

## Emotional Intelligence among Undergraduate Dental Students and Its Relationship with Academic and Clinical Performance

Research Article

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### Abstract

**Introduction:** Emotional intelligence (EI) plays a significant and vital role in the success of a healthcare professional. The current study was aimed at assessing the emotional intelligence and evaluating its association with academic and clinical performance comprehensively among the dental students.

**Materials and Methods:** 215 undergraduate dental students were involved in this cross-sectional questionnaire-based study. A Sterrett's EI questionnaire was used in this study.

**Statistical analysis used:** Independent samples t-test was performed to find out the differences in mean EI scores between female and male students. Pearson's correlation coefficient test was employed to determine the relationship between EI scores and the academic and clinical performance. Simple linear regression was calculated to predict the academic and clinical performance based on the EI scores.

**Results:** There was no statistically significant difference noted in the mean overall EI scores between females ( $168.10 \pm 16.127$ ) and the males ( $171.20 \pm 17.222$ ) conditions;  $t(198) = -1.247$ ,  $p = 0.214$ . Moderate positive correlation was observed between EI scores and academic performance ( $r = 0.393$ ,  $p < 0.01$ ) and the EI scores and clinical performance ( $r = 0.392$ ,  $p < 0.01$ ). A significant regression equation was found ( $F(1, 198) = 36.142$ ,  $p < .000$ ) with an  $R^2$  of 0.154 when calculate academic performance based on the EI scores.

**Conclusions:** Dental students have exhibited moderate levels of emotional intelligence scores. No statistically significant difference noted in mean overall EI scores between female and male students. The results showed a significant moderate correlation between the EI scores and the academic and clinical performance.

**Keywords:** Emotional Intelligence; Academic Performance; Clinical Performance; Dental Students.

### Introduction

Emotional intelligence (EI) is the ability to perceive, control and manage our own emotions as well as the capability to understand the emotions of others and use it to guide thinking and make appropriate decisions [1, 2]. Salovey and Mayer considered EI as a pure cognitive ability of an individual but Daniel Goleman perceived EI as a combination of cognitive ability and personality traits [3]. Intelligence quotient (IQ) measures the intellectual abilities of an individual whereas EI measures a person's own internal

emotions and also the social intelligence. EI has been recognized as an important aspect in determining the factors for success and plays a vital role in measuring life and work satisfaction, interpersonal relationships, job performance, psychological well-being, physical health, and psychophysiological measures of adaptive coping [4]. EI can predict a broad range of outcomes in life that are not effectively predicted by traditional measures of cognitive intelligence [5]. Research focused on EI has been found that EI accounts up to 80% in measuring the factors of success [2].

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According to Sterrett EA there are six components in emotional intelligence (EI): Self-awareness, Self-confidence, Self-control, Empathy, Motivation and Social Competence [1]. Self-awareness refers to knowing our own feelings and preferences and able to sense others' feeling about us which helps to guide our behaviour [4]. Self-confidence denotes a positive attitude and belief in us to accomplish the goals. Self-control is dealing well with the stress and staying composed even in the difficult situations without losing our calmness. Empathy allows us to recognize and understand others feelings whereas motivation makes us to take initiative and committed to do things. Social competence helps in maintaining healthy interpersonal relationships and influencing others [1, 2].

Due to the increasing complexities of the curriculum in dental education and because of the fact that the dental students are expected to acquire various clinical competencies, dental students feel high levels of stress [6]. EI plays an important role in managing one's own emotion and to understand others' emotions. Hence, it is crucial for the healthcare professionals to have good EI to understand their patients' emotions. Many ways has been proposed to measure the EI of an individual [7]. In the current study, we have used a structured questionnaire adapted from Sterrett's EI questionnaire to assess the EI among dental students.

Dental education and clinical practice have been regarded as one of the most challenging and stressful fields. Many studies have identified that stress is involved at every stage in a dentist's career [8-10]. The reported reasons that lead to stress include; the time management and scheduling of patients, managing uncooperative patients and highly technique sensitive nature of work [11, 12]. The stress is involved in the educational process of dentistry program and lot of dental students experience high levels of stress during training [13, 14]. The main causes for stress among dental students include; examinations, completing the clinical quotas in time and managing uncooperative patients. It is really important to control our emotions, keeping composure and to have self-motivation to avoid anxiety and depression because of stress. Additionally, dentists have to be competent to understand the behavior of the patient so that they can use unique individualized approach while treating the patients [15]. Hence, emotional intelligence (EI) plays a significant and vital role in the success of a dental student and a dentist.

