

ORIGINAL ARTICLE

DO WE NEED TO CARE: EMOTIONAL INTELLIGENCE AND EMPATHY OF MEDICAL AND DENTAL STUDENTS

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Background: Biomedical knowledge, though pre-requisite, needs to be supported by other important skills, in order to transform medical education and healthcare delivery. This study was thus planned to analyze the correlation between emotional intelligence (EI) and empathy in medical and dental undergraduate students. **Methods:** This cross-sectional correlational study was conducted at public and private sector medical and dental institutions of Peshawar, Pakistan from February 2015 to June 2017. Schutte Emotional Intelligence Scale (SEiS) & Davis' Interpersonal Reactivity Index (IRI) were used to assess emotional intelligence and empathy. The data was analyzed using SPSS-20. The p -value of <0.05 was considered significant when tests of significance were applied. **Results:** The mean age of the sample ($n=2170$) was 21.02 ± 1.62 years. High level of EI (118.60 ± 15.78) was reported in 1191 (54.9%) while higher empathy (63.24 ± 14.24) was reported in 1115 (51.4%) students. Female medical students had significantly higher empathic behaviour and emotional intelligence than male students ($p<0.05$), while no significant difference was found between male and female dental students. Medical students of private sector showed higher level of empathy as compared to public sector ($p<0.05$), whereas dental students of private sector showed higher level of emotional intelligence as compared to public sector ($p<0.05$). EI and Empathy had significant correlation ($r=.370$, $p=0.000$). **Conclusion:** The study showed that EI and empathy have strong correlation. Since higher levels of both have been reported in only half of the students, therefore, there is a need to work on EI of students to improve in their empathetic behaviour.

Keywords: Emotional Intelligence; Empathy; Medical Students; Dental Students

Citation: Irfan M, Saleem U, Sethi MR, Abdullah AS. Do we need to care: emotional intelligence and empathy of medical and dental students. J Ayub Med Coll Abbottabad 2019;31(1):76–81.

INTRODUCTION

With the growing complexity, multidisciplinary approach and narrow margin of safety, emotional intelligence (EI) has become one of the key competencies of modern practice of medicine.¹ EI is a type of social intelligence that involves monitoring, discriminating between and using emotions to guide thinking and actions. EI is related to interpersonal and communication skills, and is important in the assessment and training of medical undergraduates.² It is “the set of abilities”, that enable a person to generate, recognize, express, understand, and evaluate their own, and others' emotional and social contexts in order to guide thinking and action that successfully cope with environmental demands and pressures.³ Enabling the graduates to develop empathy is the raison d'être of all medical and dental education. It plays a crucial role in the physician-patient therapeutic relationship and improves patients' satisfaction and their compliance with treatment.⁴ Contrary to these fundamental facts there is evidence that empathy of the students, declines during medical education.⁵ Most of the studies related to EI and empathy in medical students have been conducted in the developed world and have shown a decline with the increase in duration of medical/dental schooling. Pakistan is gifted with cultural diversity and a variety of normative societal perspectives. This however can complicate the development of strong

patient-doctor relationship and any attempt at training doctors to improve this relationship needs to be cognizant of this fact. This study was conducted to develop an insight into the existing level of EI and empathy and their various domains in our medical and dental students. It is expected to inform curriculum developers, medical and dental educationists and health care policy makers to develop educational interventions that are conducive to the development of emotional intelligence and empathy in our medical and dental students.

MATERIAL AND METHODS

This correlational study was conducted in all public and private sector medical and dental institutions of Peshawar, Pakistan. These include Khyber Medical College, Khyber Girls Medical College, Peshawar Medical College, Rahman Medical College, Kabir Medical College, Pak International Medical College, Khyber College of Dentistry, Peshawar Dental College and Sardar Begum Dental College. The duration of the study was from February 2015 to June 2017. Purposive sampling technique was used and all the students consenting to participate were included. The Institutional Review Board of Prime Foundation, Peshawar, approved the study. Each participating institute was approached for permission, before starting data collection. Informed consent was taken from all the participants with written explanation of

