ORIGINAL ARTICLE

EMPATHY AMONG MEDICAL STUDENTS: A CROSS-SECTIONAL SURVEY

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Background: Empathy is regarded as one of the leading elements of good physician-patient relationships, having a strong association with improved patient outcomes. It is an aspect of personality, which is considered to be an essential component in the development of interpersonal understanding and in assisting proficiency in communication. Developing empathy among medical students who are going to become tomorrow's physicians is an important part of medical education. The objective of this study was to measure the mean empathy score of medical students at a private medical college and identify associated factors. **Methods:** This cross-sectional study was conducted from January to June 2018 among 569 medical students at a private medical college in Lahore. Toronto empathy questionnaire (TEQ) was used to determine empathy levels among students. Data was analysed in IBM SPSS-20. Mean TEQ scores were calculated. Independent sample t-test and one-way ANOVA were used to determine association between mean Toronto empathy score and socio-demographic variables, significant at a *p*-value of $\leq$0.05. **Results:** The age of 569 respondents ranged from 17 to 27 years with a mean of 20.82±1.757. There were 317 (55.71%) females; and 312 (54.8%) were residing at home with parents. The overall mean TEQ score was calculated to be 42.57±7.513. The Cronbach's alpha was 0.710. There was a significant association between empathy levels and year of study of the respondents (p<0.001), gender (p<0.001) and students' permanent area of residence (p=0.018). **Conclusion:** Overall mean TEQ score was found to be 42.57±7.513. Statistically significant difference was found between gender, place of residence, year of study and mean empathy scores.

Keywords: Toronto Empathy Questionnaire; Medical students; Empathy

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INTRODUCTION

Empathy is an important ingredient of professionalism in medicine having a strong relationship with improved patient outcomes.[1] Even the Association of American Medical Colleges have laid emphasis on empathy in patient-doctor relationship.[2] Empathy is generally understood as the capability to accurately perceive and understand another individual's state and emotions. Empathy is necessary to create interpersonal relations and has been proven to promote prosocial behaviour by responding adaptively to others' reactions. Preston et al divided the frame of empathy into cognitive and emotional components. Cognitive empathy refers to the capability of the subject to understand the state of the object whereas emotional empathy refers to the subject's response to the state of object. In sympathy the subject feels 'sorry' for the other and is more focused on the object's situation rather than state. Empathy results in subject's state rooting from its perception of the object's state. It varies in subjects of different ages and species.[3] After going through extensive literature on definitions and domains of empathy; a study in 2012 concluded that empathy is what leads to beneficial outcomes for patients which is mediated through physicians' comprehension of patients' complaints.[4]

Empathy is regarded as one of the leading elements of good physician-patient relationships.[5] Two separate studies conducted by Hickson et al showed that problems with physician-patient communication were the most commonly offered complaints in patients who sued their physicians.[6,7] Neumann *et al* found out that physician's empathy had a preventive effect on depression in cancer patients and stated that empathy, as an outcome-relevant professional competence needs to be assessed and developed more intensively in medical students and physicians.[8] Flickinger et al showed a statistically significant association between empathy scores of physicians and compliance to treatment by patients. Empathetic physicians had greater probability of having compliant patients.[9] Two separate studies done on control[10] and outcomes[11] in diabetic patients showed that physicians with higher empathy levels led to favourable outcomes among patients. These studies underscore the importance of having empathetic health-care workers as the building block of a country's health care system. Thus, any endeavour undertaken to ascertain

individuals who require training to raise their empathy levels would be of benefit to patients.[12]

Students join the medical profession with a desire to serve humanity, cure disease and bring about improvement in patients' quality of life. Altruism is non selfish concern for others wellbeing and is a characteristic suited to medical practice. Altruism being a major factor promoting communication skills between medical students and patients, has experienced a decline over time.[13] An important index of altruism among medical professionals is a measure of empathy with patients. Empathy is considered a professional and essential feature for clinicians.[14] Hence, evaluation of empathy in medical students is important as well as education of it among the students. The development of empathy among medical students is the basis of higher patient satisfaction and more compliance from the patient.[15] It is a step towards patient centered care rather than a doctor centered care.

Medical education in Pakistan has a focus on the cognitive domain, with little attention to humanistic skills. The study conducted by Imran et al showed that developing emotional intelligence and empathy among medical students was not achieved by the current medical education curriculum. These skills are required to develop into a competent physician.[15] Developing empathy among medical students who are going to become tomorrow's physicians is an important part of medical education.[16] Hence, empathy enhancing educational interventions should be incorporated in the undergraduate curriculum.[17] Empathy among medical students is essential for effective doctor-patient relationship. The current study was undertaken to measure the mean empathy score of medical students at a private medical college and identify associated factors. The determination of empathy levels among medical students will provide a base on which further studies can be planned. The results of the study will also help the college to institute meaningful interventions. This is the first such study to be conducted amongst this population.

