RESEARCH ARTICLE

Comparative empathy in male and female medical students: A cross-sectional, online, and survey-based study

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ABSTRACT

Background: Empathy is a capability of a person to observe a subject and recognize and briefly feels the subject’s emotional state based on visual and aural inputs. Empathy is an important quality for doctors as they are involved in patient care.

Aims and Objectives: We aimed to assess the level of empathy in a sample of students studying MBBS and compare the empathy according to gender.

Materials and Methods: This study was a cross-sectional observational study carried out by an online survey. Medical students of our college were invited to participate in this survey. We collected data from up to 50 males and 50 females for a comparative test. The eight-item form of the empathy quotient-8 was used to assess the level of empathy among students. Scores between male and female students were compared by unpaired t-test.

Result: A total of 50 males and 50 females participated in this study. Their mean age was 20.12 ± 2.14 years. One-sample t-test showed that overall students have more than average level of empathy. The gender-wise comparison showed that there was no difference in empathy between male and female students.

Conclusion: From this study, we can conclude that medical students have more than average level of empathy and there is no gender difference in the level of empathy. However, this was an experience from a single institution. Further studies may be conducted to ascertain the level and comparative level of empathy between males and females with a large sample taken from different Indian states.

KEY WORDS: Empathy; Male; Female; Medical Students; Patient Care

INTRODUCTION

Empathy is a capability of a person to observe a subject and recognize and briefly feels the subject’s emotional state based on visual and aural inputs.[¹] This is an important characteristic of doctors that may help understand the patients’ needs, either in a hospital or in a private clinic. If the doctor can understand how the patients are feeling and perceiving the disease, it would help in planning a strategy for proper management. It has been found that empathic doctors can manage patients better than those who have a lower level of empathy.[²]

Medical students express skepticism about the usefulness and significance of the idea of empathy due to the theoretical ambiguity surrounding it. Many previous studies have even
reported that in medical students during their course of study, empathy is reduced. The emphasis placed on specific information (e.g., a voluminous curriculum) throughout the medical school has a negative impact on medical students’ empathy.[3,4]

Chatterjee et al. ascertained the empathy among Indian medical students and found that the empathy scores decrease when the students are promoted from the first to the third semester of study and it remains on a plateau till the fifth semester. The empathy again increases in the seventh semester of study. However, that score is not beyond what was there in the first semester. Hence, overall the students when entering the medical college and almost leaving the college do not show any change in empathy scores. When they compared the empathy among male and female students, they found a higher empathy among females.[5]

Another study by Biswas et al. found that third-semester students showed a higher empathy than fifth and seventh-semester students. The difference in empathy showed significant statistical difference among the students studying in different semesters. Supporting the study by Chatterjee et al., this study also reported that female students are having higher empathy when compared to male students.[6]

Shilpa et al. conducted a study with Indian medical students about the newly introduced attitude, ethics and communication-based medical education and found that the students have learned the value of empathy in creating positive doctor-patient relationships and its function in efficient patient treatment.[7]

In this context, we aimed to assess the level of empathy in a sample of students studying MBBS (pre-and para-clinical) and compare the empathy according to gender.

MATERIALS AND METHODS

This cross-sectional online survey was conducted in a tertiary care hospital in eastern India. After getting permission from the Institutional Ethics Committee (Reference: IEC/21-22/043), this study was conducted following the Declaration of Helsinki, updated in 2013. All the research participants provided online consent for voluntary participation in the study.

We recruited students from 1st and 2nd-year MBBS students. Hence, we could not analyze the semester-wise difference in the empathy scores. The survey questionnaire was uploaded in Google forms and the links were shared with students with a message for voluntary participation. The survey was anonymous. We did not collect any personal information such as names, roll numbers, and email addresses. This ensured full anonymity and the right to decline participation.

The sampling method may be considered a convenience and snowball-type.

We used an eight-item form of the empathy quotient-8 for assessing the empathy among the students. The advantage of this questionnaire is the less number of items. Hence, students would not lose interest while responding. This short-form questionnaire contains a total of eight statements with response options ranging from “strongly disagree” to “strongly agree.” Some questions require direct coding and some require reverse coding. The forward or direct coding we followed was: Strongly disagree = 1, Disagree = 2, Neither disagree nor agree = 3, Agree = 4, and Strongly agree = 5.[8]

Statistical Analysis

Each statement may have a maximum score of 5. Hence, we have taken the hypothetical value to be 3 for a mean score. This was used to find the level of empathy tested for each statement (indicating domain) by a one-sample t-test.[9] The overall empathy score was tested by a one-sample t-test by taking a hypothetical mean of 24 (eight statements × 3). The score of male and female students was compared by unpaired t-test. All the tests were conducted in computer software – GraphPad Prism 6.01 (GraphPad Software, San Diego, USA). P < 0.05 was considered to be statistically significant.

RESULTS

A total of 50 males and 50 females participated in this study. Their mean age was 20.12 ± 2.14 years. When we have taken a hypothetical mean of 24 and compared the overall score of empathy by a one-sample t-test, it showed that students have more than average levels of empathy [Table 1]. The gender-wise comparison is shown in Table 2. There was no difference in empathy between male and female students in individual domains and overall scores. Figure 1 shows the overall scores of male and female students.