the purpose of the study. The demographic data was collected in addition to scales to measure emotional intelligence and empathy. The Schutte Emotional Intelligence Scale (SEiS) used in this study was developed by Schutte. It is a 33-item based Likert type scale with three subscales or categories, i.e., (a) the appraisal and expression of emotion assessed by 13 items; (b) the regulation of emotion assessed by 10 items; and (c) the utilization of emotion assessed by 10 items. Participants are requested to read each statement and decide whether they 'strongly disagree', 'disagree', are 'undecided', 'agree', or 'strongly agree' with the statement.⁶ The Davis' Interpersonal Reactivity Index (IRI) has been used to assess the level of empathy of medical students. Respondents have to indicate their level of (dis) agreement with 28 statements on a five-point Likert scale. There are four (seven-item) dimensions (Subscales) of empathy: (1) Perspective Taking is the tendency to embrace another's point of view; (2) Empathic Concern is the regard for another's feelings; (3) Personal Distress is the response to another's difficult interpersonal situations; and (4) Fantasy is the use of imagination to experience the feelings and actions of characters in creative works.⁷

The data was analyzed by using SPSS v.20. Analysis of the basic variables was carried out using descriptive statistics. The scores of SEiS and IRI were compared between the medical and dental year's students as well as between gender and institution by using the t-test. Correlation was calculated between EI using SEiS and Empathy using IRI by applying Spearman Correlation. The results of test of significance were considered significant at $p < 0.05$ level.

RESULTS

A total of 2356 students were asked to participate in the study. The response rate was 92% (n=2170). The mean age of the sample was 21.02±1.62 years with age range of 19–24 years. Majority of the students (n= 1505, 69.4%) were females, were from private sector medical colleges (n=1408, 64.9%) and were studying in clinical years (n=1171, 54%). The Cronbach Alpha Reliability was 0.87 for the SEiS and 0.79 for the IRI. High level of EI (118.60±15.78) was reported in 1191 (54.9%) students while higher empathy (63.24±14.24) was reported in 1115 (51.4%) students. Further details are given in table-1.

Table-1: Basic details of the study (n=2170)

Variables		n (%)*	
Gender		Male	665 (30.6)
		Female	1505 (69.4)
Institutes		Private	1408 (64.9)
		Public	762 (35.1)
Specialty		MBBS	1689 (77.8)
		BDS	481 (22.2)
Year of schooling in Medical School/ College	Pre-Clinical	1 st Year	441 (26.1)
		2 nd Year	313 (18.5)
	Clinical	3 rd Year	246 (14.6)
		4 th Year	323 (19.1)
		5 th Year	366 (21.7)
Year of schooling in Dental School/ College	Pre-Clinical	1 st Year	123 (25.6)
		2 nd Year	122 (25.4)
	Clinical	3 rd Year	112 (23.3)
		4 th Year	124 (25.8)
SEiS (Emotional Intelligence)		Mean= 118.60±15.78 Low = 979 (45.1) High = 1191 (54.9)	
Appraisal of Emotions Subscale		Mean= 46.52±7.07 Low = 838 (38.6) High = 1332 (61.4)	
Regulation of Emotions Subscale		Mean= 37.53±6.02 Low = 809 (37.3) High = 1361 (62.7)	
Utilization of Emotions Subscale		Mean= 34.55±5.49 Low = 849 (39.1) High = 1321 (60.9)	
IRI (Empathy)		Mean= 63.24±14.24 Low = 1055 (48.6) High = 1115 (51.4)	
Perspective Taking Subscale		Mean= 17.25±4.88 Low = 945 (43.5) High = 1225 (56.5)	
Fantasy Subscale		Mean= 15.26±5.09 Low = 956 (44.1) High = 1214 (55.9)	
Empathic Concern Subscale		Mean= 15.1±4.27 Low = 983 (45.3) High = 1187 (54.7)	
Personal Distress Subscale		Mean= 15.64±4.65 Low = 1056 (48.7) High = 1114 (51.3)	

Our results showed that female medical students had significantly higher empathic behaviour and emotional intelligence than male students ($p<0.05$). This significant difference was also observed in all subscales of SEiS and IRI. On the other hand, there was no significant difference between male and female dental students on SEiS and IRI and their subscales. Medical Students of private sector institution showed significantly higher levels of Empathy (specifically in the subscales of personal distress and empathetic

concern) than students of public sector ($p<0.05$), whereas Dental students of private sector medical colleges showed higher level of Emotional intelligence than students of public sector ($p<0.05$). Dental students of preclinical years have higher scores on SEiS and IRI (Emotional intelligence and Empathy) than students of clinical years ($p=.000$ and $p=.036$, respectively) while no significant difference was observed in medical students of preclinical and clinical years. Further details are given in table-2.

