

## Original Research Article

# Empathy levels and its relationship with various independent factors: a web-based cross-sectional study amongst medical students

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## ABSTRACT

**Background:** Empathy is a critical construct in the context of the doctor patient relationship. Very few studies in India have previously assessed clinical empathy explicitly in medical students. The present study aimed to estimate and compare the empathy scores of the medical students with various independent factors and to determine the correlation between empathy scores and age of participants.

**Methods:** A web based cross-sectional study was undertaken using a partly self-designed and partly pre-designed Jefferson scale of physician empathy (JSPE) questionnaire for data collection.

**Results:** The mean empathy score of the students was found to be  $98.79 \pm 12.02$ . Gender, type of schooling and personal rating of the student were found to have a statistically significant association on comparison. A low degree of statistically insignificant negative correlation ( $r = -0.1$ ) between age and empathy scores was found.

**Conclusions:** The mean empathy scores recorded in our study are lower as compared to those obtained by Western studies. Aptitude assessment at the time of Bachelor of medicine and Bachelor of Surgery (MBBS) entry could improve the selection of students to those who possess more attributes necessary in a doctor. Orientation in empathy is also required for MBBS students as it is documented that clinical empathy level is amenable to change by empathy education. Males, government school students and very good and average to poor students need special attention to improve their empathy levels. Longitudinal empathy training could minimize the negativity of age on empathy levels in student.

**Keywords:** Empathy levels, Medical students, Jefferson scale of physician empathy - student version (JSPE-S)

## INTRODUCTION

Empathy in medical context is clinical empathy, i.e., empathy of health care professionals for the patient.<sup>1</sup> Definitions of empathy are manifold. They vary from empathy being the “appropriate understanding of another person” to the ability to understand and mirror patients’ feelings adequately and the intention to help.<sup>2-4</sup>

Mercer and Reynolds defined clinical empathy as the ability to understand the patient’s situation, perspective and feelings (and attached meanings), communicate that understanding and check its accuracy, and act on that

understanding with the patient in a helpful (therapeutic) way.<sup>5</sup>

Clinical empathy is known to increase patients’ sense of satisfaction, thereby facilitating their compliance.<sup>6</sup> Empathetic doctors are therefore found to make better clinical decisions and be more effective at being transformational leaders.<sup>7</sup> Empathy is a more desired character for medical personnel than sympathy. Also, in contrast to sympathy, empathy can be easily improved by education.<sup>8</sup>

Inculcating clinical empathy in medical students has been placed among the learning objectives of medical college

authorities in some countries but this component has not received much attention by the Medical Council of India (MCI) and Indian Medical Colleges.<sup>8</sup> However, the MCI has recently proposed a reform in medical education by including attitude, ethics and communication (AETCOM) skills.<sup>9</sup> Considering empathy to be one of the most essential qualities in a future doctor, we embarked upon this study with the objective to estimate and compare the empathy scores of the medical students with various independent factors and to determine the correlation between empathy scores and age of the participants.

## METHODS

### *Study design*

Web-based cross-sectional study.

### *Study setting*

The study was conducted amongst 3rd year Bachelor of medicine and bachelor of surgery (MBBS) students of Adesh Medical College and Hospital, Shahabad (M), Kurukshetra.

### *Study subjects*

Students of MBBS 2017 batch.

### *Study period*

The data for this study was collected in June to July 2020.

### *Sample size*

146 MBBS students of 2017 batch were included in the study.

### *Sampling technique:*

Convenience sampling technique was used.

### *Data collection tool*

A partly self-designed and partly pre-designed questionnaire was used for data collection. It incorporated self-designed general questions and pre-designed Jefferson Scale of Physician Empathy- Student or S version (JSPE-S) questions. The first self-designed part of the questionnaire elicited information regarding various independent factors perceived as important in determining levels of empathy. The second pre-designed part of the questionnaire sought to find out empathy levels in the medical students and comprised exactly of the JSPE. The responses of the first part of the questionnaire were structured and designed relevantly as per the questions and the responses of the second part (JSPE) were based on a 7-point Likert scale.

The JSPE is a self-administered inventory that contains 20 questions, half of which are negatively phrased, while the other half are positively phrased. The students were to mark 1 of the 7 options provided on a Likert scale in response to each item (1=strongly disagree, 2=disagree, 3=somewhat disagree, 4=neutral, 5=somewhat agree, 6=agree, 7=strongly agree). The scale was reversed (that is, 1=strongly agree to, 7=strongly disagree) for the 10 negatively phrased items. Thus JSPE-S total score ranges from a minimum of 20 to a maximum of 140 with higher values indicating a higher degree of empathy. Reverse-scoring was adopted for negatively phrased items.

