e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2025; 17(1); 889-894

Original Research Article

A Cross Sectional Study on Empathy among Medical Students of Tertiary Care Centers in Tamil Nadu

Vetriselvan T.[1], Selvaraj R.[2], Sindhu L.[3], Rithika V. P.[4]

[1]Assistant Professor, Department of Community Medicine, Government Medical College and Hospital Krishnagiri, Krishnagiri, Tamilnadu

[2]Associate Professor, Department of Community Medicine, Government Medical College and Hospital Krishnagiri, Krishnagiri, Tamilnadu

[3]Assistant Professor, Department of Community Medicine, Government Medical College and Hospital Krishnagiri, Krishnagiri, Tamilnadu

[4]Student, Department of Community Medicine, Government Medical College and Hospital Krishnagiri, Krishnagiri, Tamilnadu

Received: 25-10-2024 / Revised: 23-11-2024 / Accepted: 26-12-2024

Corresponding Author: Dr. Sindhu L

Conflict of interest: Nil

Abstract:

Introduction: Empathy plays a crucial role in delivering effective healthcare. It involves both cognitive and emotional aspects that help healthcare providers understand and respond to patients' feelings. In medical education, fostering and sustaining empathy among students is essential, as it has been linked to better patient outcomes, improved diagnostic accuracy, and higher patient satisfaction. However, studies suggest that empathy levels in medical students may decline over time, highlighting the importance of evaluating and understanding empathy trends throughout their training.

Objective: To assess the empathy levels of medical students at tertiary care centers in Tamil Nadu using the Toronto Empathy Questionnaire (TEQ).

Methods: A cross-sectional study was conducted between June and December 2024, involving 605 MBBS students from both government and private institutions. Data was collected using Google Forms through a snowball sampling method. The TEQ, consisting of 16 items rated on a 5-point Likert scale, was used to measure students' empathy levels.

Results: The study found that the average empathy score among participants was 43.06 ± 7.16, with only 44.3% scoring above the cutoff value of 45. Female students exhibited significantly higher empathy levels, with 51.7% scoring above the cutoff compared to 33.9% of male students ($p<0.001$). Among different academic years, fourth-year students had the highest proportion of scores above the cutoff (48.5%), followed by third-year (47.7%) and first-year students (45.7%). Notably, students engaged in part-time work demonstrated significantly lower empathy levels, with only 9.1% scoring above the cutoff compared to 44.9% of those without part-time work ($p=0.027$). However, no significant differences were observed based on the type of institution or family background.

Conclusions: Overall, empathy levels among the students were moderate. Significant differences were observed based on gender, with female students showing higher empathy, and part-time work, which appeared to negatively impact empathy levels. The findings suggest that clinical exposure during later years may contribute to maintaining or slightly improving empathy. These insights emphasize the need for targeted strategies to enhance empathy development in medical students, particularly among male students and those juggling part-time work.

Keywords: Empathy, Medical Students, Toronto Empathy Questionnaire, Medical Education, Cross-sectional Study.

Introduction

Empathy is a complex concept that encompasses various social, cognitive, and emotional processes. At its core, it involves the ability to comprehend or experience the emotions and experiences of others [1]. This capacity allows individuals to resonate with both positive and negative emotions of others, while maintaining a clear distinction between their own feelings and those of others [2]. Empathy is considered a multifaceted construct [3], primarily consisting of two main components: affective and

cognitive empathy [4]. Affective empathy refers to the ability to emotionally respond to others' mental states, which can be further divided into empathetic concern and personal distress [5]. Cognitive empathy, on the other hand, involves the capacity to understand others' perspectives or mental states [6], and can be broken down into perspective-taking and fantasy. It's worth noting that both innate and environmental factors can influence an individual's empathy levels [7]. Hojat introduced empathy in the context of patient care, describing it as a predominantly cognitive attribute that involves understanding patients' experiences, concerns, and perspectives, along with the ability to communicate this understanding effectively. While both empathy and sympathy involve sharing, empathy is rooted in cognitive understanding, whereas sympathy involves sharing emotions with patients. Research has shown that empathy levels among undergraduate medical students tend to decline as they progress through their education and postgraduate training, although some students maintain higher empathy levels than their juniors [8]. Numerous studies have highlighted the positive impact of empathy in interpersonal relationships, particularly in healthcare settings [9]. Hojat et al.'s literature review revealed that empathy benefits both physicians and patients. For patients, empathy enhances satisfaction, treatment compliance, and diagnostic accuracy, while fostering a more humanistic relationship. For physicians, greater empathy reduces the risk of malpractice litigation, improves history-taking skills, enhances attitudes towards elderly patients, and boosts resource utilization and physical examination performance.

