Original Article

Correlation of Emotional Intelligence and Intelligence Quotient with academic performances of Dental students. A Cross Sectional study

Prof Talha M Siddiqui[1], Aisha Wali, Ali Hussain, Ali Ahmed, Jatinder Kumar

1 Professor& Chairman, Department of Operative Dentistry, Baqai Dental College, BMU
2 Assistant Director Research& Head of Research Department, Baqai Dental College, BMU
3 Lecturer, Department of Medical Education, Baqai Dental College, BMU
4 Registrar, Department of Operative Dentistry, Baqai Dental College, BMU
5 House surgeon, Baqai Dental College, BMU

ABSTRACT

Introduction: Several researchers academics have revealed in recent years that cognitive ability alone is insufficient to predict success, and that morals, talent, attitude, and behaviour all play a role. Salovey and Mayer investigated the reasons why many clever people failed in life more than a decade ago. Their research led to the identification of an intelligence subset known as emotional intelligence (EI). EI, as a sort of social intelligence, is more important than cognitive intelligence in terms of success.

Objective: The aim of the present study was to determine the correlation of EQ and IQ with Academic performances.

Methods: The present cross -sectional study was conducted in Baqai Dental College from July 2021- September 2021 after getting ethical approval from Ethical review board, Baqai Dental College. Dental students from 2nd year, 3rd year and Final year were invited to participate through census sampling technique. The study included all students from each class who were present on the day of data collection whereas those absent from each class were excluded from the study.

Results: A total of 165 dental students participated in the study. Majority of the dental students fall in the domain of emotional awareness and management within 25-34 range of effective functioning. Frequency and percentages were also calculated for level of intelligence and 72 (43.6%) of the dental students scored 90-109 which is considered as Normal. Association of students marks from the last examination with IQ score was calculated and 48(39.7%) students with <60% in the last examination fall in the Normal range of IQ. Correlation between EQ, IQ and academic performance was calculated and showed that a negative correlation was found between Academic performance and IQ.

Conclusion: The present study concluded that emotional intelligence is positively correlated with academic performance and negatively correlated with IQ.

KEYWORDS: Academic performance, Intelligent Quotient, Emotional awareness, Emotional intelligence, Emotional management, Relationship management

INTRODUCTION

In Several researchers academics have revealed in recent years that cognitive ability alone is insufficient to predict success, and that morals, talent, attitude, and behaviour all play a role. (Cho, 2010 jaining J, 2001, lazin, 1991, Goleman, 1995,Wong, 2002). Salovey and Mayer investigated the reasons why many clever people failed in life more than a decade ago. EI, as a sort of social intelligence, is more important than cognitive intelligence in terms of success. It is a person's ability to perceive and interpret emotional elements of themselves and other people that can have an impact on their behaviour (Kim, Park, Jon, Jung, & Hong, 2017). When we measure a person's EI level, we say it is their emotional quotient (Borvornsakulcharoen &

Thiengkamol, 2017) 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(Cobb & Mayer, 2000). Emotional intelligence comprises of interpersonal and intrapersonal intelligence. Outer intelligence is the interpersonal intelligence which one uses to understand and manage relationships with the other people and is important for developing qualities like empathy and building up effective relationships. The inner intelligence is the intrapersonal intelligence which one uses to know and understand oneself and is important for self -awareness, self-regulation and self-motivation (Cobb & Mayer, 2000). Emotional intelligence includes domains such as self-awareness, self-management, social awareness and relationship management (Serrat, 2017).

William Stern, a German psychologist in 1912 invented the acronym "I.Q.," an interpretation of Intelligent-Quotient. Level of Intelligence of a person is measured as a percentage of their expected and their chronological age (Dickens & Flynn, 2002).

Correspondence:
Dr. Talha M Siddiqi
Email address: drtms@baqai.edu.pk, Cell: +92 300 232 0242
Received: November 22, 2021 Accepted: January 15, 2022

It is also explained as ability to understand complexed ideas, overcome difficulties, adjust effectively to the environment, involve deeply in various forms of reasoning, and learn from knowledge (Yu et al., 2016). Intelligence level is measured as a quotient of their expected and their chronological age.