The awareness about the importance of emotional intelligence has been on the rise in the recent years. The association of EI and academic performance among students of different disciplines has been reported in the recent literature including the dental students [16-18]. But very few studies have studied the relationship of EI with clinical performance. Hence the current study was undertaken to evaluate the association of EI with academic and clinical performance comprehensively among the dental students of AIMST University.

## Materials and Methods

A cross-sectional questionnaire-based survey was conducted involving 215 undergraduate dental students from years 3 to 5. Participation was purely voluntary and individual consent was obtained from all the participants who volunteered to participate in the study. The study protocol was approved by AIMST University Human & Animal Ethics Committee (AUHAEC) with reference number: AUHAE/FOD/2017/21. The questionnaire used in the

study consisted of two parts. First part of the questionnaire comprised of demographic details (name, age, gender, year of study) of the participants and the second part consisted of a structured questionnaire adapted from Sterrett's emotional intelligence (EI) questionnaire [19].

The Sterrett's EI questionnaire used in the study consisted of 50 questions measuring the five important aspects or domains of emotional intelligence: Self-Awareness, Managing Emotions, Motivating Oneself, Empathy and Social Skills. Each section was assessed by ten questions. The 50-item instrument had each item scored on a rating scale from 1 to 5, where:

- "1" indicates that the statement does NOT apply at all
- "3" indicates that the statement applies about half of the time
- "5" indicates that the statement ALWAYS applies to the participant.

Participants can obtain a maximum score of 250 indicating the idealistic level of emotional intelligence that could be attained and a score of 50 is the minimum and would be a very worrying result for any person. A score of 125 will be viewed with considerable ambivalence and needs to be improved. For each domain the minimum and maximum scores that could be obtained were 10 and 50 respectively. Domain with a score of 35-50 was considered as "strength" and with a score of 17 or less should be examined more closely and considered as "development priority".

The hardcopies of the questionnaires were distributed to the students after the lectures and were collected on the same day after the participants completed the questionnaires. No interaction among students was allowed while answering the questionnaire. No clarifications were offered regarding any of the questions and the students had to answer the questions to the best of their interpretations.

Academic performance was assessed by the grades obtained in the SPM and STPM. The clinical performance was calculated by using daily grades obtained in the clinical logbook on a five-point grade scale. All the data was coded and the confidentiality was maintained and only key personnel had access to the data.

## Statistical Analysis

Results were analyzed using Statistical Package for the Social Sciences (SPSS) software for windows version 22. Independent samples t-test was performed to find out the differences in the mean overall EI scores between female and male students. This test was also used to find out the differences in the mean scores of each domain between the female and male students. Pearson's correlation coefficient test was employed to determine the relationship between the EI scores of the students and their academic and clinical performance. Simple linear regression was calculated to predict the academic performance based on the EI scores. Simple linear regression was also used to predict the clinical performance based on the mean scores of all the domains of EI.

## Results And Discussion

The data was subjected to statistical analysis after checking for adequacy/completeness of the responses. Of the 215 participants

who filled the questionnaires, only 200 responses were complete and taken for the statistical analysis. Among the 200 participants, 134 (67%) were female students and 66 (33%) were male students. Independent samples' t-test was performed to evaluate the difference in the mean overall EI scores between the female students and the male students. There was no statistically significant difference noted in the mean overall EI scores between the female students (168.10 ± 16.127) and the male students (171.20 ± 17.222) conditions;  $t(198) = -1.247, p = 0.214$  as shown in Table 1.

Table 2 describes the mean scores and percentages of the participants for all the five domains of emotional intelligence and also displays the mean scores for female and male students separately. Though, there was no statistically significant differences noted in the mean overall EI scores, statistically significant differences were observed in Independent samples' t-test in regards to "Managing Emotions", "Motivating Oneself" and "Empathy" between the females and males. The mean score for "Managing Emotions" of males (33.24 ± 4.687) was higher than females (31.51 ± 3.725) and the difference was statistically significant at 0.01 significance level ( $p = .010$ ). Pertaining to "Motivating Oneself", the mean score was higher in males (36.39 ± 4.053) when compared to females (32.04 ± 3.464) and it was statistically significant at 0.01 significance level ( $p = 0.000$ ). Regarding "Empathy", females have higher mean score (34.00 ± 4.062) than males (32.44 ± 2.983) and the difference was statistically significant at 0.01 significance level ( $p = 0.002$ ). (Table 3) There were no statistically significant differences noted in the mean scores pertaining to "Self Awareness" and "Social Skills" with p values being 0.252 and 0.488 respectively.