Table-2: Mean difference and t-value on Gender differences, Institutes and years of education among medical and dental students with SEiS (Emotional intelligence), IRI (Empathy) and their subscales (n=2170)

Variables	MEDICAL								
	Gender		t - value (sig)	Institutes		t - value (sig)	Years		t-value (sig)
	Male n= 592 M (SD)	Female n=1097 M (SD)		Private n=1058 M (SD)	Public n=631 M (SD)		Pre-clinical n=754 M (SD)	Clinical n=935 M (SD)	
SEiS (Emotional Intelligence)	116.8 (15.9)	119.6 (16.3)	-3.44** .001	119.0 (17.90)	118.0 (12.88)	1.23 .218	119.1 (14.90)	118.2 (17.20)	1.07 .281
Appraisal of Emotions Subscale	45.81 (7.14)	46.93 (7.18)	-3.46** .002	46.69 (7.80)	46.28 (5.99)	1.13 .258	46.65 (6.69)	46.44 (7.56)	.586 .561
Regulation of Emotions Subscale	36.83 (6.02)	37.86 (6.20)	-3.27** .001	37.47 (6.53)	37.55 (5.49)	-.249 .803	37.75 (5.70)	37.29 (6.50)	1.50 .132
Utilization of Emotions Subscale	34.15 (5.39)	34.85 (5.81)	-2.44** .015	34.86 (6.30)	34.18 (4.41)	2.36** .018	34.71 (5.44)	34.52 (5.86)	.712 .476
IRI (Empathy)	60.81 (14.46)	64.52 (15.20)	-4.87** .000	63.98 (16.42)	61.95 (12.32)	2.68** .007	63.06 (14.74)	63.35 (15.29)	-.390 .696
Perspective Taking Subscale	16.53 (4.85)	17.56 (4.83)	-4.18** .000	17.22 (5.07)	17.15 (4.72)	.294 .769	17.22 (4.88)	17.18 (4.85)	.184 .854
Fantasy Subscale	14.85 (4.77)	15.49 (5.20)	-2.47** .014	15.40 (5.25)	15.06 (4.72)	1.32 .185	15.30 (5.05)	15.24 (5.07)	.235 .814
Empathic Concern Subscale	14.69 (4.28)	15.34 (4.37)	-2.95** .003	15.42 (4.60)	14.61 (3.82)	3.68** .000	15.06 (4.29)	15.16 (4.39)	-.473 .636
Personal Distress Subscale	14.73 (4.47)	16.13 (4.75)	-5.86** .000	15.94 (4.60)	15.13 (4.72)	3.44** .001	15.48 (4.67)	15.77 (4.72)	-1.25 .209
Variables	DENTAL								
	Gender		t - value (sig)	Institutes		t - value (sig)	Years		t-value (sig)
	Male n=73 M (SD)	Female n=408 M (SD)		Private n=350 M (SD)	Public n=131 M (SD)		Pre-Clinical n=245 M (SD)	Clinical n=236 M (SD)	
SEiS (Emotional Intelligence)	115.4 (15.22)	118.9 (13.94)	-1.94 .052	119.69 (12.13)	115.17 (18.23)	3.14** .002	120.7 (12.04)	116.1 (15.78)	3.66** .000
Appraisal of Emotions Subscale	45.16 (6.55)	46.69 (6.64)	-1.18 .070	46.87 (5.89)	45.38 (8.27)	2.18** .029	47.33 (5.82)	45.56 (7.31)	2.92** .004
Regulation of Emotions Subscale	36.81 (5.73)	37.78 (5.45)	-1.39 .164	38.13 (4.78)	36.30 (6.92)	3.29** .001	38.49 (5.20)	36.75 (5.67)	3.51** .000
Utilization of Emotions Subscale	33.52 (5.25)	34.52 (4.71)	-1.63 .103	34.69 (4.17)	33.49 (6.12)	2.46** .014	34.94 (4.35)	33.77 (5.17)	2.70** .007
IRI (Empathy)	62.18 (13.49)	63.50 (13.52)	-.786 .443	64.10 (13.55)	61.15 (13.21)	2.14** .032	64.56 (11.92)	61.98 (14.89)	2.10** .036
Perspective Taking Subscale	16.18 (4.16)	17.56 (5.07)	-1.45 .146	17.63 (4.94)	16.86 (4.96)	1.51 .131	18.10 (4.52)	16.72 (5.28)	3.08** .002
Fantasy Subscale	15.11 (5.01)	15.24 (5.26)	-.196 .844	15.47 (5.27)	14.55 (5.03)	1.72 .085	15.34 (4.91)	15.09 (5.53)	.523 .601
Empathic Concern Subscale	15.52 (4.17)	14.94 (3.99)	1.13 .257	15.19 (4.20)	14.61 (3.47)	1.39 .163	15.27 (14.78)	14.78 (4.39)	1.33 .182
Personal Distress Subscale	14.90 (4.60)	15.76 (4.44)	-1.50 .134	15.82 (4.43)	15.12 (4.55)	1.51 .129	15.85 (4.46)	15.39 (4.47)	1.12 .261