Intelligence Quotient =Mental Age/ chronological age

When expected age is same as chronological age, the IQ is 100. The higher the IQ level, the more brilliant is the child. The first IQ tests were designed to measure a child's intelligence to what it "should be" in comparison to the child's age. The child with higher IQ score was significantly considered smarter than a normal child of same age, and if the child scored lower than expected for a child of his or her age, the child was given a lower IQ score (Dickens & Flynn, 2002).

Intelligence quotient (IQ) assesses a person's intellectual abilities whereas EI measures a person's own internal emotions and social intelligence (Martins, Ramalho, & Morin, 2010). Emotional intelligence appears to be a stronger predictor of achievements than intelligence quotient. On the basis of intelligence quotient, one may enter a field based on intelligent quotient, but the ultimate success depends upon emotional intelligence (jiwan T, 2010). Educational experts and psychologists have emphasized the relationship of EI and students' academic performance. A study by (Chew, Zain, & Hassan, 2013) reported that higher EI scores indicates positive social functioning as well as ability to manage emotions, adapt to change and deal with stressful situations that aids in cognitive and intellectual development, which can lead to a improved academic performance.

Academic success has a fundamental consign in education and in the learning process, as well as the type of school, students socio-economic status, parents education, intelligence and personality, all of which influence student performance and academic achievement. Environmental and biological variables influence intellectual development (Yesikar, Guleri, Dixit, Rokade, & Parmar, 2015).

Although intelligence and success are two different things, but they are strongly linked to each other (kaya, 2015). Intellectual power such as long-term memory, ability to think theoretically whereas nonintellectual power such as inspiration, self-control both have impact on student's academic performance. Authorized procedures of IQ measurement exist since the early 1900s, which have been used in many researches for the evaluation of intellectual ability (Seligman & Duckworth, 2005). Good academic performance is not achievable in the absence of intelligence but on the other hand those having high intelligence does not ensures high academic performance (Iqbal et al., 2021).

Many studies have reported a close relationship between EI and academic performance (Chew et al., 2013)(Parker et al., 2004).

(stratton, n.d.)(victoroff, n.d.) Various studies reported that there was no correlation between EI and academic achievement (Newsome, Day, & Catano, 2000)(O'Connor & Little, 2003) (Hadadi et al. 2016). Various researches done by (Gumora & Arsenio, 2002) (Parker et al., 2004),(petrides,2004)(abdullah, 2004) in separate researches, reported that there was a positive and negative correlation between EI and academic achievement.

Academic performance is thought to be solely determined by one's intelligence quotient which is also known as logical intelligence (alloway, 2010). Students scoring higher level of intelligent quotient may have poor performance in academics. Academic performance appears to be the ultimate result of many personality traits working together (mainwright, 2005).

We hypothesized that Academic performance of dental students was enhanced with higher level of emotional intelligence and intelligent Quotient. Therefore, the present study was planned to determine the correlation of EQ and IQ with Academic performances.

METHODS

The present cross-sectional study was conducted in Baqai Dental College from July 2021- September 2021 after getting ethical approval from Ethical review board, Baqai Dental College. Dental students from 2nd year, 3rd year and Final year were invited to participate through census (convenience) sampling technique. Dental students from each class present on the day of data collection were included in the study and those who were absent on the day of data collection were excluded from the study. A validated and reliable tool 'The Quick Emotional Intelligence Self-Assessment Questionnaire' (N Johar, 2019) was used to measure the emotional intelligence, comprised of 40-items with responses on a 5-point Likert Scale ranging from 0 to 4 indicating never, rarely, sometimes, often and always respectively. The total score ranged from 0 to 160 with higher score representing higher emotional intelligence. The questionnaire was divided into 4 subthemes with10 items each representing emotional awareness, emotional management, social emotional awareness and relationship management respectively.

