

Emotional Intelligence of Dental Students and Its Correlation with Leadership Behaviour

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ABSTRAK

Kepimpinan, satu seni dalam memotivasi diri dan individu lain bagi mencapai halatuju yang sama, memainkan peranan penting kepada pelajar pergigian agar mereka bersedia sebagai pemimpin yang berupaya mempromosikan kesihatan pergigian pada masa hadapan. Kecerdasan emosi (EI) adalah keupayaan untuk memahami, memanfaatkan dan mengurus emosi dengan cara positif yang berkemungkinan sangat mempengaruhi tahap kepimpinan dalam kalangan pelajar pergigian. Objektif kajian ini adalah untuk mengenalpasti pengaruh EI terhadap kepimpinan diri (SL) pelajar-pelajar prasiswazah pergigian serta untuk menilai keketaraan faktor-faktor demografi (seperti universiti pengajian, tahap pengajian akademik dan jantina) terhadap SL pelajar. Satu kajian keratan rentas telah dilaksanakan di antara tahun 2020-2021 yang melibatkan prasiswazah pergigian di dua buah universiti di Kurdistan (Hawler Medical University [HMU] dan University of Duhok [UOD]) serta sebuah universiti di Malaysia (Universiti Kebangsaan Malaysia [UKM]). Sebanyak 236 pelajar pergigian telah mengambil bahagian di dalam kajian ini dan menjawab dua soal selidik iaitu; Schutte-Self Report EI Test (SSREIT) dan Revised-Self Leadership Questionnaire (RSLQ). Hasil kajian menunjukkan terdapat hubungkait positif yang ketara secara statistik ($p < 0.01$) di antara tahap EI dan SL, dengan 37% daripada variasi SL ditentukan oleh EI. SL di kalangan pelajar prasiswazah di Malaysia lebih tinggi berbanding di Kurdistan. Pelajar perempuan mempunyai SL yang lebih baik berbanding pelajar lelaki. Kadar maklum balas yang diterima di HMU, UOD dan UKM, masing-masing adalah 70%, 43% dan 59%. Kesimpulannya, EI memainkan peranan utama dalam membangunkan kemahiran kepimpinan dalam kalangan prasiswazah

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pergigian. Oleh itu, EI merupakan elemen utama yang perlu dipertimbangkan bagi pembangunan kepimpinan mereka. Selain itu, jantina dan universiti pengajian juga menunjukkan pengaruh yang ketara terhadap SL prasiswazah pergigian.

Kata kunci: kecerdasan emosi, kepimpinan, pergigian

ABSTRACT

Leadership, the art of motivating oneself and others towards achieving a common goal, is crucial for dental students to prepare themselves as future leaders that able to promote dental healthcare. Emotional intelligence (EI) is the ability to understand, utilise and manage emotions in positive ways may highly influence the self-leadership (SL) level among dental undergraduates and potentially become a meaningful predictor for SL development. The objectives of this study was to find out the influence of EI on dental undergraduates' SL and to assess the significance of the demographic factors (e.g. university of study, level of academic study and gender) on the students' SL. A cross-sectional study performed in 2020-2021 involving dental undergraduates at two universities in Kurdistan (Hawler Medical University [HMU] and University of Duhok [UOD]) and one of university in Malaysia (Universiti Kebangsaan Malaysia [UKM]). Dental students (N=236) participated in the study answering two questionnaires; The Schutte-Self Report EI Test (SSREIT) and the Revised-Self Leadership Questionnaire (RSLQ). Results showed a significant correlation between EI and SL ($p < 0.01$) with 37% of the variation in SL determined by EI. SL among dental undergraduates in Malaysia were higher than in Kurdistan. Females had better SL compared to males. Response rate was 70%, 43% and 59% in HMU, UOD and UKM respectively. As a conclusion EI has huge influence on SL of dental undergraduates and therefore, EI is a fundamental element that needs to be considered for the leadership development among dental students. Apart from EI, gender and university of study also demonstrated significant influence on SL of dental undergraduates.

