RESEARCH PAPER.

EMOTIONAL INTELLIGENCE IN FIRST YEAR MEDICAL STUDENTS AND ITS CORRELATES: A STUDY CONDUCTED AT A FACULTY OF MEDICINE IN SRI LANKA

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Abstract

Background: Emotional Intelligence (EI) is an important attribute to possess in the practice of medicine, which requires skills such as the ability to adapt to clinical situations appropriately and have favourable interpersonal relations, which in turn may have an effect on the outcome of the patient.

Objectives: The objectives of the study were to determine the EI levels of first year medical undergraduates of a selected faculty of medicine in Sri Lanka and to determine whether there is a significant correlation between EI and gender, academic ability, number of siblings, self-motivation to study medicine, perceived levels of family support, socialization and religiosity.

Methods: The Genos Emotional Intelligence Assessment Concise Questionnaire, translated to Sinhala, was administered to a cohort of 194 first year medical students. This questionnaire included a supplementary section with personal details and questions on self- motivation to study medicine, perceived level of socialization, religiosity, family support and the Z score at the advance level examination. Data was analysed using SPSS version 22.0.

Results and conclusions: The levels of EI of new entrant medical students admitted to a Faculty of Medicine in Sri Lanka was established using the validated Sinhala translation of the Genos Emotional Intelligence Assessment Concise Questionnaire.
EI was positively co-related with self- motivation to study medicine, perceived level of socialization and religiosity. There was no significant difference in total EI scores between males and females. Perceived level of family support, number of siblings and academic ability did not correlate significantly with EI.

Keywords: Emotional intelligence, medical students, Genos Emotional Assessment

Introduction

Emotional intelligence (EI) is defined as "the ability to perceive emotions accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotions and emotional knowledge, and to regulate emotions to promote emotional and intellectual growth".[1] The corporate world has identified emotional intelligence as a predictor of academic as well as professional success.[2] It has been reported that people and college students with good EI show better social functioning and interpersonal relationships and peers have identified them as less antagonistic and conflictual.[3]

A comprehensive survey in medicine states that EI had a positive contribution in doctor-patient relationships, with better empathy, teamwork, communication skills, stress management, organisational commitment and leadership.[4] EI is important to medical professionals as it is associated with self-monitoring, which would not only facilitate adapting to clinical situations appropriately but also improve interpersonal relations. This result both in a favourable outcome for the patient and also promote the wellbeing of the practitioner.

EI becomes especially important for medical undergraduates due to the long undergraduate period of 5 years and the relatively high demands of the medical course. Few studies have suggested that EI training can help medical students build leadership qualities and empathy.[5,6] A systematic review of the literature concludes that EI should be recommended as a component of the curricula for developing physician leaders.[7] Literature surveys on emotional intelligence and medicine, and physician leadership qualities concludes that EI correlates with competencies such as increased empathy, teamwork, communication skills, stress management, organisational commitment, collaboration and interaction that modern medical curricula seek to deliver, and that leadership can be nurtured by improving EI.[7,8] However, Humphrey-Murto, et al., (2014) found that the level of EI at the stage of admission to medical school could not reliably predict academic success in later years.[8]

Literature on EI in the Sri Lanka context is sparse. The few studies done on EI have been conducted among school children[9] and in the field of management.[10] The published literature revealed a recent study of EI among medical students.[11]

Studies conducted to determine factors that contribute to a high level of EI have revealed that there was a positive meaningful relationship between Emotional Intelligence and Spiritual Intelligence.[12] Sotodehasl, et al., (2016) found that there was a positive significant relationship between EI and academic achievement, [13] while Ranasinghe et al., (2017) revealed that female medical students had a higher EI than their male counterparts and that those who engaged in extracurricular activities and those who were satisfied regarding their choice to study medicine, had significantly higher EI scores..[11] This was reinforced by Ren et al., (2016) who identified that the level of socialization within the faculty, time spent with family, arts and community service correlated with higher empathy scores which is one aspect of EI.[14] Studies have been conducted to determine whether family structure and the number of siblings have any effect on emotional intelligence of secondary school students.[15] It was revealed that there was no significant effect of family structure and number of siblings on emotional intelligence of students. Even though Barbar, Christensen & Barchard (2004) too found that there is no relationship between family size and emotional

intelligence, they found that people coming from larger families have greater externally oriented thinking.[16] However, Morand, 1999 supports the hypothesis that emotional intelligence is positively correlated with family size.[17]

Even though selection to Sri Lankan medical faculties is not based on personal attributes of students, the literature reveals the importance of EI for courses like medicine.[4] Given the current environment of medical education where there is emphasis on patient-centered practice, the use of a tool to assess emotional intelligence of students may be useful.