A structured questionnaire to measure IQ available from the IQ test.com and an online link of IQ test was given to the participants (Yesikar et al., 2015). The scoring of IQ level is given in IQ scale chart that gives a clear overview of the IQ score ranges as derived from (Resing and Blok ,2002). Academic performance of the students was measured by determining the marks in the last professional examination. For the sake of standardization, the marks of each class were converted to percentages.

Data was entered into SPSS version 22 for the analysis. Frequency and percentages were calculated for categorical variables. Chi

square test was used to find the association between IQ and academic performance. Pearson correlation test was applied to find the correlation between IQ/EQ and academic performance of dental students. P-value was kept at 0.05.

RESULT

A total of 165 dental students participated in the study. Majority of the dental students fall in the domain of emotional awareness and management within 25-34 range of effective functioning.

Table I showed frequency and percentages of students for all domains of EQ.			
Domain	**n=165 Frequency (%age)**		
	0-24	25-34	35-40
Emotional awareness	68(41.2%)	73(44.2%)	24(14.5%)
Emotional Management	69(41.8%)	74(44.8%)	22(13.3%)
Social Emotional Awareness	70(42.4%)	64(38.8%)	31(18.8%)
Relationship Management	70(42.4%)	68(41.2%)	27(16.4%)

Frequency and percentages were also calculated for level of intelligence and 72 (43.6%) of the dental students scored 90-109 which is considered as Normal.

Table II showed the frequency and percentages of dental students for level of intelligence.		
Level of intelligence	**IQ Range**	**Frequency (%age)**
Idiot	0-24	0
Imbecile	25-49	4(2.4%)
Moron	50-69	7(4.2)
Border Line	70-79	14(8.5%)
Low normal	80-89	23(13.9%)
Normal	90-109	72(43.6%)
Superior	110-119	28(17%)
Very Superior	120-139	16(9.7%)
Near Genius	140 and above	1(0.6%)

Association of students marks from the last examination with IQ score was calculated and 48(39.7%) students with <60% in the last examination fall in the Normal range of IQ.

Table III showed the association of students marks in last examination and IQ.									
% in last examination	IQ score								p-value
	25-49	50-69	70-79	80-89	90-109	110-119	120-139	140 and above	0.414
<60%	2(1.7%)	6(5%)	12(9.9%)	16(13.2%)	48(39.7%)	24(19.8%)	12(9.9%)	1(0.8%)	
>60%	2(4.5%)	1(2.3%)	2(4.5%)	7(15.9%)	24(54.5%)	4(9.1%)	4(9.1%)	0	

Correlation between IQ and academic performance was calculated when r= -.034 with 2-tailed significance, p= .667 which is not significant and therefore that there is an intermediate negative non significant correlation found between Academic performance and IQ.

Table IV showed correlation between IQ and academic performance.		
	r- value	
	Academic performance	IQ score
Academic performance Sig.(2-tailed)	1	-.034 .667
IQ score Sig. (2-tailed)	-.034 .667	1

DISCUSSION

The study was conducted on 165 dental students to find the relationship of EQ/IQ with the academic performance. The present study showed no significant association between Academic performance and IQ score. Majority of the students were in the normal range and only one student was in the genius category. Yesikar V et al, (Yesikar et al., 2015) in a study reported that majority of them had an average and above average IQ. Dickens T et al (Dickens & Flynn, 2002) in a study reported average level of IQ. Iqbal K et al (2021) in a study showed no significant association between Academic performance and students. Academic performance and intelligence have a complex relationship. The academic performance of the students with average or low IQ was similar to the academic performance of students with higher IQ which could be due to hard work of students with low or average IQ. Therefore Intelligence quotient cannot be related to academic performance(Iqbal et al., 2021). Another study revealed that all students had an IQ intelligence interval above 70, none were mentally challenged and majority of the students had an IQ in range of 80 to 130 (average and above average IQ (Yesikar et al., 2015).