Pearson's correlation coefficient test was performed to determine the relationship between the EI scores of the students and their academic and clinical performance. Moderate positive correlation values were obtained between EI scores and academic performance ( $r = 0.393, p < 0.01$ ) and the EI scores and clinical perfor-

mance ( $r = 0.392, p < 0.01$ ). (Table 4)

Simple linear regression was calculated to predict the academic performance based on the EI scores. A significant regression equation was found ( $F(1, 198) = 36.142, p < .000$ ) with an  $R^2$  of 0.154. (Table 5)

Pearson's correlation coefficient test was done to find out the relationship between the clinical grades and empathy, managing emotions and social skills. Moderate positive correlation values were observed between the clinical grades and empathy ( $r = 0.401, p < 0.01$ ) and clinical grades and social skills ( $r = 0.361, p < 0.01$ ). Weak positive correlation was obtained between the clinical grades and managing emotions ( $r = 0.223, p < 0.01$ ). (Table 6)

Simple linear regression analysis was used to predict the clinical performance based on the empathy, managing emotions and social skills scores. A significant regression equation was found ( $F(3, 196) = 16.521, p < .000$ ) with an  $R^2$  of 0.202. (Table 7)

**Discussion**

In the present study, dental students have showed moderate levels of emotional intelligence scores with a mean score of 169.13 ± 16.52. A mean score of 175-250 is considered as good and ideal, according to the Sterrett's questionnaire used in the study. Females are generally considered to be superior to males in recognizing other people's emotions, having greater empathy and in regards to certain interpersonal skills [20]. But in our study, there was no statistically significant difference noted in the mean overall EI scores between the female students and the male students though, the mean score of males was relatively higher than females. This finding is consistent with the results of study conducted by Esraa M Bishr et al. and Shakeel Anjum et al. where the authors reported significantly lower mean EI scores for the females when compared to males [16, 21]. This observation is in contrast to the

**Table 1. Comparison Of Mean Overall Emotional Intelligence (Ei) Scores Between The Female And Male Students.**

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Overall EI Scores	Females	134	168.1	16.125	1.393
	Males	66	171.2	17.222	2.12

**Independent Samples Test**

		Overall EI Scores		
		Equal vari- ances assumed	Equal variances not assumed	
Levene's Test for Equality of Variances	F	0.214		
	Sig.	0.645		
t-test for Equality of Means	t	-1.247	-1.219	
	df	198	122.122	
	Sig. (2-tailed)	0.214	0.225	
	Mean Difference	-3.092	-3.092	
	Std. Error Difference	2.48	2.537	
	95% Confidence Interval of the Difference			
	Lower	-7.983	-8.114	
	Upper	1.799	1.929	

Table 2. Mean scores of male and female students for all the five domains of emotional intelligence.

Aspects of EI	Mean score of participants	Mean score of female students	Mean score of male students
Self Awareness	36.32 (72.64%)	36.77 (73.54%)	35.86 (71.72%)
Managing Emotions	32.38 (64.76%)	31.51 (63.02%)	33.24 (66.48%)
Motivating Oneself	34.22 (68.44%)	32.04 (64.08%)	36.39 (72.78%)
Empathy	33.22 (66.44%)	34.00 (68.00%)	32.44 (64.88%)
Social Skills	33.52 (67.04%)	33.78 (67.56%)	33.26 (66.52%)

Table 3. Comparison of mean scores for the domains managing emotions, motivating oneself and empathy between the female and male students.

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Managing Emotions	Females	134	31.51	3.725	0.322
	Males	66	33.24	4.687	0.577
Motivating Oneself	Females	134	32.04	3.464	0.299
	Males	66	36.39	4.053	0.499
Empathy	Females	134	34	4.062	0.351
	Males	66	32.44	2.983	0.367

Independent Samples Test

		Managing Emotions	Motivating Oneself	Empathy	
		Equal variances assumed	Equal variances not assumed	Equal variances not assumed	
Levene's Test for Equality of Variances	F	2.916	4.181	8.425	
	Sig.	0.089	0.042	0.004	
t-test for Equality of Means	t	-2.825	-7.476	3.073	
	df	198	113.029	169.038	
	Sig. (2-tailed)	0.005	0	0.002	
	Mean Difference	-1.727	-4.349	1.561	
	Std. Error Difference	0.611	0.582	0.508	
	95% Confidence Interval of the Difference				
	Lower	-2.933	-5.502	0.558	
	Upper	-0.522	-3.197	2.563	

Table 4. Correlation between EI scores and academic and clinical grades.

