Humanitarian approach in medicine: a study of clinical empathy among medical students and graduates using Jefferson Scale of Empathy

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Abstract

Empathy is one of the pillars of professionalism in medical field. This study assesses and compares the empathy score by Jefferson Scale of Empathy-Student version (JSE-S) with other institutes within and outside the country. Mean empathy score of 575 participants was 100.75, with females having higher and significant score than males (F:102.1±11.5; M:98.3±12.5; $p<0.001$). Highest empathy score was in first year (102±10.8) which showed up's and down in the range as per year of medical education with maximum dip in second year (99.4±11.5). Specialty choice showed lesser significant difference as per JES-S score. Lower empathy score among present participants compared to international and few nation-wide institutes participants is alarming sign in-terms of patient dealing and care. This raises a striking need to organize workshop and modules to cater this aspect of professional care.

What is Empathy?

Empathy is a complex competence that includes both affective and cognitive components (1). The Society for General Internal Medicine defines empathy as 'the act of correctly acknowledging the emotional state of another without experiencing that state oneself' (2). Showing the ability to step into someone else shoes with ease (3), to consider a situation from someone else's point of view (4). Thereby, gaining a better understanding of their perspective which is highly required in medical science (4).

Sir William Osler, a Canadian physician and the father of modern medicine, stated that "the physician needs a clear head and a kind heart; his work is arduous and complex, requiring the exercise of the very highest faculties of the mind, while constantly appealing to the emotions and finer feelings (5).

Empathy is one of the pillars of medical professionals and is to be humane and responsive to humans. During the last century, the shift of medicine toward science and science-based practices was followed by an empathy-aversion that has influenced decades of medical education into promoting a model of "detached care" (6). In health care professionals, empathy have been defined as an intellective quality that empowers individuals to understand the experience and perspective of the patient and develops the skill of communicating it as well (7-9).

Empathy promotes patient and physician satisfaction contributes to patient enabling and participation and may improve patient outcomes (10-16). Furthermore, empathy improves the quality of data obtained from the patient, improves the physician's diagnostic ability, and decreases the rate of miscommunication and lawsuits (10,17-19).

How Empathy is measured in health professions education?

Hojat et al., (2001) developed, the Jefferson Scale of Empathy (JSE) (7,8) as a measuring instrument having content-specificity and context-relevance to empathy for health professions education and patient care. Although, earlier the instruments for measuring empathy were the Interpersonal Reactivity Index (IRI) (20); the Empathy Scale (21); and the Emotional Empathy Scale (22) which were not specific for the health professionals but the general population (23).

In response to that need, the Jefferson Scale of Empathy (JSE) was developed (7,24). The JSE is a 20-item instrument specifically developed to measure empathy in the context of health professions education and patient care for administration to health professions students and practitioners. Items are answered on a 7-point Likert-type scale (1 = Strongly Disagree, 7 = Strongly Agree). Half of the items are positively worded and directly scored, and the other half are negatively worded (reverse scored). Three versions of the JSE are available which are administered for medical students (S-version), practicing health professionals (HP-Version), and to all health professions students other than medical students. (HPS- Version) (7,24).

Experiential evidence, with health professions students and practitioners, showed that some personal quality measures that are conducive to relationship building were positively correlated with the JSE scores, including emotional intelligence (25-27); cooperativeness (28); desirable professional behavior (29); patient-centered care and orientation toward integrative patient care (30); positive social influence measured by peer nomination (31); and clinical and humanistic excellence measured by peer nomination (32). The JSE scores were significantly associated with an orientation toward teamwork and inter-professional collaboration in a study with allopathic medical students (33), osteopathic medical students (34), nursing students (35), and pharmacy students (36).

Various studies have explored an association between clinical empathy and progressive years of medical training, gender variation other than the choice of specialty, outside Indian continent (24,34,37-44), as well as inside the Indian Continent (45-50).