Google docs were utilized to administer the questionnaire and collect data electronically. Out of a total of 150 students, 146 participated in our study (response rate=97.3%).

### *Statistical analysis*

Data collected was entered into Microsoft excel worksheet and was analyzed by using Statistical package for social sciences (SPSS) version 21. Mean empathy scores were estimated and compared for the various independent variables. Comparison between empathy scores and gender, the decision to join MBBS, place of residence, type of school and age at which student had decided to be a doctor, was done by using the student t-test, while that for if anybody is a doctor in the family and how the participants would rate themselves as a student was done by using one way ANOVA. A Karl Pearson's correlation coefficient was also calculated for mean empathy scores and the age of the participants. A  $p < 0.05$  ( $< 0.01$ ) was considered to be statistically significant (highly significant).

### *Ethical issues*

The present study was undertaken after approval of Institutional Ethics Committee (IEC) of Adesh Medical College and Hospital, Shahabad.

## RESULTS

The mean empathy score of the students was found to be  $98.79 \pm 12.02$ . The maximum and minimum empathy scores obtained by the students in our study were 122 and 64 respectively.

Table 1 shows that the mean empathy scores of female students was higher than that of males and this difference in empathy levels between the two genders was statistically highly significant ( $p < 0.01$ ). The students who had received education from private/public schools showed a higher mean empathy score as compared to those who received education in Government schools and this difference in empathy levels between the type of schooling of students was statistically highly significant ( $p < 0.01$ ). The students who rated themselves as good had a higher mean empathy score than both very good and average to

poor students and this difference in the empathy levels and personal ratings of the students was found to be statistically highly significant ( $p < 0.01$ ). However, no statistically significant association was found between mean empathy scores and who made the decision to join MBBS, place of residence of students, age at which decision to be a doctor was made and whether there are doctors or not in the family.

**Table 1: Mean empathy scores and its comparison with various independent factors.**

Factors	No. of participant s (n= 146)	Mean±SD	P value
<b>Gender</b>			
Female	82	101.76±11.34	0.001 *
Male	64	94.96±11.86	
<b>The decision to join MBBS</b>			
Others’	18	96±12.77	0.295
Your Own	128	99.18±11.91	
<b>Place of Residence</b>			
Rural	39	98.87±10.86	0.959
Urban	107	98.76±12.46	
<b>Type of School</b>			
Government	10	89.1±8.74	0.008 *
Private/Public	136	99.50±11.94	
<b>At what age you decided to be a doctor</b>			
≤10 years	9	93.11±10.39	0.144
>10 years	137	99.16±12.06	
<b>Who is a doctor in your family</b>			
Mother/ Father	11	100.1±10.64	0.528
Both	31	95.94±12.11	
None	104	99.51±12.15	
<b>How would you rate yourself as a student</b>			
Very good	20	91.65±14.80	0.004 *
Good	77	101.31±10.53	
Average	49	97.73±11.90	
Poor	0	0	

**Table 2: Correlation between Empathy Scores and age of the participants.**

Factors	Mean	SD	N	Karl Pearson's Correlation coefficient (r)	P value
Age	21.30	1.072	146	-0.1	0.228
Empathy scores	98.79	12.02	146		

Table 2 shows that there is a low degree of negative correlation ( $r = -0.1$ ) between age and empathy scores but it is not statistically significant ( $p > 0.05$ ).

## DISCUSSION

The mean empathy score of the students in our study was found to be  $98.79 \pm 12.02$ . The maximum and minimum empathy scores obtained by the students in our study were 122 and 64 respectively. This is quite close to the findings of Biswas et al who, in a similar study on medical students, reported a mean empathy score of  $98.5 \pm 12.5$  with a maximum and minimum score obtained as 129 and 67 respectively.<sup>10</sup> It is also similar to the findings of another study by Chatterjee et al who reported a mean empathy score of  $96.01 \pm 14.56$  with a maximum score of 140 and Shashikumar et al who reported a mean empathy score of  $102.9$ .<sup>11,12</sup> However, our findings were quite low as compared to many Western studies conducted by Santos et al (Mean empathy score=119.7), Quince et al (113.03), Mostafa et al (110.4) and Wen et al (109.6) and much higher than those reported by Tariq et al in their study which was a mere  $4.77 \pm 0.72$ .<sup>13-17</sup>

