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Relationship of Emotional Intelligence Levels and Academic Achievement on Preclinical Dentistry Students

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Abstract

Emotional intelligence (EI) is involved in perceiving emotions, assimilating emotion-related feelings, and understanding and managing those emotions. It has also been related to higher academic achievement and improved dentist-patient relationships in dental education and clinical practices. The researchers aimed to determine the relationship between the levels of EI and academic achievement of preclinical dentistry students at a private dental university in the Philippines. Using purposive sampling, an online survey was distributed to a sample of 220 students. The instrument, Schutte Self-Report Emotional Intelligence Test (SSEIT), consists of 33 items scored as 1- strongly disagree, 2- disagree, 3- either agree or disagree, 4- agree, and 5- strongly agree. Academic achievement was recorded with the collection of the respondents' General Weighted Average (GWA) for their previous completed semester. The gathered data was analyzed through descriptive statistics after using the Statistical Package for Social Science (SPSS) software. Spearman's rho analysis was used to identify the relationship between EI and academic achievement. This study revealed that the majority of the students are of high EI, with a mean EI score of 120.59 (73%). All GWA mean score interpretations were recorded to be 'Good' despite the respondents' EI level. Moreover, the results showed that there is no significant relationship that existed between the EI levels and academic achievement of preclinical dentistry students. Further studies can be made using other measures of academic achievement like standardized IQ tests and using other variables such as age, gender and student's status.

Keywords: Emotional Intelligence; Academic Achievement; SSEIT; Preclinical Dentistry

Abbreviations

EI: Emotional Intelligence; SSEIT: Schutte Self-Report Emotional Intelligence Test; GWA: General Weighted Average.

Introduction

The concept of emotional intelligence (EI) did not receive the same attention similar to intellectual intelligence when both concepts were first introduced. Earlier efforts to measure

the scales of intelligence were made by David Wechsler who discussed that intelligence is an idea that comprises both cognitive (intellectual) and non-cognitive (emotional) components of the intelligence quotient [1]. In contrast to intellectual intelligence which accounted for various studies and interests, EI was laid aside and only gained full attention when Howard Gardner concluded that the intelligence quotient (IQ) failed to completely explain an individual's cognitive ability. As curiosity grew in understanding the non-cognitive aspect of intelligence, a series of academic writings were made, one of which was by Mayer and Salovey in 1993 who gave a concrete definition of emotional intelligence [2]. First coined as social intelligence and emotional quotient (EQ), EI is defined as the capacity of an individual to reason about emotion and thinking as it involves one's ability to understand and manage emotions in a positive way to overcome challenges and conflicts that may arise [3]. Emotional intelligence is one of the core components of every individual's characteristic and it is valuable in observing and understanding how people behave. Furthermore, intellectual capacity alone cannot ensure a person's success in other facets of life. The cognitive aspect is one of the variables that determine a person's fulfilment in life, but it also gives room for other aspects, the majority of which are emotional intelligence abilities. EI is related to academic and professional success and contributes to individual cognitive-based performance over and above the level attributable to general intelligence [4].

Educational institutions nowadays place particular emphasis on student's ability to enrich mental or intellectual aspects. Although this is crucial in improving cognitive development, the link between emotions and learning receives less consideration [5]. Research has shown that focusing on the emotional and social learning process is effective in educational settings [6]. In a meta-analysis on EI predicting academic performance [7], the authors made two significant conclusions. It was suggested that first, students with higher EI may be more adept at managing negative emotions related to academic achievement, such as worry, boredom, and disappointment which can be solved by emotion management. Second, higher EI enables students to handle their social environment and build healthy relationships with the people around them hence resulting in academic success. To be able to do well in one's academic performance, a proper acquisition of subject knowledge, achievement in practice, and development of proficiencies, aptitudes, and skills acquired from the educational system should be evident [8]. This achievement, also referred to as academic success, has inherent features that have key roles vital for its accomplishment. These include motivation, self-directed learning, and individual proficiency, as well as extrinsic issues like the academic syllabus, teaching strategies, and the support structure for students. Emotional intelligence plays a role by assuming a key position in acquiring educational accomplishments, academic acclimatization, and emotional wellness in stressful environments by bridging the gap between the efforts made for effective learning and academic success [9]. In contrast, some authors disagree that EI should be used as a predictor of future academic success. Although they claim that developing EI is crucial in clinical practice, the results of their study showed no correlation between EI and academic achievement [10]. Comparably, research conducted in 2017 by Ranjbar H, et al. [11] asserts that further research in this area was necessary given that their study showed that the association between educational achievement and EI may be influenced by other variables that may be altered by other factors in the setting.