Keywords: dentistry, emotional intelligence, leadership

INTRODUCTION

Leadership, the interpersonal influence exercised in a situation, and directed through the communication process, toward the attainment of specified goals (Tannenbaum et al. 2013), is an inseparable part of any profession,

including dentistry, where a dentist is obliged to work in an organised medium dealing with different personnel such as dental assistant, dental hygienist or other co-workers, whether in private or public dental associations. Leadership skills are paramount among dentists in order

to provide a quality treatment and face any challenges in the profession. Leadership is noticeably needed in dental education (Roth 2007), and the literature reflects awareness of the significance of leadership in all aspects of dentistry including clinical practice (Christensen 2004), organised dentistry (Jeffcoat 2004), dental research (Pinn 2006) and dental public health (Mouradian et al. 2004).

Increasing awareness of leadership in many aspects of dentistry has led to the implementation of leadership education in several universities in the United States of America (Goldstein et al. 2009; Victoroff et al. 2009; Skoulas & Kalenderian 2012). For example, student leadership development programs have been implemented in University of Michigan School of Dentistry, Herman Ostrow School of Dentistry and University of Southern California since 2006 (Goldstein et al. 2009). Another leadership development program for dental students was carried out at the Case Western Reserve School of Dental Medicine, in Cleveland Ohio, which aimed at maximising dental students' knowledge of leadership, enhancing their leadership skills and stimulating leaders whom can serve as role models (Victoroff et al. 2009).

Emotional intelligence (EI) is the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions in order to promote emotional and intellectual growth (Salovey & Mayor 1990). Dentists should be aware of

their own emotions and recognise the impact of these emotions and their consequences in their practice. Failure to understand and control these emotions properly may lead to the projection of these feelings to patients. Ability to control the emotions that affect patient experiences is an important factor in deciding whether a dentist is efficient or not (Sammorraie 2019). Although the influence of EI on the leadership behaviour have been conducted in several fields (Bumphus 2008; Caruso & Salovey 2004; Whitman 2009), it remains unclear to what extent EI can assist in leadership skills among dental undergraduates or dentists overall. Understanding the correlation of EI with leadership behaviour among dental students is potentially useful for the development of leadership competency in oral healthcare practice. Thus, this research aimed to determine the correlation between EI and leadership behaviour among dental students and to assess other related factors such as university of study, level of academic study and gender on the students' leadership behaviour.

MATERIALS AND METHODS

Study Design and Study Population

A cross-sectional study was conducted within 2020-2021 which involved dental undergraduates within clinical years of training (Year 3, Year 4 and Year 5) at the National University of Malaysia (UKM), Hawler Medical University (HMU) and University of Duhok (UOD). Malaysia is considered

a developing country and UKM has been recognised as an established university ranked in the top 150 in QS World University Rankings (QS World University Rankings 2021), therefore it was supposedly to have better curriculum structure in UKM. Hence, UKM was included in the study. Among the three local dental universities available in Iraqi Kurdistan (a region in northern Iraq), two universities (HMU in the capital of Kurdistan- Erbil) and (UOD in Duhok- a smaller city in Kurdistan) were selected based on the cultural differences and subsequently our interest in knowing their influence on both variables EI & self-leadership (SL).

Ethical Approval

Ethics approval was obtained from UKM Research Ethics Committee coded UKM PPI/111/8/JEP-2021-195 prior to commencement of study in Malaysia. In order to conduct the study in the dental universities at Kurdistan, ethics approval was obtained from Ministry of Higher Education and Scientific Research of Kurdistan Regional Government.

Sample Size Calculation

Following a sample size calculation with G-Power analysis, a total number of 210 dental students were supposed to participate, with an effect size of 0.5, an error of 0.05 and a Power of 0.95. In another study with a similar study design, an effect size of (0.69) and a sample size of (N=240) was found suitable (Bhaskar et al. 2013). In this

study, a medium effect size of (0.5) was used that represented "an effect likely to be visible to the naked eye of a careful observer," as argued by Cohen (2013). The approach of relying on a conventional use of small, medium, and large effects and pick one for power analysis is more convenient and also the most prominent (Sedlmeier & Gigerenzer 1989). We were able to collect data from a total of 236 dental undergraduates. The participation was 148 students from universities in Kurdistan (HMU and UOD) and 88 students from UKM. Participation rate in HMU was 93 students out of 132 (70%), 55 students out of 127 (43%) in UOD and 88 students out of 150 (59%) in UKM.