In our study, the mean empathy score of female students was higher than that of males and this difference in empathy levels between the two genders was statistically highly significant ( $p < 0.01$ ). This is similar to the findings of Biswas et al who in their study found a statistically significant difference ( $p < 0.05$ ) between the higher mean empathy scores of female medical students ( $100.7 \pm 12.9$ ) as compared to male students ( $96.9 \pm 12.0$ ).<sup>10</sup> Papageorgiou et al too reported that there was a tendency for female students to have higher empathy scores compared to male students.<sup>18</sup> This is also in agreement with the findings of Chatterjee et al who in their study reported a highly significant statistical difference ( $p < 0.01$ ) between the higher mean empathy scores of female students ( $102.21 \pm 13.30$ ) as compared to male students ( $94.38 \pm 14.45$ ).<sup>11</sup> Numerous other studies conducted by Santos et al, Raof et al, Quince et al, Youssef et al, Mostafa et al, Bangash et al, Wen et al and Dehning et al have also reported that female medical students had higher empathy scores.<sup>13-16,19-22</sup> This could be due to the fact that women are more adept at understanding the emotional status of a patient compared to men. It has also been reported in many studies that women are more skilled in developing interpersonal relationships with patients.<sup>23,24</sup>

Contrary to our findings, in the study done by Tariq et al, women and men performed the same on the JSPE scores.<sup>17</sup> Benabbas et al, Rahimi-Madiseh et al and Di Lillo et al also reported no significant association between gender and empathy.<sup>25-27</sup>

In our study, the students who had studied in private/public schools had a highly significantly higher mean empathy score than those who had studied in Government schools ( $p < 0.01$ ). This could be due to the fact that public school students probably came from higher socioeconomic status families which could shape them to develop a more humane attitude. It could also be due to probably the better schooling which is generally offered by public schools in

comparison to government schools. No supportive evidence could however be traced for this finding.

In our study, the students who rated themselves as good had a highly significant higher mean empathy score as compared to those who rated themselves as very good or average students to poor students ( $p < 0.01$ ). It is well documented that good knowledge and knowledge in multiple areas enhances empathy levels. So, it is assumed that good students may be reading a lot many things besides what is there in their syllabus and this could lead to their increment in empathy levels. However, too much of studying/ reading could also be counter-productive for empathy development as the people- skills component which is so necessary may be curtailed because of excessive involvement in academic pursuits. We extend forward this explanation for low mean empathy scores in students who rated themselves as very good students. One reason could also be the fewer number of students who rated themselves as very good. As no supportive evidence could be traced for this finding too, it is open for further exploration.

In our study, there was no significant difference in the mean empathy levels of students belonging to rural or urban areas ( $p > 0.05$ ). This is different from the findings of Biswas et al<sup>10</sup> who reported in their study that students belonging to a rural area had significantly higher empathy score and Madera et al who in their study conducted in Columbia among nursing students reported that belongingness to rural areas translated to higher empathy scores in the students.<sup>28</sup>

We also did not find any statistically significant association between mean empathy scores and three more variables i.e. whether the decision to join MBBS was the students' or someone else, age at which decision to become a doctor was made and whether there was a doctor in the family or not. These findings in our study highlight the fact that empathy may not depend on these factors. Nevertheless, as no supportive literature could be traced for these findings, further exploration in this area is suggested.

In our study, we found a low degree of negative correlation ( $r = -0.1$ ) between age and empathy scores although not statistically significant ( $p > 0.05$ ). This implies that as the age progressed the empathy levels declined. This is in consonance with the findings of Biswas et al who too reported that with the advancement of age, empathy level of medical students eroded.<sup>10</sup> It is also in concordance with the study conducted in Iran by Khademalhosseini et al but discordant with the findings of Bangash et al.<sup>21,29</sup>

## CONCLUSION

Empathy is a key concept in the doctor-patient relationship. The mean empathy scores of students in our study is much less than that reported in many Western studies. One reason for it could be a faulty selection

procedure wherein students are being offered MBBS course without judging their aptitude for it. Secondly, there was no provision of any training in empathy as such for the students till now. It is well documented that empathy levels during MBBS can be improved by specifically designed interventions. The recent introduction of AETCOM by MCI for MBBS students can possibly take care of this shortfall in medical training and pave the way for future empathetic doctors. It may be necessary to provide more attention to male MBBS students, those who have studied in government schools as well as very good and average to poor students as they have been found to possess lower empathy scores. To nullify the detrimental impact of increasing age on the levels of empathy, the restoring interventions for the same could be taken up for the students in a longitudinal fashion across the MBBS course.

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