Furthermore, exploration of the relationship between EI and factors such as gender, number of siblings, perceived level of family support, self-motivation to study medicine, level of socialization within the faculty and perception of religiosity in medical students would help faculty to identify "at risk students" who may require support and guidance through the course.

The objective of the study was to determine with regard to new entrants at a faculty of medicine in Sri Lanka, the level of EI and its association with academic ability, gender, number of siblings, perceived level of family support, self-motivation to study medicine, level of socialization within the faculty and perception of religiosity.

Method

Instrument

The validated Sinhala translation of the Genos Emotional Intelligence Assessment Concise Questionnaire was used for this study.[18] The questionnaire consists of 31 items designed to measure the frequency with which an individual displays emotionally intelligent behaviours across seven dimensions (seven subscales). These sub scaled are Emotional Self- Awareness (ESA), Emotional Expression (EE), Emotional Awareness of Others (EAO), Emotional Reasoning (ER), Emotional Self- Management (ESM), Emotional Management of Others (EMO), Emotional Self- Control (ESC). The items are scored on a five-point Likert scale, from 'Almost Never' to 'Almost Always'. A supplementary questionnaire was prepared to include demographic data (gender, date of birth, and number of siblings in the family), and the rank (all island) at the selection test for medical school (as an indicator of academic ability). Furthermore, student perception of level of family support, self-motivation to study medicine, level of socialization within the faculty and religiosity were assessed by students response on a five point Likert scale to the following questions in the supplementary questionnaire; "I get good family support to carry out the academic work", "I'm motivated by myself to study medicine and be a competent medical professional in the future", "I think that I am well socialized within the faculty" and "I think I'm a religious person".

Participants and procedure

The Sinhala version of the Genos Emotional Intelligence Assessment Concise Questionnaire with the supplementary questionnaire was administered to medical students at the point of entry to the Faculty of Medicine, University of Peradeniya, Sri Lanka, subsequent to obtaining ethical clearance. Foreign students were excluded from the study. The students were informed that participation was purely voluntary in nature.

The total EI score was calculated by the sum of the sub categories. The Genos EI raw scores (subgroup scores and cumulative score) were correlated to the

island rank at the selection test to the medical faculty, gender, number of siblings in the family, level of family support, self-motivation to study medicine, level of socialization and students' perception of religiosity.

Data analysis

The normality of the total EI score was tested with the Shapiro-Wilks test to decide if parametric or non-parametric statistical tests should be used. The difference of EI scores between males and females was tested with the Mann-Whitney u test, which tests the difference between two normally distributed continuous variables. Kendall's rank correlation method was used to look for correlations between total EI and ESA, EE, EAO, ER, ESM, number of siblings, A/L rank, motivation, support, socialization and religiosity as variables were not normally distributed. The total EI score was not normally distributed (Shapiro-Wilks test statistic 0.91, significance, 0.001). Since variables were

not normally distributed no linear regression was carried out. Non-linear regression would not be of value as it is reserved for categorical variables, but ordinal regression could have been used after ordinally categorising EI, but it was not attempted as EI categorisation was not practical. Analysis was done using SPSS version 22.0.

Results

The response rate was 100%. Six point seven percent (6.7%) of questionnaires were incompletely filled thus excluded.

Hundred and eighty-four newly recruited medical students, aged 19 to 21 years, who had not commenced the academic programme, participated in the study. There were 93 males and 91 females.

The total EI score was not normally distributed (Shapiro-Wilks test statistic 0.91, significance <0.001). There was no significant difference in total EI scores between males and females.

Table 1: Level of EI (subgroup and cumulative scores) of the study population

EI		ESA	EE	EAO	ER	ESM	EMO	ESC	Total
Theoretical range		6-20	6-25	6-20	8-25	8-25	4-20	4-20	31-155
Mean (% from max score)		16.89 (84.4)	19.36 (77.36)	16.05 (80.24)	20.65 (74.76)	18.96 (82.5)	16.49 (78.15)	15.63 (80)	124.03
Median		17.00	20.00	16.00	21.00	19.00	17.00	16.00	127.50
Median by sex	Male	17	20	16	20**	19	17	16	126
	Female	18	20	17	21**	20	17	16	129
**P values for difference between sexes<0.05 - Mann-Whitney U test									

Table 2: Correlation between EI (subgroup and cumulative score) and island rank at the selection test to medical faculty, number of siblings, perceived level of family support, self-motivation to study medicine, perceived level of socialization and perception of religiosity.