The present study aimed to assess clinical empathy and the various associated factors in a cohort of medical students across four and a half years of undergraduate and internship programs.

Objectives:

- To assess clinical empathy, using the JSE-S empathy score, for the medical students and the interns.
- To compare and correlate the empathy score for the medical students of different years and the interns.
- To assess the variability in the empathy score as per gender and choice of specialty for the medical students and the interns.

Methodology:

The study was commenced after the approval from the Institutional Ethical Committee, PSMC, Karamsad. A cross-sectional study to assess the empathy of undergraduate medical students and the interns at Pramukhswami Medical College, Karamsad, India, was conducted using the Jefferson Scale of Physician Empathy–Student Version, after acquiring copyright permission from the JSE-score. All the interns and undergraduate medical students were included in the study. The study commenced from October 2019 till February 2020 for 631 undergraduate medical students and the interns who were enrolled for the academic year 2019-20.

The participant's information sheet was explained and given to the undergraduate students of PSMC (First, Second, Third-first, and Final year of medical education) and the interns. The voluntary participants from the undergraduate medical program and internship were enrolled in the study. The undergraduate medical students or interns not willing to participate in the study after reading the participant information sheet were in exclusion criteria. The incompletely filled form was also excluded from the study. Every participant signed a written consent form before filling the questionnaire.

The principal investigator of the study acquired permission from the respective head of the department to allocate specific time to conduct the research study within the institute. Participants took 15 to 20 minutes to complete the JSE-S score sheet. All the records related to the study are kept under lock and key of principal investigator without names /or any personal profile.

The data was analyzed by SPSS ver. 20, using descriptive statistics for mean & SD with Skewness and Kurtosis statistics, Spearman correlation, and Kruskal Wallis test and Mann-Whitney U test.

Data Analysis

A total of 631 undergraduate medical students and interns were approached. 602 participants gave their consent to participate in the study. The hard copy of the JES-S questionnaire was given to the voluntary undergraduate medical students and interns (602) out of whom only 575 forms were accepted for data analysis since few (28) survey questionnaires were partially filled by the participants so were excluded from the study. Thus, the overall response rate was 91.13%.

Table-1: Descriptive Statistics of JES score by different independent Variables

Independent Variables		JES Score		
Variables	Categories N (575)	Range (Min/Max Score)	Median JES Score	Mean±SD
AGE	< than 22 (433)	62 (63/125)	102	100.7±12.025
	22-24 (139)	56 (75/131)	100	100.0±12.3
	25-27 (3)	14 (82/96)	96	91.3±8.1
GENDER	Male (248)	68 (63/131)	99	98.3±12.5
	Female (327)	57 (70/127)	103	102.1±11.5
YEAR OF MBBS	First year (144)	46 (79/125)	103	102.1±10.8
	Second year (84)	46 (76/122)	100	99.4±11.5
	Third-first year (107)	61 (63/124)	102	100.4±13.5
	Final year (100)	55 (70/125)	102	100.1±12.4
	Intern (140)	61 (70/131)	100	99.7±12.3
Specialty Chosen	Medicine specialty (194)	68 (63/131)	101.5	100.5±12.0
	Surgery specialty (270)	60 (67/127)	102	100.5±12.0
	Other (4)	41 (70/111)	96	93.3±17.1
	Undecided (107)	53 (72/125)	102	100.5±12.4
Different Percentiles in JES score for the study population			5^{th}	78.2000
			25^{th}	92.3000
			50^{th}	102.2500
			75^{th}	110.3000

The JES-S empathy scores are decreasing with advancing age and score is more in Female compared to that in Male. JES-S empathy score is lesser during the second year of the medical profession but increases progressively during the subsequent years and the score is maximum during the internship.

Less variability is observed for the JES-S empathy score as per the specialty chosen by the participant except for much lower value in case of choosing another specialty.

The median score is 102.25. 50% of the students lie on either side of this score. Only 5% of the students scored below 78.2 and also 5% of the students scored above 119.35.