In healthcare, it's crucial for physicians to communicate their empathetic understanding to patients while maintaining professional distance, which distinguishes empathy from sympathy. Researchers have developed various tools to assess individual empathy, with the Jefferson Scale of Physician Empathy (JSPE) being a widely used measurement instrument [10]. Baron Cohen et al. introduced the Empathy Quotient, designed to measure and quantify individual differences in empathy [11] . Other assessment tools include the Questionnaire of Cognitive and Affective Empathy (QCAE) [12] and the Toronto Empathy Questionnaire, which are primarily used to measure empathy in the general population [13] . Recent research by Costa et al. suggests that medical students' empathy levels remain relatively stable throughout their education [14]. However, most studies examining empathy variation among medical students have observed a declining trend during their medical school training. These findings come from diverse countries with distinct cultural systems [15-26]. Gender has been identified as a predictor of medical students' empathy levels in most studies, with females typically demonstrating higher empathy levels than males [27]. Importantly, empathy is believed to significantly impact various aspects of medical students' educational experiences. Researchers have explored the importance of empathy in the educational process and discovered that different dimensions of empathy exert distinct influences on students' mental health, academic performance, clinical competence, and specialty preferences. While evidence regarding the impact of empathy on medical students is growing, it's important to note that most studies examining empathy's role in medical student development have not been comprehensive. Consequently, this study was conducted to assess empathy levels among medical students at tertiary care centers in Tamil Nadu.

Materials and Methods:

This cross-sectional study was conducted in all tertiary care centers across Tamil Nadu including all government and private institutions for a 6-month period from June to December 2024. The study population consists of all MBBS medical students, with a calculated sample size of 603 students based on a previous study in Telangana (assumed standard deviation of 6.26, 95% confidence interval, and 5% error margin) [28]. Participants were approached using the snowball sampling method. Considering the fourth author the study as seed participant whose data was not included in the study. Seed participant has contacted her known fellow mates and friends studying in tertiary health care centers in Tamil nadu through online mode I.e., whats app, E mail, Telegram via google form. They were requested to send this questionnaire after completing to their fellow mates and friends and so on until the minimum sample was obtained.

The study includes all MBBS students and interns who are willing to participate. Demographic information such as age, sex, year of study, and college name were collected anonymously. The Toronto Empathy Questionnaire, containing 16 items with a 5-point Likert scale (never, rarely, sometimes, often, always), will be administered via Google Forms as this was a self-administered, semi-structured questionnaire more appropriate for online data collection. Institutional Ethical Committee approval will be obtained prior to conducting the study. Data analysis was performed using SPSS software, including descriptive analysis with frequency, percentage, mean, and standard deviation calculations.

Results:

In this study, total 605 students have responded to the questionnaire with mean age of 21.15 ± 2.7 yrs. Majority of study participant were females (58.5%) and their year of study was 46.4% and 24.8% of 3rd yr and 2nd yr respectively. This study

predominantly had students from government colleges (83.5%), majority of them stayed in hostel (83.3%). On asked about their family type majority were from (79.2%) nuclear family and 8.3% from Joint family and its is noteworthy to see 12.6% had single parent family and about 2% of the students do part time work.