Data Collection Instrument

A set of questionnaires consisting of subject particulars (name, age, gender, year of academic study and university of study), Schutte-Self Report EI Test (SSEIT) and Revised Self-Leadership Questionnaire (RSLQ) was utilised as a data collection instrument in this study. The questionnaire was prepared to be available online by utilising Google form.

The SSEIT was utilised to measure EI level among dental students. This test was selected since it is a widely used test which measures EI as a trait-based measure. Trait-based measures are preferred because they have very good psychometric properties, do not have questionable theoretical bases and correlate moderately and have meaningful with a broad set of outcome variables (O'Connor et al. 2019). In

the SSEIT, respondents were asked to rate themselves on the 33 items using a 5-point Likert scale. To calculate a scale score, reverse code responses were performed for items 5, 28, and 33 prior to summing all the scores. The total score for (SSEIT) ranges from 33 to 165, with a higher score indicating a higher EI (Schutte et al. 2009). The mean score across many large samples is about 124, with a standard deviation of about 13. So, scores below 111 or above 137 are unusually low or high and scores between 111-137 are considered moderate (Schutte et al. 1998). SSEIT is adapted from the original paper by Schutte et al. (1998) and it is a public domain as stated in the authors' original paper.

The RSLQ is used to measure an overall self-leadership score. The test contains 35 items in nine different subscales describing the three basic self-leadership dimensions. The respondents were asked to rate themselves on the 35 items using a 5-point Likert scale. To calculate a RSLQ scale score, self-punishment items (6, 15, 24 and 30) were reversely coded prior to summing all the scores. Scores between 70-105 were considered low SL, scores between 105-140 were considered moderate and scores between 140-175 were considered high SL according to the author recommendation. Higher leadership scores demonstrate higher leadership skills and behaviour. The RSLQ is adapted from Houghton and Neck (2002) and it had been notified and obtained approval for utilisation from the author.

Reliability Test for the Study Instruments

The research tools (RSLQ and SSEIT) were tested for reliability among dental undergraduates in the three universities using Cronbach's alpha. The value of the Cronbach's alpha for both tools had surpassed the recommended minimum value of Cronbach's alpha (α of 0.87 for RSLQ and α of 0.86 for SSEIT). This proved the reliability of RSLQ as reported by Houghton and Neck in 2002 as well as SSEIT which the author reported the reliability to be 0.90 (Schutte et al. 1998).

Data Collection Procedures

This study involves male and female dental undergraduates within clinical years of training (Year 3, Year 4 and Year 5) at UKM and the selected universities in Kurdistan with age ranges between 19-27 years old. Following acceptance of ethical approval, the questionnaire was distributed online via students' WhatsApp groups or individual email. During the distribution of questionnaire, it was made clear for all participants to contact the researcher for any clarifications. Informed consent was obtained from the subjects prior to answering the questionnaires.

Data was collected within two and a half months. None of the collected data was excluded in this study since none of the participants had arguable mental instability (history of depression). This was confirmed through the student records available at each respective university. Upon completion of data collection, the

SL and EI scores of undergraduates at each university (UKM, HMU and UOD) were divided into 3 categories (low, moderate and high). Following this, the mean scores for each of the categories were calculated. Regarding SL, the mean score was also categorised based on the university of study, level of the academic study and gender of the undergraduates.

In order to facilitate the interpretation of the mean scores, the mean scores of SL and EI were given using a 5-point Likert scale. Each mean score based on the 5-point Likert scale was obtained by dividing the mean score of the test with the number of items in the questionnaire. Using this scale, the range of the mean score for EI and SL, respectively, were interpreted as follows; strongly disagree/not at all accurate (mean score 1 to 1.80), somewhat disagree/ somewhat accurate (mean score 1.81 to 2.60), neither agree nor disagree/a little accurate (mean score 2.61 to 3.40), somewhat agree/mostly accurate (mean score 3.41 to 4.20), strongly agree/completely accurate (mean score 4.21 to 5.00).