	EI	ESA	EE	EAO	ER	ESM	EMO	Siblings	A/L rank	Motivation	Support	Socialization	Religiosity
EI	1.00	.57**	.54**	.57**	.50**	.52**	.59**	.01	-.02	.21**	.02	.23**	.17**
ESA	.57**	1.00	.34**	.38**	.33**	.35**	.37**	.01	-.03	.21**	-.01	.15*	.12*
EE	.54**	.34**	1.00	.31**	.29**	.29**	.34**	.07	.07	.09	.01	.18**	.10
EAO	.57**	.38**	.31**	1.00	.37**	.27**	.43**	-.01	.05	.18**	.07	.15*	.15*
ER	.50**	.33**	.29**	.37**	1.0	.21**	.40**	.01	.02	.19**	.04	.18**	.12*
ESM	.52**	.35**	.29**	.27**	.21**	1.0	.29**	-.03	-.09	.11	-.03	.20**	.15**
EMO	.59**	.37**	.34**	.43**	.40**	.29**	1.0	.02	-.01	.18**	.00	.13*	.19**
Siblings	.01	.01	.07	-.01	.01	-.03	.02	1.00	.05	-.01	-.13*	.01	-.03
A/L rank	-.02	-.03	.07	.05	.02	-.09	-.01	.05	1.0	.11	-.01	-.03	.12*
Motivation	.21**	.21**	.09	.18**	.19**	.11	.18**	-.01	.11	1.0	.07	.08	.11
Support	.02	-.01	.01	.07	.04	-.03	.01	-.13*	-.01	.07	1.00	.02	.01
Socialization	.23**	.15*	.18**	.15*	.17**	.20**	.13*	.05	-.03	.08	.02	1.0	.22**
Religiosity	.17**	.12*	.10	.15*	.12*	.15**	.19**	-.03	.12*	.10	.01	.22**	1.00

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

*. Correlation is significant at the 0.05 level (2-tailed).

EI was positively co-related with self-motivation to study medicine, perceived level of socialization and religiosity. The perceived level of family support, number of siblings and academic ability did not correlate significantly with EI.

Discussion

Currently no tests of EI are used in the selection of students for the undergraduate program in medicine in Sri Lanka, where the selection is based purely on academic merit and on the district quota system. The present study establishes a base level of EI for new entrant medical students, with identification of factors associated with EI.

Many tools have been identified in the literature for the purpose of assessing EI. The emotional competence inventory (ECI), Bar-On Emotional Quotient Inventory (EQI), and Mayer-salovey-Caruso Emotional Intelligence Test (MSCETT) are popular EI measures. The Genos EI inventory which was designed to be used in workplace settings (for recruitment/promotion) has the potential to be used in coaching, developmental and educational fields.[19] The concise version of the Genos EI inventory (31items) was chosen for this study over the complete version (71 items) as it was assumed that the response rate and the accuracy of responses would be higher with the concise version.

The study revealed a mean EI of 124 (range 54-149) among new entrant medical students. The scores for the sub scale Emotional Self- Awareness was highest, with the lowest score being for Emotional Reasoning (Table 1). Even though Ranasinghe et al., 2017 established EI levels for 2nd, 4th and final year medical students at the University of Colombo, Sri Lanka, using the Schutte Self-Report Emotional Intelligence Test, this study is the first to establish EI levels of new entrant medical students in a medical faculty in Sri Lanka. However, a similar study using the Genos questionnaire had been carried out to establish EI levels of high school students in Sri Lanka, which reported that highest scores were observed for Emotional Expression while the lowest was for Emotional Self- Control.[9]