The present study reported negative correlation of Academic performances with IQ. Emotional intelligence is a major predictor of academic performances in continuous assessments and final examinations, indicating the presence of a direct EI effect on academic performance in medical education. The impact of EI on academic performance seems to be attributed to students' capabilities accurately perceive emotions and to comprehend emotional causes(Chew et al., 2013). Students with average IQ needed one or more years for preparation of medical entrance exams, while the other students with higher IQ needed less time for this. Also students with average IQ compensated their routine activities for sake of studies and good results in the semester exam whereas students with higher IQ spent lesser hours in their studies and performed well. It was seen that students with average IQ had almost similar academic performance as compared to students with higher IQ , but it was due to long study hours devoted by them. So the academic performance had direct relation with number of attempts during medical entrance, number of study hours, and regularity in the classes(Yesikar et al., 2015). Similar findings were illustrated in the study by Abel Gedefaw et al where university entrance

examination results, missing lectures and missing seminars/ tutorials had a statistically significant correlation with academic performance.

N Johar et al(N Johar, 2019) in a study reported positive correlation between academic performance and EQ. Positive correlation was also reported by (Chew et al., 2013(Wijekoon et al., 2017). N Johar(N Johar, 2019) also revealed that subscales of EI were significantly correlated with academic performance. Siva Kumar Pendyala et al(Pendyala et al., 2021) reported moderate correlation between Academic performance and EQ. (Bastian, Burns, & Nettelbeck, 2005) in a study found no correlation between emotional intelligence and academic achievement.

Parker et al,(Parker, Hogan, Eastabrook, Oke, & Wood, 2006),found no relationship between EI and academic success. Nath S et al(Nath, Ghosh, & Das, 2015) reported there was a strong negative correlation between EQ and IQ.

The findings of the study contradicts the findings of Zirak and Ahmadian(Karaman Özlü et al., 2016) who concluded that there is no significant positive association between emotional intelligence and academic success. Likewise, Azimifar (Azimifar, n.d.) also revealed contradictory results that there is no statistically significant correlation between students' scores and the achievement tests. Another study results found that there is a negative association between academic success and emotional intelligence. (Shah, Sanisara, Mehta, & Vaghela, 2014)

The findings from the current study reported that the four domains of emotional intelligence namely emotional awareness, emotional management and social emotional awareness and relationship management were linked with academic performance. (N Johar, 2019)et al reported similar results. These findings were in line with previous literature that supports the current four dimensional EI model. This model is consisted of perceiving emotions, using emotions to help one's own thinking patterns and managing it appropriately. (Shore et al, 2006) In this way EI may act directly by facilitating and prioritizing thoughts. This underlying process may in turn regulate behaviour and individual adopt appropriate lifestyle choices ultimately resulting in benefitting academic performance.(Megías, Gómez-Leal, Gutiérrez-Cobo, Cabello, & Fernández-Berrocal, 2018) Goleman in his new EI model necessitates the importance of EI more than IQ.(Goleman, n.d.)

Limitations

The current study had limitations including sample size, single centered study and sociodemographic variables. The present study reflected the assessment of Intelligent Quotient and Emotional intelligence of dental students of only one university. Therefore there was a small size and study limited to single centered and validity of the tool used for IQ assessment was taken from IQ test. com but the Validity and Reliability of the tool was not checked.

CONCLUSION

The present study concluded that emotional intelligence is positively correlated with academic performance and negatively correlated with IQ.

Recommendation:

The study recommended for conducting future related studies with different variables and conducting the study on a larger sample.

DECLARATION OF INTEREST

The author has no conflicts of interest to declare.

REFERENCE

Abdullah, M. C., Elias, H., Mahyuddin, R., & Uli, J. (2004). Emotional intelligence and academic achievement among Malaysian secondary students. Pakistan Journal of Psychological Research, 105-121.

Alloway, T. P., & Alloway, R. G. (2010). Investigating the predictive roles of working memory and IQ in academic attainment. Journal of experimental child psychology, 106(1), 20-29.

Azimifar, M. (2013). The relationship between emotional intelligence and academic achievement among Iranian students in elementary schools. European Online Journal Of Natural And Social Sciences, 2(2), pp.216-222.