The mean empathy score using Toronto Empathy Questionnaire (TEQ) were 43.06 + 7.16. Considering the cut off Value of 45, where high score indicate high level of empathy, only 44.3 % had scored above the cutoff value. This TEQ has total 16 questions framed in such a way as 8 questions were positively worded and 8 questions were negatively worded, which were jumbled to minimize sequence bias and the answers were collected in likert scale format as Never, Rarely, Sometimes, Often and Always. In positively worded questions majority had answered Always (49.3%) for 3rd question I.e, "I enjoy making other people feel better", Often (42.6%) for 13th question I.e., "I get a strong urge to help when I see someone who is upset" and Sometimes (49.9%) for 1st question "When someone else is feeling excited, I tend to get excited too" (Table-1).

In negatively worded questions majority had answered Always (49.6%) for 15th question I.e "I find it silly for people to cry out of happiness", Often (35%) for 11th question I.e"I become irritated when someone cries" and Sometimes (49.4%) for 2nd question I.e "Other people's misfortunes do not disturb me a great deal" (Table - 2).

Table 1:

TEQ - Positively Worded		**NEVER**	**RARELY**	**SOME-TIMES**	**OFTEN**	**ALWAYS**
1.	When someone else is feeling excited, I tend to get excited too	5.6%	13.9%	49.9%	24.6%	6%
3.	It upsets me to see someone being treated disrespectfully	1.8%	2.5%	17%	40%	38.7%
5.	I enjoy making other people feel better	1.2%	2.6%	12.6%	34.4%	49.3%
6.	I have tender, concerned feelings for people less fortunate than me	3%	8.4%	33.9%	35.4%	19.3%
8.	I can tell when others are sad even when they do not say anything	3.5%	7.9%	34.2%	38.%	15.5%
9.	I find that I am "in tune" with other people's moods	6.6%	15%	47.8%	25.5%	5.1%
13.	I get a strong urge to help when I see someone who is upset	2%	4.1%	27.3%	42.6%	24.5%
16.	When I see someone being taken advantage of, I feel kind of protective towards him\her	6.1%	7.6%	36.4%	32.7%	17.%

Table 2:

TEQ - Negatively Worded		**NEVER**	**RARE-LY**	**SOME-TIMES**	**OFTEN**	**AL-WAYS**
2.	Other people's misfortunes do not disturb me a great deal	2.3%	14.7%	49.4%	23.8%	9.8%
4.	I remain unaffected when someone close to me is happy	11.4%	8.6%	22.1%	30.1%	27.8%
7.	When a friend starts to talk about his\her problems, I try to steer the conversation towards something else	5.1%	6.6%	22.8%	27.6%	37.9%
10.	I do not feel sympathy for people who cause their own serious illnesses	5.8%	14%	33.9%	25.8%	20.5%
11.	I become irritated when someone cries	1.3%	3.6%	20.8%	35%	39.2%
12.	I am not really interested in how other people feel	5.5%	8.1%	28.4%	28.1%	29.9%
14.	When I see someone treated unfairly, I do not feel very much pity for them	2.8%	4.3%	16%	30.2%	46.6%
15.	I find it silly for people to cry out of happiness	2.5%	5.1%	23.6%	19.2%	49.6%

Majority of the female study participants (51.7%) had scored above the cutoff when compared to males (33.9%) this difference was statistically significant (p value <0.001). A higher proportion of students from government colleges (43.6%) scored above the cutoff compared to those from private colleges (48%). Majority of those scoring above the cutoff was seen in the 4th-year (48.5%), 3rd-year (47.7%) followed by, 1st-year students (45.7%), CRMI (44%), and 2nd-year students (36%). Participants from joint families (44%) and single-parent families (44.7%) had similar proportions of scoring above the cutoff, slightly higher than those from nuclear families (44.3%). These differences were

not statistically significant. A significantly higher proportion of participants without part-time work (44.9%) scored above the cutoff compared to those with part-time work (9.1%). This difference was statistically significant (p-value = 0.027) (Table - 3).

