Emotional intelligence of dental students and patient satisfaction

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Abstract

The objective of this study was to determine the degree of correlation between emotional intelligence of dental students, patient satisfaction and related factors. A total of 123 senior students and their patients participated in the study. Students completed the 133 item Bar-On Standardised Emotional Quotient Inventory (EQI) and patients completed a seven item satisfaction questionnaire. The mean score for EI of female students was 442 and 462 for male students, for an overall average score of 452 for all dental students. Male students significantly scored higher in stress control ($P = 0.0$), general mood ($P = 0.011$) and intrapersonal scales ($P = 0.024$). There was a statistically significant relationship between student gender and average EI score ($P = 0.007$). Married students scored higher in adaptability ($P = 0.019$) and general mood scales ($P = 0.039$). Significant relationships existed between students' gender ($P = 0.009$), level of patient education ($P = 0.0$) and patient satisfaction levels. Not recording a significant relationship for the interpersonal scale ($r = 0.134$), there was a significant relationship amongst intrapersonal, stress control, adaptability, and general mood dimensions of the students and patient satisfaction reports. There was a statistically significant relationship between general emotional intelligence score of the students and patient satisfaction. Patients of the students with high general emotional intelligence scores were significantly more satisfied with treatment than patients of students with low EI.

Perceived stress in dental undergraduates is well documented (1, 2). As high as 72% and 67% of final-year dental students have been reported to suffer from stress and pathological anxiety respectively (1). Thirty six per cent and 22% prevalence for psychological distress and emotional fatigue amongst first-year dental students from seven European dental schools has been reported (3). The ability to perceive emotions in self and others, manage emotions, and handle relationships are important attributes for health care providers because these attributes contribute to health maintenance, including mental health, and career development (4).

A mutually satisfying patient–doctor relationship has been described in literature and has many benefits including improved patient adherence and loyalty, better therapeutic outcomes and decreased malpractice suits (5).

The concept of emotional intelligence (EI) was introduced in the early 1990s by Salovey and Mayer, who defined it as 'a type of social intelligence that involves the ability to monitor one's own and other's emotions, to discriminate between them, and to use this information to guide one's thinking and actions' (6). These ideas were later expanded upon by Gardner and popularised by Goleman in his book entitled 'Emotional Intelligence' (7). Bar-On describes EI as the 'array of personal, emotional and social competencies that enables one to cope with environmental demands' (8).

In medical education, EI has been proposed as an important attribute of professional competence (2, 6). However, Wong et al. (9) found that social perception was only a moderate predictor of academic performance amongst university students. Sternberg et al. (10) reported a modest association between 'practical intelligence' and academic performance in students making the transition from high school to university. Newsome et al. (11) found little association between academic success and emotional and social competencies, but using a sample of physicians, Wagner et al. (5) reported that higher patient satisfaction is associated with the physicians' EI. Parker et al. (12) proposed that intrapersonal, adaptability and stress management abilities are important factors in the successful transition from high school to university. Carrothers et al. (6) found that students' emotional intelligence is associated with

an educational program that includes a strong emphasis on the social sciences and humanities.

Although many medical schools have considered EI constructs in their admission process (4), it remains unclear to what extent EI assists in understanding differences in physician behaviour, the quality of patient–doctor relationship, and patient satisfaction. The study reported in this paper investigated the relationship between dental students' EI scores and patient satisfaction. The research hypothesis that stimulated this study was that higher levels of student emotional intelligence, which represents a more sophisticated approach to interaction with other people and with better understanding one's own emotions, is associated with more positive patient impressions of dental treatment. This hypothesis is based on the assumption that emotional maturity amongst providers is a key component in establishing positive rapport with patients, understanding patients' needs and expectations and adapting to difficulties and challenges that may arise during the course of dental therapy.

Materials and methods

A total of 140 fifth and sixth year dental students who were fulfilling their clinical requirements in the Endodontic department of the Dental School at Azad Medical Sciences University, Tehran, Iran and their patients participated in the study. One patient was enrolled in the study for each participating dental student. Seventeen students did not submit a completed EI questionnaire and were excluded from the final study sample which was 123. The gender distribution of the students was 43 male and 80 female. The patient group consisted of 49 female, 67 male and seven patients did not identify their gender on the patient questionnaire.

Necessary information about the study objectives and procedure was presented to each student and patient who served as a subject in the study and instructions for completing the EI questionnaire and patient satisfaction questionnaire were provided. Personal information such as age, marital status, occupation and education were also added to the questionnaires.