By different age groups, the median score for age group 1 (<22 years) is 102.30. 50% of the students lie on either side of this score. Only 5% of the students scored below 78.32 and also 5% of the students scored above 119.31.

The median score for age group 2 (22-24 years) is 102.35. 50% of the students lie on either side of this score. Only 5% of the students scored below 77.35 and also 5% of the students scored above 120.35.

The median score for age group 1 (25-27 years) is 96.25. 50% of the students lie on either side of this score. Only 5% of the students scored below 82.35.

A skewness statistic value shows negative values for all the parameters signifying that there is a leftward shift of the graph. A Kurtosis statistic shows the value <3 i.e., the graph is towards the flattened aspect.

Cronbach's Alpha reliability statistics show the value of more than 0.70 for 20 questions of JES-S empathy score (0.743)

Spearman's rho correlation for 575 participants shows significant high level of positive correlation for age and year of MBBS (0.710; 2-tailed Sig. 0.0001) while a low value of correlation is observed between Age and Gender (0.086; 2-tailed Sig. 0.040) and gender with Mean Empathy score (0.157; 2-tailed Sig. 0.0001)

Table-2: Table showing the association of JES scores with different Independent Variables

Independent Variables		JES- S Mean Rank	Chi-Square	Significance
Variables	Variable Categories (N)			
Age	<22 years (433)	291.70	2.7	0.259
	22-24 years (139)	279.50		
	25-27 years (3)	148.33		
Gender	Male (248)	258.09	14.146	0.000*
	Female (327)	310.69		
MBBS year	1st year (144)	308.51	4.012	0.404
	2nd year (84)	271.02		
	3rd year (107)	293.93		
	4th year (100)	282.89		
	>4th year (140)	276.21		
Specialty Chosen	Medicine & communication (194)	287.32	0.834	0.841
	Surgery & technical (270)	288.85		
	Other (4)	213.25		
	Undecided (107)	289.87		

Kruskal Wallis test results show statistical significance for the JES-S empathy score as per gender (Chi-square 14.146; $p<0.0001$). No statistical significance is observed between the JES-S empathy score and other independent variables like age, year of MBBS, and specialty is chosen; although the variation is observed within the variables for mean ranks. First-year MBBS is having more Mean rank value than other groups. Variability for mean rank is observed as per age groups and specialty is chosen.

Table-3: Mann-Whitney U variability significance for year of medical students and specialty chosen with respect to gender

Independent Variables and Categories	Gender	N	JES-S Mean Rank	Sum of Ranks	JES-S score by Mann-Whitney U	Z (2 tailed Sig)
Year of Medical Program (N)						
1st Year MBBS (N=144)	**Male**	69	65.83	4542.00	2127.0	-1.842 (0.065)
	Female	75	78.64	5898.00		
2nd Year MBBS (N=84)	**Male**	36	40.17	1446.00	780.0	-.759 (0.448)
	Female	48	44.25	2124.00		
3rd Year MBBS (N=107)	**Male**	45	41.87	1884.00	849.0	-3.446 (0.001*)
	Female	62	62.81	3894.00		
4th Year MBBS (N=100)	**Male**	44	46.00	2024.00	1034.0	-1.375 (0.169)
	Female	56	54.04	3026.00		
More than 4th Year MBBS (N=140)	**Male**	54	66.50	3591.00	2106.0	-.925(0.355)
	Female	86	73.01	6279.00		
Specialty Chosen (N)						
Medicine and Allied Branch (N=194)	**Male**	77	90.05	6933.50	3930.5	-1.50(0.134)
	Female	117	102.41	11981.50		
Surgery and Allied Branch (N=270)	**Male**	129	123.53	15935.00	7550.0	-2.41(0.016*)
	Female	141	146.45	20650.00		
Other (N=4)	**Male**	3	2.00	6.00	.000	-1.34(0.18)
	Female	1	4.00	4.00		
Undecided (N=107)	**Male**	39	45.13	1760.00	980.0	-2.24(0.025*)
	Female	68	59.09	4018.00		

Mann Whitney U test results show statistical significance for JES-S empathy score as per gender for participants from 3rd year of Medical program and those who had chosen surgery as a specialty and for those who did not decide the specialty to be chosen while no statistical significance was observed as per other chosen specialties or year of the medical program.