Bastian, V. A., Burns, N. R., & Nettelbeck, T. (2005). Emotional intelligence predicts life skills, but not as well as personality and cognitive abilities. Personality and Individual Differences, 39(6), 1135–1145.

Borvornsakulcharoen, D., & Thiengkamol, N. (2017). Model of EQ and MQ Integrated with Environmental Education Affecting Environmental Behavior. Humanities, Arts and Social Sciences Studies, 17(2), 215–238. Retrieved from https://tci-thaijo.org/index.php/hasss/article/view/94439

Chew, B. H., Zain, A. M., & Hassan, F. (2013). Emotional intelligence and academic performance in first and final year medical students: A cross-sectional study. BMC Medical Education, 13(1), 1. https://doi.org/10.1186/1472-6920-13-44

Cho, S. (2010). The role of IQ in the use of cognitive strategies to learn information from a map. Learning and Individual Differences, 20(6), 694–698. https://doi.org/10.1016/j.lindif.2010.09.001

Dickens, W. T., & Flynn, J. R. (2002). The IQ paradox: still resolved. Psychol Rev, 109(4), 1–25. Retrieved from http://lyris.brookings.edu/~/media/Files/rc/papers/2002/0205education_dickens/20020205.pdf

Goleman D. Emotional intelligence: Why it can matter more than IQ. New York: Bantam Books. 1995.

Gumora, G., & Arsenio, W. F. (2002). Emotionally, emotion regulation, and school performance in middle school children. Journal of School Psychology, 40(5), 395–413. https://doi.org/10.1016/S0022-4405(02)00108-5

Haddadi kohsar, a., & roushan, r., & asgharnezhad farid, a. (2007). a comparative study of relationship emotional intelligence to mental health and academic achievement in shahed and non shahed students university of tehran. journal of psychology and education, 37(1), 73-97.

Iqbal, K., Chaudhry, S. R., Lodhi, H. N., Khaliq, S., Taseer, M., & Saeed, M. (2021). Relationship between IQ and academic performance of medical students. The Professional Medical Journal, 28(02), 242–246. https://doi.org/10.29309/tpmj/2021.28.02.4348

Janing, J. (2001). Linking teaching approaches and learning styles: how can it help students? Emergency Medical Services, 30(9), 77-80.

Jiwan, T. (2010). Emotional quotient scores over intelligence quotient. The Nursing journal of India, 101(3), 57-58.

Karaman Özlü, Z., Avşar, G., Gökalp, K., Ejder Apay, S., Altun, Ö. Ş., & Yurttaş, A. (2016). Comparison of the Emotional Intelligence Levels of Students Receiving Education in Different Fields. Education Research International, 2016, 1–5. https://doi.org/10.1155/2016/8508153

Kim, Y. J., Park, E. H., Jon, D. I., Jung, M. H., & Hong, N. (2017). Does emotional intelligence fluctuate within clinical depressive condition? Psychiatry Investigation, 14(5), 532–538. https://doi.org/10.4306/pi.2017.14.5.532

Lazin, R., & Neumann, L. (1991). Student characteristics as predictors of dropout from medical school: admissions to BeerSheva over a decade. Medical Education, 25(5), 396-404.

Wainwright MA, Wright MJ, Luciano M, Geffen GM, Martin NG. (2005).Multivariate genetic analysis of academic skills of the Queensland core skills test and IQ highlight the importance of genetic g. Twin Res Hum Genet, 8(6): 602-8.

Martins, A., Ramalho, N., & Morin, E. (2010). A comprehensive meta-analysis of the relationship between Emotional Intelligence and health. Personality and Individual Differences, 49(6), 554–564. https://doi.org/10.1016/j.paid.2010.05.029

Johar, N., Ehsan, N., & Khan, M. A. (2019). Association of emotional intelligence with academic performance of medical students. PAFMJ, 69(3), 455-59.