MATERIAL AND METHOD

This cross-sectional study was conducted at a private medical college in Lahore (Lahore Medical & Dental College) from January to April 2018. All undergraduate medical students at the college comprised the study population. The students of first, second, third, fourth and final year MBBS who were present on the day of data collection were invited to participate in the study. Faculty members of respective MBBS years were contacted to provide 20-25min from their lectures for data collection. Data was collected after obtaining informed voluntary consent from 569 respondents. A structured questionnaire was used to collect data, which comprised of two sections. One section pertained to the socio-demographics such as age, gender, year of study, area of residence and parental education. The second section included the Toronto Empathy Questionnaire (TEQ).

TEQ is a brief, reliable and valid tool to measure empathy.[18] We obtained written permission from the original authors of TEQ before employing this tool for data collection. Toronto Empathy Questionnaire is composed of 16 questions, which are scored on a five-point Likert Scale ranging from 0 to 4, where 0= never, 1= rarely, 2= sometimes, 3= often and 4=always. Eight items of the TEQ are reverse coded, which include item 2,4,7,10,11,12,14,15. The individual responses of the 16 items are added to get a total empathy score that may range from 0 to 64. A higher mean empathy score indicates a higher level of empathy.

Data was entered, cleaned and analysed using SPSS 21.00. Categorical variables are described using proportions and percentages, whereas continuous variables such as age and Toronto empathy score are described using mean and standard deviation. Age was categorized into a multichotomous variable for analysis. Independent sample t-test and one-way ANOVA were used to determine association between mean Toronto empathy score and socio-demographic variables, significant at a *p*-value of $\leq$0.05. ANOVA with post-hoc Tukey's test was also used.

RESULTS

The study respondents comprised of 569 MBBS students. Their age ranged from 17 to 27 years with a mean of 20.82±1.757. Majority were females 317 (55.71%), residing at home with parents 312 (54.8%) and 437 (76.8%) had taken F.Sc. (Intermediate) examination before entry to the medical college. (Table 1) The overall mean TEQ score was calculated to be 42.57±7.513, with a Cronbach's alpha of 0.710.

We assessed the association of various factors with empathy levels among these students. There was a significant association between empathy levels and year of study of the respondents (p<0.001). Post hoc analysis yielded a significant difference between mean empathy scores in first year and third year students (p=0.001), fourth year and second year students (p=0.001), fourth year and third year students (p<0.001), and fourth year and final year students (p<0.046). Gender was also found to be significantly associated with empathy (p<0.001) with females' mean TEQ scores (41.33±6.944) being higher than males (41.33±6.944). Students' permanent area of residence and its association with empathy also yielded significant results (p=0.018). (Table-2)

Table-1: Socio-demographic characteristics of 569 MBBS students at a private medical college, Lahore

Variables		N (%)
Year of study	First	124 (21.8)
	Second	140 (24.6)
	Third	98 (17.2)
	Fourth	96 (16.9)
	Fifth	111 (19.5)
Gender	Male	252 (44.29)
	Female	317 (55.71)
Higher Secondary Education	Fsc/ Intermediate	437 (76.8)
	A levels	124 (21.8)
	Others	8 (1.4)
Father's Education	Primary	7 (1.2)
	Matriculation	16 (2.8)
	Intermediate	36 (6.3)
	Graduate	187 (32.9)
	Post graduate	311 (54.7)
	Other	12 (2.1)
Mother's Education	Illiterate	4 (0.7)
	Primary	12 (2.1)
	Matriculation	34 (6.0)
	Intermediate	95 (16.7)
	Graduate	242 (42.5)
	Post graduate	176 (30.9)
	Other	6 (1.1)
Father's Occupation	Doctor	138 (24.3)
	Engineer	44 (7.7)
	Teacher	10 (1.8)
	Businessman	190 (33.4)
	Government employee	37 (6.5)
	Private job	19 (3.3)
	Other	131 (23.0)
Mother's Occupation	Doctor	72 (12.7)
	Teacher	54 (9.5)
	Housewife	393 (69.1)
	Other	50 (8.8)
Permanent Residence	Urban	508 (89.3)
	Rural	61 (10.7)
Current Residence	College hostel	193 (33.9)
	At home with parents	312 (54.8)
	At home with relatives	33 (5.8)
	Other hostel	9 (1.6)
	At friend's house	9 (1.6)
	Other	13 (2.3)