	Overall EI scores	Academic Grades	Clinical Grades
Overall EI scores	1	.393*	.392*
Academic Grades	.393*	1	
Clinical Grades	.392*		1

\*Correlation is significant at the 0.01 level (2-tailed).

Table 5. Linear regression analysis with EI scores as dependent variable with academic grades.

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Sig	F Change
EI scores	.393 <sup>a</sup>	0.154	0.15	15.226		0.000

**Table 6. Correlation between Clinical grades and Empathy, Managing emotions and Social Skills.**

	Clinical Grades	Empathy	Managing Emotions	Social Skills
Clinical Grades	1.000	.401*	.223*	.361*
Empathy	.401*	1.000	.205*	.496*
Managing Emotions	.223*	.205*	1.000	.421*
Social Skills	.361*	.496*	.421*	1.000

\*Correlation is significant at the 0.01 level (2-tailed)

**Table 7. Linear regression analysis with clinical performance as dependent variable with empathy, managing emotions and social skills.**

Model	R	R Square	Adjusted R Square	R Square of Estimate	Sig F Change
Empathy	.401 <sup>a</sup>	0.161	0.156	0.624	0.000
Managing Emotions	.223 <sup>b</sup>	0.05	0.045	0.664	0.002
Social Skills	.361 <sup>c</sup>	0.131	0.126	0.664	0.000

<sup>a</sup>Predictors: (constant), Empathy

<sup>b</sup>Predictors: (constant), Empathy, Managing emotions

<sup>c</sup>Predictors: (constant), Empathy, Managing emotions, Social skills

results obtained by Amit Kumar et al. in which females showed higher EI mean compared to males [22]. In regards to the mean scores of individual domains of EI, there were no statistically significant differences observed pertaining to self-awareness and social skills between the females and males. But mean scores of male students was significantly higher to female students in relation to managing emotions and motivating one-self. Females showed higher mean scores than males in regards to empathy. In the study published by Amit Kumar et al., females had higher mean scores in all the five domains of the EI when compared to male students.

The findings of our study showed a moderate positive correlation values between EI scores and academic performance ( $r = 0.393$ ,  $p < 0.01$ ). A significant regression equation was found ( $F(1, 198) = 36.142$ ,  $p < .000$ ) with an  $R^2$  of 0.154 when calculate academic performance based on the EI scores. This finding is consistent with other studies published by Chew BH et al., Shetty S et al. and Brian B. Partido et al. in their studies [23, 24, 11]. The results of our study showed that EI is significantly associated with high academic performance.

There was a moderate positive correlation noted between EI scores and clinical performance ( $r = 0.392$ ,  $p < 0.01$ ). The findings of our study showed that the clinical performance can be predicted by the domains of empathy, managing emotions and social skills. This finding is similar to the study done by Brian B. Partido et al. where the authors found social competence, empathy, and motivation to be the predictors of clinical performance.

**Limitations and Recommendations**

The study was a self-reported assessment and reflected the emotional intelligence scores of dental students of only one university. To understand the relationship of emotional intelligence with academic and clinical performance, a large multicenter study involving the dental students from various universities has to be

carried out.

**Acknowledgement And Declarations**

We have no conflicts of interest to disclose and there was no funding or financial support involved.

**Conclusion**

In the current study, dental students of the University have exhibited moderate levels of emotional intelligence (EI) scores. Though, the mean score of males was higher than females, there was no statistically significant difference noted in the mean overall EI scores between the female and male students. Statistically significant differences were observed in regards to managing emotions and motivating oneself, where male students showed higher mean scores compared to females. Pertaining to empathy, females were having better mean scores when compared to males. The results showed that there was a significant moderate correlation between the EI scores and the high academic performance. The domains of empathy, managing emotions and social skills were found to be having a significant correlation with clinical performance. The findings of our study showed the importance of emotional intelligence and its association with the academic and clinical performance among the dental students and emphasize the need for enhancing the emotional intelligence of the students.

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