Data Analysis

All data was analysed using IBM SPSS data editor version 26.0 (IBM, Armonk, New York, USA) where the values were expressed as mean and standard deviation. The p -value <0.05 was considered as a statistically significant result. To determine the mean scores for EI and SL, the data was analysed using descriptive statistics.

Pearson's correlation was carried out to determine the relationship

between the independent variable (EI) and outcome variable (SL). Simple regression analysis was carried out to see how much of the variation in SL was determined by EI.

To assess the significance of demographic factors, ANOVA was performed with leadership behavior as the dependent variable to identify statistically significant predictor of leadership behavior among dental undergraduates. These predictors included year of academic study (Year 3, Year 4 and Year 5) and University of study (HMU, UOD & UKM). Tukey HSD post hoc test was used in conjunction with ANOVA to determine if the mean values were significantly different among the groups (HMU, UOD, UKM). Independent sample T-test was carried out to see whether there was a statistically significant difference between means of males and females for SL.

RESULTS

A total of (N=236) dental undergraduates participated in this study, with ages between 19 to 27 years old, mean age of 22 years old and SD of 1.46. The participants answered EI and SL questionnaires, with 87 (36.9%) of the respondents being male and 149 (63.1%) being female. The participation was from 36 males and 57 females in HMU, 24 males and 31 females in UOD and 27 males and 61 females in UKM. Most of the participants were in year 3 of academic study (43.2%) followed by year 5 (38.6%) and year 4 (18.2%) respectively. Participation rate was highest among the HMU students

(70%), followed by UKM (59%) and UOD students (43%). Based on Table 1, most of the students demonstrated moderate levels of SL and EI at all of the three universities with UKM demonstrated higher mean scores for both variables.

One-way ANOVA was performed in order to analyse the difference between the means of SL across the three universities of study, as well as,

across the three years of academic study (Table 2). There is no statistically significant difference between the mean scores of SL of dental undergraduates in the different years of academic study (p-value=0.814). However, there is a statistically significant difference between the mean scores of SL at the three universities (p-value=0.001). Hence, multiple comparison using Tukey HSD post hoc test was

Table 1: Descriptive statistics for levels of SL (RSLQ) and EI (SSEIT)

University	Level	SL		EI	
		N (%)	Mean score ± SD	N (%)	Mean score ± SD
HMU	Low	3 (3.2)	101 ± 1.732	12 (12.9)	103.251 ± 5.723
	Moderate	69 (74.2)	123.927 ± 9.929	65 (69.9)	124.169 ± 7.639
	High	21 (22.6)	147.238 ± 4.867	16 (17.2)	145.125 ± 6.1847
	Total	93 (100.0)		93 (100.0)	
UOD	Low	5 (9.1)	96.823 ± 7.463	9 (16.4)	103.67 ± 5.152
	Moderate	43 (78.2)	125.697 ± 9.503	41(74.5)	120.268 ± 7.049
	High	7 (12.7)	150.428 ± 5.349	5 (9.1)	144 ± 6
	Total	55 (100.0)		55 (100.0)	
UKM	Low	3 (3.4)	90 ± 3.605	13 (14.8)	103.692 ± 4.682
	Moderate	52 (59.1)	126.942 ± 9.015	57 (64.8)	125.842 ± 7.548
	High	33 (37.5)	148.032 ± 6.738	18 (20.5)	146.06 ± 5.991
	Total	88 (100.0)		88 (100.0)	

SSEIT score range for EI level: score below 111 (Low EI level), between 111-137 (moderate), above 137 (high). RSLQ score range for SL level: 70 -105 (Low SL level), between 105-140 (moderate), 140 - 175 (high).

performed to confirm the difference between the means of SL between universities of study (HMU, UOD, and UKM). When post hoc Tukey HSD test was performed, the results showed that there was a significant mean difference between HMU and UKM (0.208), as well as a significant mean difference between UOD and UKM (0.254) for SL (Table 3).

Independent Sample T-Test was performed to compare the mean

scores of self-leadership between male and female students. Results showed a statistically significant difference between the mean scores of SL for male and female students (p-value=0.002). Based on the results females demonstrated better self-leadership compared to males (Table 4).