In various medical educations such as dentistry where the practice is patient-centered, emotional intelligence needs attention because improved EI equates to better clinical performance and higher academic achievement [4]. Medical students can increase their productivity and success in their work as well as the productivity and success of those around them by nurturing their EI. Moreover, aptness in controlling and interpreting emotions is beneficial as this can improve patient-centered treatment, dentist-patient relationship, and patient contentment with the health assistance given to them. Clinicians may be better able to fully understand why some treatment approaches are more or less acceptable to some patients if they can comprehend patients' emotional responses to prescribed medications or lifestyle advice [12]. The preclinical 3rd-year and 4th-year dentistry students are the appropriate population for this study because these levels involve laboratory-based courses. These courses are considered as a stepping stone in simulating real-life clinical cases in dentistry which can help in effectively performing duties before they navigate in the actual clinical setting.

Understanding and developing the emotional intelligence of preclinical dentistry students before they handle different patients in the clinic is beneficial in determining new areas for improvement, especially in emphasizing better performance in handling and building good dentist-patient relationships. With EI acknowledged as important as intellectual intelligence in enhancing the abilities to achieve academic fulfillment, identifying the levels of their EI and how it can affect their academic performance can be used as a predictor of their aptness in clinical practices. The Schutte Self-report Emotional Intelligence Test (SSEIT) made by Dr. Nicola Schutte and her colleagues in 1989 was utilized as the questionnaire in this study. This test provides a method of allowing the researchers to measure the general emotional intelligence of the respondents and identify its levels. In effect, the interpretation of the scale scores was used as a reference to determine its relationship with academic achievement based on the GWA provided by each student.

This study aimed to answer the question, "What is the

relationship of emotional intelligence and academic achievement of preclinical dentistry students at a private dental university in the Philippines?" An ample amount of collected evidence suggests that a positive correlational relationship between academic performance and emotional intelligence exists. Durlak J, et al. [6] did a meta-analysis and showed that social and emotional learning programs mainly based on Goleman's model of EI have produced an increase in academic performance for its participants by an 11-percentile improvement. In addition to this, direct evidence from other studies has found a positive association between the two variables [13-15]. In the meta-analysis devised by MacCann C, et al. [7], it was suggested that there are three primary reasons why EI may correlate with academic performance. The first is that students with higher EI are more likely to be able to regulate negative emotions (i.e. anxiety, boredom, disappointment) concerning academic performance, thus allowing us to trace the responsibility of these effects to emotion management.

The second reason claims that students with higher EI levels manage their social environment better, allowing them to form better relationships with peers, teachers, and family. The third is that EI competencies can overlap with academic a competency which is a requirement for having a proper understanding of human motivations and emotions. In a study performed at the University of Malaysia, it was revealed that EI helped in acquiring educational accomplishments among its pre-service teachers. Further observations discovered that students with low EI were associated with health-damaging behaviors while on the contrary, high EI students held enhanced interpersonal, organizational, and time-management skills [7]. Suleman Q, et al. [9] found a strong association between EI and grades once assessments were made at a national level. One study in a medical school in Chennai, India, documented that EI leads to proficient achievement and improved clinical outcomes [16]. Another study composed of a sample of medical students also confirmed that students with higher EI produced good scores in continuous assessments and even performed better in concluding professional examinations [17]. According to Rehman R, et al. [8], EI allows an individual to develop self-awareness, enabling them to identify their desires, take positive actions, and make life changes with the use of selecting coping strategies that relieve anxiety and stress and help improve their mental health. Additionally, EI has also been recognized to normalize negative emotions (i.e. monotony, dissatisfaction, nervousness) that emerge in the course of one's studies, allowing students with higher EI to manage improved intrapersonal and interpersonal interactions.

Having the competency to interact properly with instructors, colleagues, and family members makes for good interpersonal and communication skills that are required to be proficient in academics. Thus, it has been unanimously agreed that EI is a proficiency of importance that is needed by students to be able to improve their wellness as well as their future academic and workplace success [18]. Yahaya A, et al. [2] have also concluded that a significant relationship exists between emotional intelligence and academic achievement with findings showing that only self-awareness, self-motivation, and empathy elements have significant relationships as a predictor of academic achievement. In contrast, a study in Canada made by Humphrey-Murto and colleagues in 2014 suggested that emotional intelligence does not predict future academic performance. Assumptions were made after studying the student's Mayer-Salovey-Caruso EI Test (MSCEIT) scores and their correlation to their future academic performance in medical school. Authors claim that EI should not be used as a single predictor of the student's skills in achieving higher clinical scores, although it is necessary to nourish a successful doctor-patient relationship.