Discussion:

The study aimed to assess the clinical empathy using the JSE-S score in medical undergraduate students and interns and to identify the relation between the scores acquired as per age, gender, year of medical program and specialty to be chosen by the participants in near future.

The outcome can be discussed under the following headings:

Empathy:

The mean empathy score of the undergraduate medical students and interns in this study is 100.75 the values are close to Nair et al., from Udupi, Karnataka. (101.04) (48), although much lower than that reported by Chen et al from USA (114.3) (41), Mostafa et al from Bangladesh (110.41) (50), and Kataoka et al from Japanese (104.30) (42). The score is lower than those from other states of India, as reported by Shashikumar et al from Pune, Maharashtra (102.91) (49), and

Murthy et al from Vijayawada (103.29) (46), although higher than Kulkarni et al from Nagpur (99.25) (45) and Chatterjee et al., from New Delhi (96.01) (47).

The empathy scores reported at the entry-level of medical school in this study is lower (102.1; Table-1) than that reported from the United States by Chen et al (115.5) (41) and Hojat et al (114.5) (8) even that is reported from various Indian states like by Shashikumar et al from Pune (107.85) (49) and Nair et al., from Karnataka (105) (48). Similar results were reported from Vijayawada Murthy et al (102.52) (46) while lower values are reported by Kulkarni et al from Nagpur (96.05) (45).

Clinical Empathy and Gender:

In the present study clinical empathy score was found to be higher in females (102.1±11.5) compared to that in male participants (98.3±12.5) with statistical significance by Kruskal Wallis test results (Chi-sq 14.146; $p<0.0001$; Table-2). The results are similar to that observed by Chen et al (2007) (41) from the USA where female medical students had higher empathy than male medical students s (116.5 vs 112.1, $P< .001$). Similarly, Kataoka et al (2009) (42) Japanese study showed that female outnumbered male participants (mean scores for women and men were 107 and 103.7, respectively). Indian studies like that of Shashikumar et al (49) showed similar results with significantly higher empathy levels in female students compared to males (F:106.5±16.16; M:101.89±19.9;$p < 0.012$). Chatterjee et al (47) study from New Delhi also showed a significantly higher level of empathy score in female students (F:112.25; M:99.71; $p<0.001$). Similar results were observed in Kulkarni et al study from Nagpur, female (101.30± 14.53) vs male (97.05±12.72) showing a statistically higher significant empathy score ($p<0.05$) (45).

Hojat et al.(2002) (51,52) longitudinal study found that the mean empathy scores in males and females changed equally over the years, females showed consistently higher scores than males, even when the mean scores dipped in general, and that the difference remained significant. Hasan et al.(2013) (53) study on the medical student at Kuwait showed a statistically significant difference in male and female empathy score (100.6 ± 18.5; 107.1 ± 14.1;$p \leq 0.003$). Similar values were also identified by other researchers globally (54,55).

The majority of Indian studies have shown better empathy scores in female medical students compared to male probably due to the traditional cultural role of the female in the area. Although Baez et al.(2017) (56) study found that a tool that is based on self-reporting to identify empathy score may induce biases leading the participating individual to assume traditional gender-based stereotypes. In contrast, a review conducted by Christov-Moore et al (2014) (57) asserted that higher empathy in females has not only social but also phylogenetic and ontogenetic roots.

Rahimi-Madiseh study in Iraninan students showed more empathy score value in females than male but no significance was observed ((105.6 vs. 103.7) (58).