Correlational analysis between SEiS (Emotional Intelligence) and IRI (Empathy) and their subscales show strong correlation, not only in the overall data

but also in the separate data among medical and dental students, respectively (Table-3).

Table-3: Spearman correlation between SEiS (Emotional intelligence), IRI (Empathy) and their subscales in medical and dental students (n=2170)

Measures	Students	I ρ (p-value)	II ρ (p-value)	III ρ (p-value)	IV ρ (p-value)	V ρ (p-value)	VI ρ (p-value)	VII ρ (p-value)	VIII ρ (p-value)	IX ρ (p-value)
SEiS (Emotional Intelligence)	Overall	1								
	MBBS	1								
	BDS	1								
Appraisal of Emotions Subscale	Overall	.839** (.000)	1							
	MBBS	.841** (.000)	1							
	BDS	.831** (.000)	1							
Regulation of Emotions Subscale	Overall	.845** (.000)	.590** (.000)	1						
	MBBS	.850** (.000)	.6** (.000)	1						
	BDS	.823** (.000)	.545** (.000)	1						
Utilization of Emotions Subscale	Overall	.742** (.000)	.441** (.000)	.513** (.000)	1					
	MBBS	.751** (.000)	.452** (.000)	.526** (.000)	1					
	BDS	.712** (.000)	.397** (.000)	.465** (.000)	1					
IRI (Empathy)	Overall	.370** (.000)	.305** (.000)	.286** (.000)	.373** (.000)	1				
	MBBS	.359** (.000)	.290** (.000)	.294** (.000)	.364** (.000)	1				
	BDS	.397** (.000)	.349** (.000)	.242** (.000)	.398** (.000)	1				
Perspective Taking Subscale	Overall	.417** (.000)	.359** (.000)	.364** (.000)	.335** (.000)	.736** (.000)	1			
	MBBS	.425** (.000)	.367** (.000)	.378** (.000)	.340** (.000)	.746** (.000)	1			
	BDS	.380** (.000)	.323** (.000)	.304** (.000)	.311** (.000)	.684** (.000)	1			
Fantasy Subscale	Overall	.292** (.000)	.238** (.000)	.219** (.000)	.317** (.000)	.776** (.000)	.418** (.000)	1		
	MBBS	.284** (.000)	.223** (.000)	.230** (.000)	.310** (.000)	.785** (.000)	.437** (.000)	1		
	BDS	.318** (.000)	.288** (.000)	.174** (.000)	.339** (.000)	.738** (.000)	.342** (.000)	1		
Empathic Concern Subscale	Overall	.226** (.000)	.194** (.000)	.178** (.000)	.241** (.000)	.693** (.000)	.406** (.000)	.432** (.000)	1	
	MBBS	.228** (.000)	.197** (.000)	.186** (.000)	.246** (.000)	.722** (.000)	.448** (.000)	.472** (.000)	1	
	BDS	.215** (.000)	.179** (.000)	.147** (.001)	.219** (.000)	.583** (.000)	.247** (.000)	.290** (.000)	1	
Personal Distress Subscale	Overall	.216** (.000)	.173** (.000)	.155** (.000)	.260** (.000)	.731** (.000)	.401** (.000)	.453** (.000)	.390* * (.000)	1
	MBBS	.209** (.000)	.160** (.000)	.161** (.000)	.261** (.000)	.743** (.000)	.416** (.000)	.478** (.000)	.430* * (.000)	1
	BDS	.234** (.000)	.209** (.000)	.127** (.005)	.256** (.000)	.682** (.000)	.332** (.000)	.358** (.000)	.240* * (.000)	1