Some studies have concluded that EI is significantly co-related with gender[8,20] explaining that females due to biological factors, cultural influences, and upbringing may be more emotionally intelligent. However, this study revealed that there was no significant difference in overall EI between males and females, even though the mean total score and the mean score for each subscale was higher in females compared to male students. A significant difference between males and females was only noted in the ER subscale (Table 1). This indicates that females are significantly better at considering one's own and others' emotions when making decisions, as well as expressing that such consideration has taken place. This is consistent with the findings of a similar study conducted in Australia, even though the tool used differed.[21] Furthermore, a study on Irish students revealed that though there was no significant difference in total EI score between males and females, females had scored higher in self-reported empathy, social responsibility[22] and regulation of emotions.[23] On the other hand, a study among Sri Lankan high school students revealed that higher EI was found among males when compared to females.[9]

Even though the Z score would have enabled better identification of a relationship between academic performance and EI, the rank order was used for this study as the Z scores of students were seen to be very close with difficulty in differentiating between students. Ranasinghe et al., (2017) concluded that EI was associated with better academic performance amongst final year medical students, in Sri Lanka. However, this study did not reveal a significant correlation between academic performance (as assessed by the Advanced level examination rank) and EI.[11] Thererefore the question arises as to whether it would be useful to assess EI separately as entrance criteria to certain courses, especially, those such as medicine. EI as a selection criterion to medical school has been studied by Carrothers, et al., (2000).[24] A pilot study done by Carrothers et al., (2000) states that EI identifies applicants who are oriented towards the social sciences and humanities and EI scores correlated positively with the interview assessment designed to test interpersonal skills.[24] Thus further research

will be necessary to draw conclusion as to measurement of EI as an ability to test suitability for selection to medical school.

The literature reveals that siblings "through their conflicts", can develop skills in perspective taking, emotion understanding, negotiation, persuasion, and problem solving.[25] However, our study did not reveal any significant association between the level of EI with the number of siblings. This finding may be due to the fact that even a single child might have faced a certain amount of emotionally challenging situations outside the family, such as with peers, which may have resulted in development of EI.

An Iranian study concluded that there is a direct significant association between EI with the socio- economic status and a good parental relationship.[26] A study by Harrod & Scheer (2005) concluded that EI is positively co-related with the parent's education and household income. It is reasonable to assume that emotionally intelligent medical students may have a better family environment and support, which would have influenced them positively to cope with the stress of the academic work and peer pressures.[27] However, this study failed to reveal a correlation between EI and the degree of family support as perceived by the student (Table 2). It is important to mention that this study did not specify a level of family support and assessed only the "student perception of family support", which does not evaluate dimensions of family support in detail and rigorously to draw reasonable conclusions.

Selection of students for courses in Sri Lanka are based on academic merit and the district quota system and very few students who are selected for medicine on this basis reject this selection in favour of other options. This brings forth the important question as to whether students are in reality self-motivated to do medicine or whether social and family pressure plays a role in their career choice. Self-satisfaction over career choice was positively correlated to EI in several studies.[26,28,29] This study too confirms the finding – in this study, self-motivation to study medicine or their satisfaction in choosing medicine as a career was positively correlated with the total EI score (Table 2).

A literature review on the role of EI in medicine, revealed that teamwork, communication and interpersonal skills have a positive co relation with EI [8], which may be reflected by better socialization within the faculty, for example by participating in group/team activities, and social services. This study showed a positive correlation between EI and perceived level of socialisation (Table 2).

Similar to the result of this study, there was a significant relationship between EI and perceived positive religious coping among medical students in the Mazandaran University in Iran.[30] However, some researchers had concluded that perception of religiosity does not show a positive effect on EI. [31]

Conclusions

EI levels of new entrant medical students at a Faculty of Medicine in Sri Lanka was established using the Genos Emotional Intelligence Assessment Concise Questionnaire . Emotional intelligence in new entrant medical students was positively co-related with the determination and self- motivation to study medicine, the perceived level of socialization within the faculty and the perceived level of religiosity. There was no significant difference in overall EI between males and females. Perceived level of family support, the number of siblings and the island rank at the selection

test to medical school did not correlate significantly with EI.

Limitations

The relationship between motivation, religiosity and socialisation and EI in this study was assessed using a tool and was based purely on student perceptions, so the findings may not be definitive.

Recommendations

A more extensive study on new entrants to medical faculties in Sri Lanka may reveal valuable information, which may provide evidence to evaluate the criteria by which students are selected to medical schools. Also identification of factors which have an impact on EI may help the faculty in developing mechanisms to improve EI of medical students, as well as identify students who may require support. Furthermore, a longitudinal study to detect any change in the level of EI of students following the medical course would reveal useful information regarding possible interventions.

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