Similarly, a study performed in an Iranian university in 2017 by Ranjbar H, et al. [11] also suggested that the association between educational success and emotional intelligence may be influenced by other variables in the setting and further investigation in this area was needed as the research found a weak correlation between the two aforementioned variables. Azimifar M, [19] presented contradictory results that showed no statistically significant correlation between students' scores and their achievement tests. In business administration students, a study showed that there was a negative insignificant association between emotional intelligence and academic success [20]. Based on the aforementioned results and outcomes of these researches, it can be assumed that there is no agreement among researchers on the association between emotional intelligence and academic achievement.

Materials and Methods

The Schutte Self-Report Emotional Intelligence Test (SSEIT) is the instrument used to measure EI levels of the preclinical dentistry students. The SSEIT is also known as the Assessing Emotions Scale (AES), Emotional Intelligence Scale (EIS), Self-Report Emotional Intelligence Test (SREIT), Self-Report Emotional Intelligence Scale (SREIS), and Schutte Emotional Intelligence Scale (SEIS). The Cronbach's alpha is 0.94 for the 33-item questionnaire. The test measures four factors: expression of self's emotions, understanding of others' emotions, regulation of emotions, and utilization of emotions. The items are scored on a 5-point Likert scale (1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree). To calculate the scale scores, reversing the codes of items 5, 28, and 33 was done first as

these items were on a reverse scale in the questionnaire. Following this, the sum of all responses was done to get the scale scores. The SSEIT yields a total score ranging from 33 to 165 with higher scores indicating greater EI (Schutte et al., 1998). The statistical scoring system of EI levels are as follows — high emotional intelligence (110 to 165 score with an average of 66.7 %–100%), moderate EI (55 to 109 score with an average of 33.4 %–66.6 %, and low EI (33 to 54 score with an average of 0 %–33.3 %. Additionally, the GWA of the respondents is categorized as follows – excellent (1.00-1.25), very good (1.50-1.75), good (2.00-2.25), fair (2.50), passed (2.75-3.00), and conditional (4.00) based on the university's standards.

The college ethics review committee gave approval for the study to commence, noting that there is minimal risk to the respondents. A letter from the Dean of the College of Dentistry was obtained, granting the request of the researchers to acquire the total number of respondents who will be part of the survey. The sample size was computed through the given population and implementation was made after. The researchers coordinated with the class representatives of each section to gather the list of students who would be given the survey forms. The preclinical dentistry students received the Google Form questionnaire through an instant messaging app. The respondents were required to use their official university email for answering and were limited to one response only. Upon giving their voluntary consent, understanding the objectives of the study, and given the chance to ask questions, the survey commenced. After the responses were submitted, the summary was visible only to the researchers. Furthermore, all responses of the participants were treated confidentially and deleted at the end of the study. Computations for the mean as well as performing the Kolmogorov-Smirnov and Spearman's rho correlation coefficient (r) were all done by coding the gathered data to the IBM SPSS Statistics (version 22).

Results and Discussion

Using Slovin's formula, the computed target number of respondents is 276. Among the 899 preclinical dentistry students in the university, 220 students answered (24.47% response rate) with a 0.06 margin of error. With a mean score of 121, majority (73%) of the preclinical dentistry students have high levels of EI. Two of the respondents fall under low EI, 47 respondents with moderate EI, and the majority 171 respondents have high EI. It can be said that students predominantly attained a high EI. In addition, it was observed that respondents with low EI had a mean GWA of 2.31, respondents with moderate EI had 2.39, and the respondents with high EI had 2.37, all of which are interpreted and categorized as good GWA. After Spearman's rho analysis, the p-value of 0.83 was higher than the 0.05 level of significance. Therefore, there was no significant relationship between the EI of the preclinical dentistry students and their academic achievements based on their GWA. It was supported by Spearman's rho value of 0.01 which indicated a negligible correlation (Table 1).

Mean of EI scores and interpretation of SSEIT	
Mean	**Interpretation**
120.59	High emotional intelligence
Legend: Low EI=33-54 (0%-33.3%); Moderate EI-55 to 109 (33.4%-66.6%); High EI-110-165 (66.7%-100%)	

Table 1: Mean of EI Scores and Interpretation of SSEIT.