The result from Pearson’s correlation analysis showed a statistically significant large and positive correlation (r = 0.585)

between EI and SL at the significant level ($\alpha = 0.01$). In order to understand the prediction and influence rate of EI on SL, a regression analysis was performed. As shown in Table 5, increasing one unit for EI will increase self-leadership by 0.57. Determination of Coefficient (R^2) showed that 37% of the variation of SL was determined by EI and the remaining variation was due to other factors that can affect self-

leadership. ANOVA analysis was also performed for checking the goodness of fit of the explanatory variable (EI) on the response variable (SL). The result suggested that the model was appropriate based on ($F=109.54$ and p -value = 0.001).

DISCUSSION

Results showed that EI has a huge

Table 2: One-way ANOVA between demographic predictors (university/year of academic study) and SL

		N	Mean Score of SL*	Std. Deviation	F	p-value
University of study	HMU	93	3.778	0.457	6.890	0.001
	UOD	55	3.732	0.489		
	UKM	88	3.986	0.438		
	Total	236	3.845	0.469		
Year of academic study	Year 3	102	3.851	0.467	0.174	0.814
	Year 4	43	3.873	0.469		
	Year 5	91	3.824	0.476		
	Total	236	3.845	0.469		

*Mean score represented in this table is a normalised score as described in page 6, line 15)

Table 3: Multiple comparison using Tukey HSD between university of study and SL

Dependent Variable				Mean Difference	p-value
Self-leadership (SL)	HMU	UOD		0.046	0.828
		UKM		-0.208*	0.007
	UOD	HMU		-0.046	0.828
		UKM		-0.254*	0.004
	UKM	HMU		0.208*	0.007
		UOD		0.254*	0.004

Table 4: Independent Sample T Test between genders with SL

		N	Mean Score of SL*	Std. Deviation	T	p-value
Gender	Male	87	3.608	0.440	-3.071	0.002
	Female	149	3.774	0.401		

*Mean score represented in this table is a normalized score as described in page 6, line 15)

Table 5: Simple Regression Analysis between independent variable (EI) and dependent variable (Self-Leadership)

	Coefficients			Model Summary		ANOVA	
	B	T	p-value	Correlation	R-Square	F	p-value
(Constant)	1.53	7.35	0.001	0.58	0.37	109.54	0.001
EI	0.57	10.46	0.001				

impact on self-leadership among dental undergraduates where there was a large and positive correlation between the two. This was in line with a number of studies, where there was a significant statistical correlation between EI and leadership effectiveness (Tang et al. 2010; Jones 2012), including empirical evidence of 181 peer reviewed articles (Beckles 2018). Understanding the relationship between EI and SL among dental undergraduates can help in planning for dental training that promote future dentists with competency in both patient care as well as managing dental services by incorporating EI concepts in the leadership training. An empirical study that was done by Oztimurlenk (2019) showed that the inclusion of EI concepts in education of employees was a factor affecting their EI positively. It is worth noting that it has been proved that EI is trainable (Mattingly & Kraiger 2018; Goleman & Senge 2014). We also need to take into account that dentistry is considered a stressful field for both the dentist and the patient. Several researchers have suggested that possessing high EI as well as SL skills have the potential to facilitate stress coping among students (Houghton et al. 2012). Therefore, inclusion of SL and EI in training courses could also benefit the students by increasing their

abilities to cope with stress.

While there was no statistically significant difference in the mean scores of SL between HMU and UOD, SL of dental undergraduates in Malaysia (UKM) was significantly higher than that of Kurdistan (HMU+UOD), with 37.5% (33 students) at UKM demonstrating high SL level, while 22.6% (21 students) and 12.7% (7 students) demonstrating high SL level at HMU and UOD, respectively. In UKM, soft-skill training (e.g. communication skills) is provided among pre-clinical year students which may contribute to higher leadership level among UKM dental undergraduates. This is consistent with several studies which proved a significant influence of communication skills on leadership behavior (Zilembo & Monterosso 2008; Abe et al. 2013). Learning communication skills may also explain the higher levels of EI at UKM since EI was proven to have strong correlation with better communication skills as well (Amini et al. 2019; Erigüç et al. 2014). In addition, dental students at UKM were also exposed to various forms of teamwork pedagogy such as group seminars, problem-based-learning sessions and other social initiatives. Working in a team encourage the development of SL in an individual. Hence, leadership value is indirectly taught to the

