

## Original Research Article

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# Assessing empathy among undergraduate medical students: a cross sectional analysis using the Jefferson scale in a medical school in Coastal Karnataka

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## ABSTRACT

**Background:** Empathy has been shown to improve the physician's diagnostic skills as well as enhance the quality of communication with the patient. Empathy being an integral component of patient care, this study was designed to measure empathy levels among undergraduate medical students and to identify the factors associated with it in this population.

**Methods:** This cross sectional study was carried out among 437 medical students including interns on the rolls of a medical school in coastal Karnataka. The students were administered a psychometrically validated Jefferson Scale of Empathy–Student Version (JSE-S) questionnaire, to measure various components of empathy. Responses were indicated on a seven point Likert scale and total scores ranged from 20–140, with higher values indicating higher levels of empathy.

**Results:** Mean empathy score among the participants was  $100.5 \pm 14.8$ , with significantly higher score being reported by females than males [101.9 vs. 97.3,  $p=0.002$ ] and by first year students compared to third year students [105.2 vs. 95.3,  $p<0.01$ ]. Empathy scores showed a declining trend as the students progressed through the medical school ( $p=0.002$ ).

**Conclusions:** Although the study showed higher empathy level among female medical students, there appeared a declining score among both genders as the years of study progressed with a marginal increase during the internship phase. This necessitates the need for incorporating caregiving as an integral part of the medical school curriculum by stressing on doctor- patient communication skills, which in turn could aid medical students become compassionate physicians.

**Keywords:** Empathy, Medical students, JSE-S, Patient care

## INTRODUCTION

Empathy in patient care refers to a cognitive attribute that involves an understanding of the patient's concerns. It forms an integral part of the delivery of patient-centred

care, which is necessary to build and maintain lasting relationships with patients and satisfy their need for social affiliation and support. Effective communication with the patient is an art that is learnt over many years of training and practice.<sup>1</sup>

Though literature supporting the positive impact of empathy in healthcare remains meagre, studies do report less favourable clinical outcomes in relation to dwindled compassion of physicians.<sup>2,3</sup> Considering the significance of empathy in a physician's skill set, it is vital to assess and evaluate the level of empathy present in medical students: the physicians of the future. Although medical teaching standards are regulated through a continuous evaluation in every country, assessment of medical student's empathy levels and factors affecting it, is a relatively novel concept yet to be explored.

At present, the vast majority of literature pertaining to empathy among medical students is limited to western industrialized nations. This institution wherein the present study was carried out offers a unique perspective in expanding our understanding of the dynamics of empathy in medical education as it caters to medical students with diverse cultural background from across India, and around the world. The study aimed at determining the level of empathy and its association with factors such as gender and year of study among undergraduate students of a medical college located in India's southern state of Karnataka.

## METHODS

Using a cross sectional design, the study was carried out during the month of February and March in the year 2016 among undergraduate medical students and interns studying in a reputed medical school situated in Udupi district of Karnataka. Prior permission was obtained from the institutional academic authority to carry out the study and the study protocol was approved by the Institutional Ethics Committee. Considering a sample mean empathy score of 115 and population mean empathy score of 117 with a standard deviation of 13 from literature, for a power of 80% at 5% level of significance the minimum required participation (sample size) was 332 and a total of 437 participant responses were considered for analysis.<sup>4</sup>

The study population included first to third year medical students and interns posted in Community Medicine for their rotatory internship. The medical students were approached during their lecture hour after obtaining the permission of the teacher. The interns on the other hand were contacted during clinic postings and requested to participate. All the participants were briefed about the objectives of the study and informed that their participation was voluntary and were also assured of anonymity and confidentiality of the data. A written informed consent was obtained from those students willing to take part in the study. Willing participants were administered the Jefferson Scale of Empathy student version (JSE- S) to assess empathy levels.<sup>5</sup> JSE-S is a self-administered 20 item psychometrically validated instrument consisting of 20 statements, for which the

respondent was expected to indicate their level of agreement on a seven-point Likert scale. Ten of these questions were directly scored (i.e. strongly disagree=1, strongly agree=7) and the remaining negatively keyed questions were reverse scored, in which agreement with the statement represented a low level of empathy. The level of empathy was directly proportional to the score, which ranged from 20 to 240.

Only fully completed questionnaires were included for the final analysis. Data was analysed using the Statistical Package for Social Sciences (SPSS) version 16. Categorical variables were expressed as percentages and results were expressed in terms of mean scores with standard deviations and a  $p<0.05$  was considered statistically significant.

## RESULTS

Of the total 437 participants, 253 (57.8%) were females and 184 (42.1%) were males. The age bracket ranged from 18 to 34 years, majority (93.9%) being in the age group of 18 to 22 years. The mean age of students was  $20.19\pm1.06$  years. The proportion of first, second and third year students who participated in the study were 24.7%, 31.3% and 37.7% respectively, while only 6.2% of the interns could be recruited.