Mestre et al.(2009) (59) in their study summarized that female adolescents have a more empathic disposition, ie., the main driver of pro-social behavior, than the male adolescents (59).

Although more need to be explored for the gender difference for clinically empathy score specifically by having permutation and combinations in terms of emergency department work and other less stressful departments and so on.

Clinical empathy and number of years of study

In our study, the mean empathy scores are highest in the first year (102.1±10.8) which subsequently decreases in the second year (99.4±11.5), although increases in the third and fourth year (100.4±13.5; 100.5±) of medical education. However, the score decreased again at the time of the internship (99.7±11.5). Similar results were observed by a few researchers in India (45,48) and researchers from other countries (50,58).

Although other researchers in India (47,49) or other countries showed a sequential increase in the value of empathy as the progression of their educational year increased (41,53,60). While a few studies didn't show any significant change as per the milestone of medical education (19,46).

The present study shows statistical significance only in year 3 as per gender ($z= -3.446; p<0.001$; Table-3) while no significance was observed for other years of the medical program.

An increase in the empathy score in the present study during third year, probably, indicates the positive effects of the teaching of community medicine along with the rotational community posting.

Researchers have found that the doctors of family medicine (loosely an off-shoot of community medicine) are more empathetic than others (61). The decline in empathy score, in the present study, as the course progresses could be attributed to theory disciple traditional curriculum with less scope for development of skills related to affective domain (62,63). Moreover, there is limited scope of being assessed in terms of the affective domain either at the level of an undergraduate program or postgraduate selection test in India (64).

With the present revised curriculum based on competency-based approach, probably might have a better empathy approach of undergraduate students having a specific focus on Early clinical exposure (ECE) and Attitude, Ethics, and Communication skill (AETCOM) part from first year of medical program (65). Some researchers have attempted to explain the variability in empathy levels by pointing out those students in the clinical years, by having a curriculum that relies on a problem-based approach to addressing a patient's complaint rather by more humanistic interaction (66).

Clinical empathy across different settings

The present study shows an almost similar score for empathy as per the specialty program they would like to choose shortly with the same score for those who could not decide the specialty branch. Although, lesser empathy value was observed for those who choose specialty other than surgery or medicine.(Table-2) However, statistical significance was observed for applicants who took surgical specialty and undecided for specialty to be chosen as per gender ($z= -2.41$; $p<0.05$ and $z= -2.24$; $p<0.05$; Table-3).

Some of the Indian studies did not show a difference concerning the preference for desired specialty (48) highlighting that "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" (48). With the revised Competency-based curriculum it would be interesting to find any relevant difference as per the longitudinal study.

This was a cross-sectional study thus authors could not capture the actual progression of empathy among the undergraduate medical students. Moreover, this represents the response from a single private medical institute of the country.

The social allure may have led students to under or over report empathy.

Conclusion:

The present study further affirms a comparatively lower empathy score among students in Indian medical schools compared to medical students from the USA etc and also few states within the country like Maharashtra and Karnataka. This is something we need to worry about, and need to identify the ways to modify the present curriculum. This study also shows a significantly better empathy score for females compared to males, although representing an overall decline for empathy score as per the milestone of the medical course. This indicates that there is a strong need to reflect on our curriculum and identifying how it is progressing, specifically, in terms of the doctor-patient relationship. As a caregiver, it is mandated that medical students from their entry should be taught about the professional values for being a good physician, specifically focusing on the communication skills (doctor-patient; doctor-doctor; doctor-health professional). The curriculum should be framed in such a manner that other than assessment of cognitive and clinical skills there should be assessment of the affective and attitudinal domains on regular basis via multiple source feedback. Finally, a longitudinal study will provide a better picture of determining empathy levels.

Limitation:

It would be good to know the progress of the herd, for estimating the empathy level during their journey in the medical institute.

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Conflict of Interest:

No conflict of interest that might have biased the outcomes of the paper.

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