dental students at UKM. However, in universities at Kurdistan no training or involvement of such concept exists in the dental curriculum. By comparing to the dental students at HMU and UOD, findings of this study highlighted that the presence of leadership component in UKM dental curriculum had significantly led to better attainment of leadership skills among the dental students. Implementation of teamwork pedagogy could be considered in the dental curriculum at the universities of Kurdistan (HMU and UOD) since it will be a cost-effective approach for the enhancement of the dental students' leadership skill.

The possible deficiencies of skilled leaders within academic dental institutions and major obstacles that every clinician and researcher encounters in their practice with coworkers, employees, and patients (Slavkin & Lawrence 2007), has raised a concern and many studies support that leadership skills must be incorporated longitudinally across a dentist's career, with undergraduate development being a crucial step in assisting dental students with this value (Christensen 2004; Grocock 2020; Till et al. 2020). In a study performed among dental undergraduates in Harvard School of Dental Medicine, the dental students thought that their exposure to leadership theories and skills through a course developed for third-year students was life-changing and highly valuable (Kalendarian et al. 2010). The introduction of a leadership course in the dental curriculum might as well interest dental students in Malaysia and Kurdistan. Nonetheless,

since the majority of dental students in both countries exhibited moderate to high SL, leadership courses could also be incorporated as part of future continuous dental professional education among dentists in both countries for the improvement of their leadership skills.

Participation from year four of study was found to be the least compared to other years (18.2%). In particular, the low participation rate of fourth-year students might reflect the heavy workload associated with the first-time encounter to patient treatment in Kurdistan universities (HMU+UOD) and subsequently more tiredness and less time. While the low rate of participation of the fourth-year students in Malaysia (UKM) might be due to the heavy workload associated with the curriculum and lack of time caused by it. It is worth mentioning that experience might have a role in the development of leadership skills among individuals (Benjamin & O'reilly 2011). As the years of experience increase, leadership capacities increase. However, this does not seem enough as the results showed no significant difference in the SL level between the different years of academic study. Hence, other factors contributing to leadership improvement in dentistry must be considered including continuous education of leadership skills.

Female dental undergraduates showed better SL in comparison to their male counterparts, and this was consistent with the qualitative findings of some studies (Larsson & Björklund 2020; Taichman & Taichman 2014). In contrast to Brocklehurst et al. (2013)

the study demonstrated contradictory finding by suggesting that there is a lack of women role models in dentistry. Results of a meta-analysis conducted by Eagly and Johnson (1990) indicated that women possessed better social skills and can be described as kindlier, more pleasant and socially sensitive leaders compared to men. However, there are different circumstances as to whether men or women leaders are preferred, and successful leadership today demands a mixture of both masculine and feminine behaviors (Powell 2014). Even though the number of female participants in all the three universities was higher than the number of participation of males, but this does not have any influence on the results as independent sample t-test was used to compare the “means” of each independent group (male and female) hence the sample size of each group in Independent sample t-test does not necessary have to be equal (Gerald 2018). A “mean” refers to the average of a set of values, in other words it is the adding up of the numbers and dividing the total by the number of observations. So, the total score of SL of females was divided by the total number of female participants in the study and the total score for SL of males was divided by the total number of male participants in the study.

In this research the sample population was kept at the level of convenience from one university in Malaysia and therefore, may not be representative of all Malaysian local universities. The academic level of dental students in this study was limited to only Year 3 to Year 5 dental

undergraduates. Thus, expanding the levels of study by involving preclinical year students and dental postgraduates may give a different perspective on how the academic level influences SL.

CONCLUSION

The EI had a huge influence on SL of dental undergraduates where there was a large and positive correlation between EI and SL and 37% of the variation of SL was determined by EI. Therefore, EI is a fundamental element that need to be considered for the leadership development among dental students. Apart from EI, gender and university of study also demonstrated significant influence on SL of dental undergraduates. Females had better SL compared to males. SL among dental undergraduates in UKM was higher when compared to the universities at Kurdistan.

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