Table 1 illustrates the association of the participants' empathy level with various factors. Mean empathy score among the participants was found to be  $100.5\pm14.8$ , with female students exhibiting a higher score of  $101.9\pm16.5$  in comparison to the male students and this difference was statistically significant. Further, it was perturbing to see a declining trend in the scores with the first year students displaying the highest mean score ( $105.2\pm12.4$ ) and the third years the lowest ( $95.2\pm15.7$ ). Encouragingly there was an upward trend during the internship phase that was quite comparable to the early years. This difference was also found to be statistically significant ( $p<0.001$ ).

The JSE-S empathy scale had forty-seven possible specialties choices listed, from which the participants had to mark their preferences. Student preferences were then broadly classified into "people-oriented" and "technology-oriented" specialties. The "people-oriented" specialties are those that require extensive encounters with patients with attention to psychosocial factors such as primary care, gynaecology/obstetrics, psychiatry, paediatrics, internal medicine and cardiology, while the "technology-oriented" specialties are more focused on procedural and technical skills such as anaesthesiology, general surgery, orthopaedics and radiology. There was however, no significant difference observed in empathy levels between the two groups as is evident from table 1. A small group of undecided participants also displayed a similar score ( $100.26\pm16.1$ ).

**Table 1: Factors associated with empathy level of the participants (N=437).**

Characteristics		Empathy score (mean $\pm$ SD)	95%CI
Age group * (in years)	$\leq 19$	103.3 $\pm$ 13.9	101.02- 105.54
	20	96.7 $\pm$ 14.8	94.08-99.27
	$\geq 21$	99.7 $\pm$ 16.4	97.17-102.26
Gender *	Male	97.3 $\pm$ 16.1	95.17-101.23
	Female	101.9 $\pm$ 16.5	98.65-102.78
Year of study*	First	105.2 $\pm$ 12.4	102.84-107.58
	Second	101.3 $\pm$ 15.1	98.77-103.88
	Third	95.2 $\pm$ 15.7	92.87 -97.71
	Internship	101.6 $\pm$ 16.8	94.95 -108.23
Desired specialty	People oriented	100.51 $\pm$ 14.8	98.09 -102.94
	Technology oriented	99.54 $\pm$ 15.2	97.17-101.91
	Undecided	100.26 $\pm$ 16.1	97.40 -103.13

\*p&lt;0.01.

## DISCUSSION

This study showed a declining empathy through the years in medical school, with female students exhibiting significantly higher empathy than males. The mean empathy score of students in this study was 101.04, which is much lower than that reported by Chen et al (114.3), but similar to those reported by Shashikumar et al (102.91), Murthy et al (103.29), Kulkarni et al (99.25) and Katoaka et al (104.30).<sup>6-10</sup> The empathy scores reported at the entry level of medical school in this study is also lower (105.2) than that reported from the United States by Chen et al (115.5) and Hojat et al (114.5) but quite similar to the report by Shashikumar et al from Pune, India (107.85).<sup>6,7,11</sup> Similar studies from other parts of India by Murthy et al from Vijayawada (102.52) and Kulkarni et al from Nagpur (96.05) showed worse scores.<sup>8,9</sup>

The present study revealed that the empathy levels among female medical undergraduates were significantly higher as compared to their male counterparts. This is in conformity with the findings from various studies across the globe.<sup>10,12-16</sup> Similar observation was also noted among female physicians in a study from Italy.<sup>17</sup> Likewise, several Indian studies have also reported higher empathy level among female medical students.<sup>7-9</sup> This could be a result of the greater empathic disposition among women in comparison to men as has been shown in various studies.<sup>8,18</sup>

Our study findings showed that the students had higher empathy levels at the entry point of medical school which significantly dropped in the later years of medical course. Similar finding was reported by one study from Pune, India and several from the USA.<sup>6,7,11,19</sup> These findings are however, in contrast to some of the other studies from India, Brazil and Europe.<sup>8,9,12,20</sup> This decline in empathy levels as the course progresses could be attributed to an intense theory based education with little or no emphasis on interpersonal aptitudes and the ability to relate to

patients.<sup>21,22</sup> On a positive note, this study showed an improvement in the empathy levels among interns. Although the number of interns enrolled into the study was limited (6.2%), this is of importance as this change in empathy scores probably is an outcome of enhanced patient contact more as a caregiver rather than a learner during the period of internship.

Literature from American universities have reported a higher empathy level among those students, who either opted for people oriented specialties or humanities coursework as their electives during medical school in comparison to those who did not.<sup>6,13,19</sup> Our study however, did not show any difference with regard to preference for a particular speciality. Since most Indian medical schools come under the vigilance of a regulatory body, there is no scope for offering electives, humanities or otherwise, and we were therefore unable to study this effect.

As this study was cross-sectional in nature, we were unable to capture the actual progression of empathy among the medical students. Moreover, results from this study cannot be generalized to medical students across the country as it involved participants from a single private medical school.

## CONCLUSION

This study further affirms a comparatively lower empathy score among students in Indian medical schools. Although female medical students fared significantly better than the males, there was an overall decline in empathy levels as the course progressed. Incorporating caregiving as an integral part of the practical curriculum by stressing on doctor- patient communication skills in the hospital and the community could be one of the ways to enhance empathy among this population. Longitudinal studies could further help us assess factors determining empathy levels. Further studies could also explore why

Asian students have a lower empathy score in comparison to those studying in American medical schools.

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