DISCUSSION

With an aim to find the level of empathy among the medical students of pre-and para-clinical subjects, we found that overall students have a more than average score in empathy. However, this is far lower than the highest level of empathy one may achieve. The medical profession is not only for treating patients’ diseases but also for taking a holistic approach for a better outcome. Students from western countries show higher empathy than the eastern region of the world. However, lower empathy score among medical students is a global issue.[10] Medical education is primarily a scientific exploration of the human system. Hence, the primary focus is the human body. This may make undergraduate students insensitive to the concerns of patients.[11] Hence, the level of empathy should be increased among medical students. A well-designed course
findings of the many previous studies that suggested a higher empathy among female students\textsuperscript{[13-16]}. There is evidence to support the idea that men and women have different levels of empathy. Males are stereotyped as being less emotional and more logical, while females are regarded as being more caring and empathic\textsuperscript{[17]}. However, this may change in time and a self-perception of empathy may be different than the actual empathy.\textsuperscript{[18]} Although some studies reported that a semester of study affects empathy, Murthy et al. reported that there is no difference in empathy scores among medical students at a different semester of study. However, female medical students showed higher empathy.\textsuperscript{[19]} In contrast, Dixit et al. reported that 1\textsuperscript{st} year medical students are having poor empathy.\textsuperscript{[20]} This year-wise and the gender-wise difference may be multifactorial. The assessment method, time of the survey, the mental capability of self-assessment of the students, social desirability bias, etc., may be contributing factors.\textsuperscript{[21,22]}

This study has used a fairly new questionnaire to ascertain empathy among medical students. The questionnaire was found to have a Cronbach’s alpha of 0.81 when we analyzed it after the conduction of the study. Hence, this questionnaire can be used by other researchers to assess empathy among Indian medical students. However, our study has some limitations. This comparative study was conducted with limited students from a single institute. The sample was clustered into pre- and para-clinical subjects. The convenience sample is a non-probability sample. Hence, the generalizability of the result may not be appropriate.

**CONCLUSION**

From this single-center study, we can conclude that medical students studying pre-clinical and para-clinical subjects have a more than average level of empathy. If empathy is considered according to gender, we found no gender difference in the level of empathy. However, as this was an experience from a single institution with limited students, further studies may be conducted to ascertain the level and comparative level of empathy between males and females with a large sample taken from different Indian states involving multiple institutions.

**REFERENCES**


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**Table 1:** One-sample \( t \)-test with 3 as hypothetical mean for statements 1–8 and 24 for overall score

<table>
<thead>
<tr>
<th>Statement</th>
<th>95% CI</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(-0.302)–(-0.202)</td>
<td>0.6946</td>
</tr>
<tr>
<td>2</td>
<td>0.5077–0.9323</td>
<td>0.0001*</td>
</tr>
<tr>
<td>3</td>
<td>0.7755–1.1645</td>
<td>0.0001*</td>
</tr>
<tr>
<td>4</td>
<td>0.2936–0.7064</td>
<td>0.0001*</td>
</tr>
<tr>
<td>5</td>
<td>(-0.550)–(-0.050)</td>
<td>0.0192*</td>
</tr>
<tr>
<td>6</td>
<td>(-0.3659)–(-0.1659)</td>
<td>0.4573</td>
</tr>
<tr>
<td>7</td>
<td>(-0.6281)–(-0.1519)</td>
<td>0.0016*</td>
</tr>
<tr>
<td>8</td>
<td>(-0.2722)–(-0.1922)</td>
<td>0.7332</td>
</tr>
<tr>
<td>Overall</td>
<td>0.1611–2.4589</td>
<td>0.0259*</td>
</tr>
</tbody>
</table>

*Statistically significant \( P \) values of one-sample \( t \)-test. CI: Confidence interval

**Table 2:** Comparison of empathy in male and female medical students

<table>
<thead>
<tr>
<th>Statement</th>
<th>Male</th>
<th>Female</th>
<th>( P )-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.02±1.29</td>
<td>2.88±1.27</td>
<td>0.58</td>
</tr>
<tr>
<td>2</td>
<td>3.74±1.05</td>
<td>3.7±1.11</td>
<td>0.85</td>
</tr>
<tr>
<td>3</td>
<td>3.98±0.98</td>
<td>3.96±0.99</td>
<td>0.91</td>
</tr>
<tr>
<td>4</td>
<td>3.6±0.99</td>
<td>3.4±1.09</td>
<td>0.34</td>
</tr>
<tr>
<td>5</td>
<td>2.62±1.26</td>
<td>2.78±1.26</td>
<td>0.53</td>
</tr>
<tr>
<td>6</td>
<td>2.96±1.35</td>
<td>2.84±1.35</td>
<td>0.66</td>
</tr>
<tr>
<td>7</td>
<td>2.66±1.27</td>
<td>2.56±1.15</td>
<td>0.68</td>
</tr>
<tr>
<td>8</td>
<td>3.06±1.33</td>
<td>2.86±0.99</td>
<td>0.39</td>
</tr>
<tr>
<td>Overall</td>
<td>25.64±5.34</td>
<td>24.98±6.26</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*\( P \)-values are of unpaired \( t \)-test

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![Figure 1: Comparison of overall score between male and female medical students](image-url)


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