Nath, S., Ghosh, S., & Das, S. (2015). Relation between intelligence, emotional intelligence, and academic performance among medical interns. Open Journal of Psychiatry & Allied Sciences, 6(2), 96. https://doi.org/10.5958/2394-2061.2015.00004.x

Parker, J. D. A., Creque, R. E., Barnhart, D. L., Harris, J. I., Majeski, S. A., Wood, L. M., Hogan, M. J. (2004). Academic achievement in high school: Does emotional intelligence matter? Personality and Individual Differences, 37(7), 1321–1330. https://doi.org/10.1016/j.paid.2004.01.002

Parker, J. D. A., Hogan, M. J., Eastabrook, J. M., Oke, A., & Wood, L. M. (2006). Emotional intelligence and student retention: Predicting the successful transition from high school to university. Personality and Individual Differences, 41(7), 1329–1336. https://doi.org/10.1016/j.paid.2006.04.022

Pendyala, S. K., Kondreddy, K., Hau, L. L., Phing, L. C., Ying, L. P., & Lim, L. (2021). Emotional intelligence among undergraduate dental students and its relationship with academic and clinical performance. International Journal of Dentistry and Oral Science, 8(4), 2140–2145. https://doi.org/10.19070/2377-8075-21000423

Petrides, K. V., Frederickson, N., & Furnham, A. (2004). The role of trait emotional intelligence in academic performance and deviant behavior at school. Personality and individual differences, 36(2), 277-293.

Resing, W., & Blok, J. B. (2002). De classificatie van intelligentiescores: Voorstel voor een eenduidig systeem. Psycholoog.

Serrat, O. (2017). Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance. Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance, 1–1140. https://doi.org/10.1007/978-981-10-0983-9

Shah, C., Sanisara, M., Mehta, H., & Vaghela, H. (2014). The relationship between emotional intelligence and academic achievement in medical undergraduate. International Journal of Research in Medical Sciences, 2(1), 59. https://doi.org/10.5455/2320-6012.ijrms20140211

Shore, S. K., Schaeffer, S. J., & Tsao, J. W. (2018). Importance of intelligence and emotional intelligence for physicians. Jama, 320(2), 204-205.

Stratton, T. D., Elam, C. L., Murphy-Spencer, A. E., & Quinlivan, S. L. (2005). Emotional intelligence and clinical skills: preliminary results from a comprehensive clinical performance examination. Academic Medicine, 80(10), S34-S37.

Victoroff, K. Z., & Boyatzis, R. E. (2013). What is the relationship between emotional intelligence and dental student clinical performance?. Journal of dental education, 77(4), 416-426.

Wijekoon, C. N., Amaratunge, H., De Silva, Y., Senanayake, S.,

Jayawardane, P., & Senarath, U. (2017). Emotional intelligence and academic performance of medical undergraduates: A cross-sectional study in a selected university in Sri Lanka. BMC Medical Education, 17(1), 1–11. https://doi.org/10.1186/s12909-017-1018-9

Wong, C. S., & Law, K. S. (2002). The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. The leadership quarterly, 13(3), 243-274.

Yesikar, V., Guleri, S., Dixit, S., Rokade, R., & Parmar, S. (2015). Intelligence quotient analysis and its association with academic performance of medical students. International Journal of Community Medicine and Public Health, 2(3), 275–281. https://doi.org/10.18203/2394-6040.ijcmph20150482

Yu, T. Y., Chen, K. L., Chou, W., Yang, S. H., Kung, S. C., Lee, Y. C., & Tung, L. C. (2016). Intelligence quotient discrepancy indicates levels of motor competence in preschool children at risk for developmental delays. Neuropsychiatric Disease and Treatment, 12, 501–510. https://doi.org/10.2147/NDT.S101155

AUTHOR'S CONTRIBUTION

1. Talha M Siddiqui: Conception and design of the work; writing, revision and drafting of manuscript.

2. Aisha Wali: Acquisition, analysis and interpretation of data

3. Ali Hussain: Literature search

4. Ali Ahmed: Data Collection

5. Jatinder: Data Collection