Table-2: Association of mean Toronto empathy score and socio-demographic factors

Variable		Mean±SD	*p*-value
Year of study-MBBS	First year	43.69±6.884	<0.001*
	Second year	41.59±7.546	
	Third year	39.78±7.639	
	Fourth year	45.41±7.405	
	Final year	42.59±7.145	
Gender	Male	41.33±6.944	<0.001*
	Female	43.56±7.806	
Permanent Residence	Urban	42.81±7.47	0.018*
	Rural	40.40±7.51	
Age in years	< 19	43.01±7.08	0.655
	20-22	42.33±7.59	
	23 and above	42.68±7.87	

*One way ANOVA

DISCUSSION

The overall mean empathy score was found to be 42.57 with a Cronbach's alpha within the acceptable range.[19] There was a statistically significant difference in the empathy levels of students in different years of medical school. A decrease in empathy score was seen from first year to third year with fourth year students displaying highest level of empathy, which is followed by a decline amongst final year students. Other researchers have reported similar results. Youssef *et al* found year of study significantly associated with mean Toronto empathy score among 662 medical students from all five years at University of West Indies. They noted a decrease in empathy level from first to third year, with a spike in fourth year and a subsequent decline seen in final year students.[20] A study conducted among medical students in Kuwait also saw highest empathy score among fourth year medical students with a decline in subsequent years.[21] The pattern of empathy seen in our study, with a peak in empathy levels among fourth year medical students may be attributed to several reasons. Firstly, subjects like behavioural sciences, which is taught in third year MBBS at our institute expose students to topics such as ethics, doctor-patient communication etc. that probably explains the high empathy scores. Also, with the passing year of medical school from first to fourth year, there is increased exposure to patients. Students are required to develop skills of history taking and examination, which builds students' professional attitude and approach to gain patient cooperation, that may enhance empathy. Additionally, the subject of community medicine taught in fourth year re-enforces these topics explaining the high empathy levels seen amongst this group of students. The subsequent drop may be attributed to exhaustion, burnout or adoption of a problem-based approach as opposed to a humanistic approach during clinical years.[21] Hosseini also demonstrated variation in empathy scores among different years of education at Shiraz Medical School, Iran. The first years were found to have maximum while seventh year medical students had lowest empathy scores.[22] A study conducted in Faisalabad Pakistan used TEQ to compare empathy scores of medical students taught using discipline based versus integrated curricula. The students enrolled in integrated modular based system had mean empathy levels of 44.2 versus 39.7 for discipline-based curriculum.[23] Haque et al have reported divergent results. They assessed empathy levels among 224 medical students from all five years at the National Defence University of Malaysia using TEQ and found no association between empathy levels and year of study.[24] The Serbian study also

employed TEQ to assess empathy levels and found no difference in empathy levels among freshman and fifth year medical students.[25] Their results may be explained by the small sample size used, i.e., 224 and 363 in the Malaysian and Serbian studies respectively.

In our study it was also found that females are more empathetic than males, which is consistent with international studies. Haque *et al* also identified females to be more empathetic as compared to male students.[24] Bangash *et al* showed females to have higher levels of empathy as compared to males.[26] Many reasons have been cited for these findings, one being that women as mothers looking after their children develop into affectionate, humane and tender-hearted personalities as compared to men. This caring nature benefits patient outcome. Women are also more cognizable of emotions leading to improved doctor-patient interaction.[27]

Our study found no difference in age of students and empathy levels. Similar results were found by Bangash et al at Ziauddin University Medical College, Karachi.[26] However, the Iranian study reported a decrease in empathy with increasing age of medical students.[22] We found a significant association of permanent residence and empathy levels, with students from urban areas being more empathetic. Although our literature review didn't identify any study looking at the above association, we did find report of students belonging to families with lower income being less empathetic.[21] We may consider low income as a proxy for rural residence.

One limitation of our study is its cross-sectional study design. The differences we see in empathy levels reflect differences between each year of cohort rather than changes over time, which would best be studied utilizing the longitudinal study design. Thus, the difference reported amongst the five years of medical training may be interpreted with caution. Secondly, the results are derived from one private medical college hence can't be generalized to all medical colleges.

CONCLUSION

The mean TEQ score was found to be 42.57±7.513 among medical students at this private medical college. Mean TEQ score was highest among fourth year medical students compared to all other years. Statistically significant difference was found between gender, place of residence, year of study and mean empathy scores. Initiating training course for final year medical students in ethics and behavioural sciences etc. may help in maintaining their empathy levels. In order to estimate a true change in empathy levels of medical students, we recommend undertaking a prospective study in which empathy levels of medical students should be assessed yearly from the time of entry into medical college till their graduation.

AUTHORS' CONTRIBUTION

SR: Conception and design of work, analysis and interpretation of data, write up and approved the final version to be printed, KB: Conception and design of work, analysis and interpretation of data, write up and approved the final version to be printed, WA & MHR & UN & ZJ & SK & SZ: contributed to data collection, write-up and revision and approval of final version, FM: Conception and design of work, revised the work for intellectual content and approval of final version to be published

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