Bar-On standardised Emotional Quotient Inventory (EQI) 133 item self-report measure (13) was distributed amongst students immediately after they completed treatment for their patients. The Patient Satisfaction Questionnaire containing seven questions was obtained from Tehran Psychiatry Institute, Iran Medical Sciences University Tehran, Iran. To prevent the influence of undesired events such as painful and complicated treatments, probable poor co-operation of the patient, etc, and to obtain patients' impressions of the students based on their initial meeting, the patient satisfaction questionnaires were distributed at the end of first appointment which is mainly devoted to examinations and documentation only. Both students and patients were assured that their responses would only be known to the investigators. The back of both student and patient questionnaire sheets were secretly coded to allow matching of student and patient pairs to facilitate data entry and analysis of responses.

Five dimensions are evaluated in EQI: interpersonal scale, intrapersonal scale, adaptability scale, stress management scale and general mood scale. Students answered using a five point likert scale by selecting one of these response options for each item on the inventory: always, often, sometimes, rarely and never. The sum of the responses for each parameter was calculated as quantitative values.

Relations between demographic variables of patients and students and patient satisfaction were assessed using the ordinal regression test and the correlation between EI score and patient satisfaction was evaluated by the Spearman correlation test. The *P*-value under 0.05 was set as significant. Data were analyzed using SPSS 11.5 (SPSS Co., Chicago, IL, USA) for windows.

Results

The average score on the EQI for the female students was 442 (29.1% high score) and it was 462 for male students (57.1% high score). The average total score for 123 dental students was 456. There was a statistically significant relationship between the mean EI scores and gender of students ($P = 0.007$). Male students obtained higher scores in stress control in comparison to female students (mean 66.8 for male vs. 59.6 for females), general mood (mean 67.5 vs. 63) and intrapersonal (mean 145 vs. 128) scales. Married students ($n = 27$) obtained higher scores in general mood ($P = 0.039$) and adaptability ($P = 0.019$) scales. No significant relationship between student marital status ($r = -0.005$, $P = 0.952$), academic year ($r = 0.041$, $P = 0.633$) and mean EI score was detected.

Fifty per cent of male students and 29.1% of female students gained high scores in intrapersonal scale. As a consequence, there was a statistically significant relationship between students' gender and the intrapersonal scale ($P = 0.024$). As for stress control scale, 40.5% of male and 12.7% of female students gained high scores, and thus there was a statistically significant relationship between stress control scale and students' gender ($P = 0.0$). Approximately two-thirds (66.7%) of male and 40.5% of female students recorded high scores in general

TABLE 1. Crosstab between EI score and patient satisfaction in senior dental students of Azad Medical Sciences University Tehran, Iran

Patient satisfaction level	EI Score			
	Excellent	Medium	Poor	Total
Unsatisfied	0 (0.0)	4 (66.7)	2 (33.3)	6 (100)
Partly satisfied	7 (29.6)	17 (65.4)	2 (7.7)	26 (100)
Highly satisfied	40 (44)	48 (52.7)	3 (3.3)	91 (100)
Total	47 (38.2)	69 (56.1)	7 (5.7)	123 (100)

TABLE 2. Descriptive statistics of EI score and dimensions

	Mean ± SD	High, n (%)	Moderate, n (%)	Low, n (%)
Intrapersonal	139.98 ± 14.43	44 (36.4)	67 (55.4)	12 (8.3)
Interpersonal	87.02 ± 6.96	3 (2.5)	82 (67.8)	38 (29.8)
Adaptability	93.86 ± 9.5	13 (10.7)	75 (62)	35 (27.3)
Stress control	62.00 ± 9.06	27 (22.3)	93 (75.2)	3 (2.5)
General mood	64.39 ± 7.41	60 (49.6)	59 (47.1)	4 (3.3)

mood scale which also represented a statistically significant difference ($P = 0.011$). No significant relationships between adaptability and interpersonal scales and gender of the students were recorded.

Forty four per cent of the patients were deeply satisfied with students who scored high on the EQI, whilst only 3.3% of patients were satisfied with students with lower EI scores. Approximately one-third (33.3%) of patients indicated they were unsatisfied with the first meeting impression for students with low EI scores. Overall, a statistically significant relationship between the general EI scores of students and patient satisfaction level was observed ($r = 0.407$) (Table 1).

Patients expressed significantly more satisfaction with the 43 male students in comparison with the 80 female students, ($r = -0.225$, $P = 0.009$) and there was less satisfaction scores in patients with higher education levels ($r = -0.503$, $P = 0.0$). Patients' age, marital status and gender had no impact on their satisfaction reports. No relationship between student marital status, year of study and patient satisfaction was identified.

Patient satisfaction was significantly correlated with four of the students' EQI scales: intrapersonal ($r = 0.427$), stress control ($r = 0.263$), general mood ($r = 0.272$) and adaptability ($r = 0.333$). Patient satisfaction was not significantly correlated with the interpersonal scale ($r = 0.134$) (Table 2).

