitted before the questionnaire.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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