The study revealed that the respondents predominantly attained high EI. On the handout provided by Schutte and her colleagues to assess the scores of the EI scale (EIS), high EI are those with high scale scores and displaying enthusiasm, lower levels of impulsivity, and depression. Greater optimism, improved mood, a more sympathetic viewpoint, closeness and comfortability in relationships, and other comparable results are all linked to high EI. Correspondingly, individuals with high EI, as explained by Chew, et al. (2013) [4] in their study, are those who can perceive, control, and regulate emotions in themselves and others. As a result, people with higher EI would be able to feel happier and more stable. This is supported by the results shown in their EIS. On the other hand, the results showed that it did not reach any statistical significance to display a relationship between the EI levels and academic achievement of the preclinical dentistry students. All levels of EI showed mean GWA scores categorized as 'Good'. The close approximation of the computed mean GWA exhibits no noticeable variation that is significant enough to establish whether or not academic achievement is affected by the level of the students' EI. This can suggest that the students' EI does not directly influence their achievement in academics. Similar to the study conducted by Humphrey-Murto and her colleagues (2014), it was claimed that there is no correlation between EI and future academic performance after observing their respondents' Mayer-Salovey-Caruso EI Test (MSCEIT) scores in medical school admission (Table 2).

Frequency, Mean GWA, and interpretation according to EI levels			
Emotional Intellegence Level	**Frequency**	**Mean General Avarage weighted**	**Interpretation**
Low (33-54)	2	2.31	Good
Modarate (55-109)	47	2.39	Good

High (110-165)	171	2.37	Good
	N=220.00		
Legend: Ecxcellent= 1.00-1.25; Very Good= 1.50-1.75; Good= 2.00-2.25; Fair= 2.50; Passed= 2.75-3.00; Conditional= 4.00			

Table 2: Frequency, Mean GWA, and Interpretation according to EI Levels.

The authors of the study suggest that EI alone should not be used as a predictor of academic success. The study also shows that EI does not directly influence medical student's academic and clinical skills including measures of communication although it is necessary to build a productive relationship between medical professionals and their patients. Moreover, the authors claim that a possible reason why there is no relationship seen between the two variables is that EI is still a relatively recent construct and lacks conceptual coherence. The authors have argued that the construct of EI itself is vague and limits the researchers on what can be interpreted from the EI scores. While the results of this study show no significant relationship between the presented variables in terms of statistics, it is still crucial for preclinical dentistry students to develop and properly manage their EI as this can be valuable in other facets of their life as students including their future endeavors. Managing EI as early in the preclinical level enables students to establish rapport, develop an ethical therapeutic relationship with patients as well as obtain and process relevant clinical information before they move forward in the clinical level. Preclinical dentistry students hone their skills and abilities through the laboratory-based courses and one of the good stepping stones for them before they enter the actual clinical setting is an improved EI to help them manage patients and work as teams. Furthermore, EI is acknowledged in various studies to be an important factor in honing successful interpersonal and intrapersonal relationships and must be developed to gain better achievement in academics as a student, notwithstanding the fact that the results of the study did not support this prediction.

Relationship of EI and Academic Achievement					
Variables		**Spearman's Rho**	**Relationship**	**Sig. level at 0.05**	**Interpretation**
Emotional Intelligence Level	General Weighted Average	0.01	No or Negligible Correlation	0.83	Not Significant
Legend: > 0.70= very strong relationship; 0.40-0.69=strong relationship; 0.30-0.39 moderate relationship; 0.20-0.29=weak relationship; 0.01-0.19=no or negligible relationship					

Table 3: Relationship of EI and Academic Achievement.

The researchers recommend further studies to be conducted using other methods of data collection. This can allow the future researchers to gather data more efficiently and reach a better confidence level in a given margin of error. In addition, this study focused on interpreting the EI of the respondents through the total scores of the items attained in their EI scales. Future researchers can focus on interpreting the scores of EI based on the four subscales, with each subscale having corresponding items on the questionnaire as given by Schutte and her colleagues in the instruction guide. Different measures of a respondent's academic achievement may also be used, aside from their GWA. Standardized intelligence quotient (IQ) tests may be considered such as Stanford-Binet Intelligence Scale, Wechsler Individual Achievement Test and the like. Moreover, future researchers may explore the relationship of EI with other variables including age, gender, and students' status. The same study may be conducted comparing the EI of preclinical and clinical students of dentistry, or on a different group of respondents such as those from other academic courses.

Conclusion

There is no significant relationship between EI and academic achievement of the preclinical dentistry students. The majority of the preclinical students exhibited high levels of EI, although these levels do not directly influence their academic achievement.

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