Discussion

A relatively small body of work has examined the relationship between the emotional intelligence of health care professionals and patient's satisfaction. Because health care training involves interaction and communication with patients, it may be hypothesised that students who have high EI scores would achieve more satisfactory clinical outcome and be perceived in a more positive manner by their patients. The inconsistent findings from previous research on emotional and social competency and professional success may be the result of methodological differences. Our study is the first of its kind to assess the relationship of patient satisfaction to students' EI in a stressful clinical environment such as Endodontic treatment.

Emotional intelligence is a new construct, and currently there is discussion amongst psychologists and most recently, medical educators regarding its construct validity, predictive power, and the psychometric properties of the few instruments available to measure it (1, 4). Concerns about possible overlap between basic personality and EI dimensions, especially when EI is assessed using self-report measures, has led some researchers to be concerned that instruments like the Bar-On standardised Emotional Quotient Inventory (EQi) may simply reassess basic personality (14, 15).

The EQ-i is a 133 item self-report measure developed to assess five broad dimensions as: interpersonal, intrapersonal, adaptability, general mood and stress management. A high score on any individual dimension, or the total EI score, reflects a high level of social and emotional competency. EQ-i scores typically increase across life span from young adulthood to middle age (13).

Gamini & Azimi (2004), using a 33 item version of EQ-i test, found no difference amongst first and final year students at the same school where the current study was conducted. Interestingly, first year female students scored significantly higher than males only in the self motivation dimension (16). Female students in the current study recorded lower scores in general mood, stress control and intrapersonal scales, and had a lower overall EI score than male students. Contrary to our findings, Pau et al. (2003) reported that the mean total EI score for female students was higher than their male classmates and female dental students had significantly higher scores for three of the four EI factors, utilisation of emotions, appraisal of emotions and social skills. These investigators also reported that female students and those in clinical years of study scored higher in perceived stress than males or those in preclinical years (2). Chamberlain et al. found a significant relationship between gender of dental students and neuroticism, which suggests that female students were more anxious, self-conscious, and vulnerable than their male classmates (17).

Whilst marital status and year of the study had no impact on the EI of the participants in our study, married students scored higher only in adaptability and general mood scales. It is not clear if marriage helped them to develop such abilities or persons enjoying those abilities are more prone to early marriages. Although females are typically considered to be superior to males in perceiving emotions, female students in the current study did not score higher in interpersonal and intrapersonal scale on the EQI. Male students' score for stress control was impressive and may be the main reason for higher satisfaction response from the both male and female patients in our study. Dental treatment is perceived to be a stressful procedure both for the patient and the dentist and those with higher abilities to control their own and other's stress may be more likely to become more successful in their profession. The current study was designed and conducted in the Endodontic Department and most dental students and patients find root canal treatment to be a complex and exhausting procedure. To avoid the bias because of uncontrolled events such as painful injections, difficulties in getting deep numbness, and flare-ups etc, and to obtain the patients' first impressions based on their initial interaction with students prior to actual endodontic treatment, questionnaires were distributed to patients at the end of first appointment which is mainly devoted to documentation and examination. Despite all these precautions male students appeared to be more successful in the stress control dimension and gained more patient satisfaction.

There was a direct correlation between student gender, patient's education level and patient satisfaction. Patients with university degrees ($n = 13$) appeared to be more demanding and more effort to gain their trust and compliance was required. Whilst 100% of patients with high school diplomas reported high satisfaction, only 41.9% of patients with university degrees reported full satisfaction. Patient's age, gender and marital status showed no impact on their satisfaction level. Wagner et al. found a limited relationship between patient satisfaction and physicians' EI scores. They found the personal happiness and life satisfaction of the clinician were the only emotional intelligence dimensions that were associated with patient satisfaction (5). Contrary to our expectation, in this study, the interpersonal dimension which contains empathy, social responsibility and interpersonal relationships subscales, was the only scale that showed no direct relationship with

patient satisfaction. Chamberlain found that personality components especially conscientiousness, neuroticism and their facets and to a lesser degree agreeableness were found to be reliable predictors of dental students' professional behaviour, but openness to experience and extroversion facets of the five dimensions had no impact on student's performance, all confirming that both cognitive and non-cognitive skills are required to be taught and assessed (17).

Contrary to findings of some previous studies, we found a strong relationship between EI of students and patient satisfaction levels. Although the EI construct is widely becoming popular in the business world, the concept of emotionally skilled and non-skilled health care professionals seems to remain neglected and requires more emphasis during the admission both in undergraduate and postgraduate programs and should be included in the curriculum of dental schools.

Conclusion

Fifth and sixth year students at one dental school in Tehran, Iran appeared to possess an acceptable level of EI and most patients were satisfied after their first meeting with students in an endodontic clinic. Based on evidence that there may be a relationship between dental students' EI score and patient satisfaction reports, providing educational experiences for dental students related to EI dimensions may facilitate the development of skills that are essential for optimal interaction with patients which will contribute to success in their professional practice. These findings suggest that female students may benefit from education related to stress control and male students may benefit from attention to the interpersonal dimension of EI.

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