DISCUSSION

This study is an attempt to draw a relationship between Emotional Intelligence and Empathy of undergraduate medical and dental students of public

and private sector institutes of Peshawar, Pakistan. The reliability of Schutte Emotional Intelligence Scale in our study is in line with the reliability reported by Schutte et al who reported it to be 0.90.⁶

Regarding IRI, the reliability of our study was higher than reported by Davis in 1980.⁷

In our study, the high level of Emotional Intelligence was found in 54.9% of the students, which was reported to be only 34% and 26% respectively in medical students of India, which is an encouraging finding.^{8,9} However, efforts must be made to raise the levels, as almost half of the students are not in the high levels. A significant difference was found in emotional intelligence of students of medical and dental students of public and private sector institutes in our study. However, there is a dearth of literature on such a comparison. In preclinical and clinical years of medical students, no significant difference was found in our study and it is supported by a study conducted in Lahore, which also showed no significant difference between students of pre-clinical and clinical years of medical college.¹⁰

The mean empathy score in our study was much lower to other studies conducted across the globe with scores ranging from 82.7 to 117.¹¹⁻¹⁴ The differences in the scores may be attributed to differences in the curriculum, teaching/ learning methods and styles of the students enrolled in these studies.

Our research showed that dental students of private sector institution showed significantly higher levels of empathy on IRI as compared to students of public sector institutes. A study conducted in Malaysia is in line with our research findings that there was higher mean empathy score in students of Chinese origin studying in Private Sector University and students of Indian origin studying in public sector university.¹² Two studies reported that empathy decreases as the level of medical education increases.^{5,15} Another study reported that empathy scores did not change significantly during the pre-clinical years of medical school but significantly decline at the start of the clinical year and persist until graduation.¹⁶ There have been some studies showing that increase in empathy as student's progress through medical years.^{13,15}

A study supported our results showing that pre-clinical dental students of first year had significantly higher empathy scores than students in any subsequent year.¹⁴ One study showed that there was no difference in level of empathy between pre-clinical and clinical year students while another study showed contrasting views of adequate empathy levels in both pre-clinical and clinical dental students.^{11,17}

Our study found that females have significantly higher levels of emotional intelligence using SEiS and empathy using IRI of medical students. Different studies conducted in students

support our findings.^{13,18-20} Few studies, however, were in contrast to our findings and reported higher empathy and emotional intelligence in males than females.^{12,21} Collectively, some studies report no gender difference regarding empathy and emotional intelligence.^{22,23}

The finding of our study showing insignificant gender difference in emotional intelligence and empathy of dental students is supported by a study from India.²⁴ Some of the studies are contrary to our findings and showed females dental students to have higher level of emotional intelligence & empathy.^{9,14} However, one study from Malaysia, reported higher empathy and emotional intelligence in male dental students.¹² Our study reporting significantly higher empathy and emotional intelligence in dental students of pre-clinical years as compared to clinical years was supported by a study from USA.¹⁴ Our study showed significant correlation between Emotional Intelligence and Empathy ($r = .370, p = .000$), which is in accordance with other studies that have shown similar findings of positive correlation between SEiS (Emotional Intelligence) and IRI (Empathy) and their subscales.²²⁻²⁴

The major limitation of the study was the cross-sectional nature of the study. A cohort study should be conducted in future, in order to check the effect of medical education on empathy and emotional intelligence.

CONCLUSION

The results of our study suggest a strong correlation between Emotional Intelligence and empathy. Since higher level of emotional intelligence and empathy have been reported in only half of the students, therefore, there is a need to work on Emotional Intelligence of students to improve in their empathetic behaviour.

This can be either done in the form of inclusion of this important aspect in the undergraduate medical curriculum or through add-on professional development workshops. Further research should be conducted in this area to increase our understanding regarding the role of Emotional Intelligence on the performance of medical students.

ACKNOWLEDGEMENT

We are grateful to all the students and staff of Medical and Dental Colleges of Peshawar that participated in this study. We appreciate Dr. Saeeda Bibi, Dr. Ibrahim Khan and Dr. Nazima Saleem for their help in data collection.

AUTHORS' CONTRIBUTION

MI: Conceived the idea, planned the study and wrote the manuscript. US & MRS: Helped in the development of synopsis, data collection, analysis and final production of results. ASA: Helped in the write-up of the study and critically reviewed the manuscript. All the authors intellectually contributed significantly to the completion of the study.

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Submitted: 19 May, 2018

Revised: --

Accepted: 28 October, 2018

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