Table 3:

Variable		Below cutoff (45)	45 and above (Above cutoff)	P value
Gender	Male	166 (66.1%)	85 (33.9%)	<0.01*
	Female	171 (48.3%)	183 (51.7%)	
College	Government	285 (56.4%)	220 (43.6%)	0.415
	Private	52 (52%)	48 (48%)	
Year of college	1st yr	63 (54.3%)	53 (45.7%)	0.213
	2nd yr	96 (64%)	54 (36%)	
	3rd yr	147 (52.3%)	134 (47.7%)	
	4th yr	17 (51.5%)	16 (48.5%+)	
	CRMI	14 (56%)	11 (44%)	
Type of Family	Joint Family	28 (56%)	22 (44%)	0.996
	Nuclear Family	267 (55.7%)	212 (44.3%)	
	Single parent Family	42 (55.3%)	34 (44.7%)	
Part time work	Yes	10 (90.9%)	1(9.1%)	0.027*
	No	327 (55.1%)	267 (44.9%)	

*** Statistically significant (p value < 0.05)**

Discussion:

This cross-sectional study examined empathy levels among medical students in Tamil Nadu using the Toronto Empathy Questionnaire (TEQ). The findings reveal several important patterns and relationships that merit discussion in the context of existing literature. The mean empathy score of 43.06 ± 7.16 found in our study is similar to findings by Spreng et al [29] and Hasan et al [30] who reported mean TEQ scores were 44.5 ± 7.7 and 43.2 ± 6.9 respectively. However only 44.3% of participants had TEQ score above the cutoff value of 45, suggesting room for improvement in empathy levels among medical students in this region.

Gender differences in empathy scores were significant, with female students (51.7%) more likely to score above the cutoff compared to male students (33.9%). This finding aligns with previous research by Hojat et al. (2002) [28] and numerous other studies [11-19], [21-36] that consistently report higher empathy levels among female medical students. This gender disparity may be attributed to socialization factors and emotional awareness differences between genders.

The year-wise analysis revealed interesting patterns, with first-year (45.7%) and clinical year students (47.7% for 3rd year, 48.5% for 4th year) showing higher proportions of above-cutoff scores compared to second-year students (36%). This finding contrasts with some previous studies that reported declining empathy levels as students' progress through medical education [14,37] . The relatively stable or slightly increasing empathy levels in clinical years might be attributed to increased patient contact and the emphasis on clinical communication skills in the curriculum.

A notable finding was the significantly lower proportion of students with part-time work scoring above the cutoff (9.1%) compared to those without part-time work (44.9%). This suggests that the additional stress and time constraints of maintaining part-time employment might negatively impact students' capacity for empathy, though the small sample size of working students (n=11) warrants cautious interpretation. Some studies noted individuals experiencing higher levels of stress and emotional separation tended to have higher empathy levels [38-40].

The type of family structure (nuclear, joint, or single-parent) did not significantly influence empathy scores, suggesting that family composition may not be a crucial determinant of empathy levels among medical students. Similarly, the type of institution (government vs. private) showed no significant difference in empathy scores, indicating that family and/or educational institutional factors might not be substantially impacting in empathy development.

Response patterns to individual TEQ items provide additional insights. The high proportion of positive responses to questions about helping others and feeling protective towards those being taken advantage of suggests strong prosocial tendencies. However, the concerning responses to negatively worded items, particularly regarding emotional responses to others' distress, indicate areas requiring attention in medical education.

Conclusion

This study provides valuable insights into empathy levels among medical students in Tamil Nadu, highlighting the influence of gender and employment status on empathy scores. The

findings suggest that while overall empathy levels are moderate, there is significant room for improvement, particularly among male students and those managing part-time work alongside their studies. The stability or slight improvement in empathy scores during clinical years is encouraging and may reflect the positive impact of clinical exposure and patient interaction. However, the relatively low proportion of students scoring above the empathy cutoff suggests the need for targeted interventions to enhance empathy development throughout medical education.

Limitations

In the era a digital and social media dependence the students social media pattern also needs to be assessed and recent increase in assault in health care should also be considered before coming to final conclusion not including the social media exposure and dependence is a limitation for this study which needs to be considered. Following up of the participants may provide newer perspective which was also missing here, these are areas for further exploration in this theme.

Recommendations

1. Implementation of structured empathy training programs, particularly targeting early-year medical students
2. Additional support systems for students managing part-time work
3. Integration of more clinical exposure and patient interaction opportunities throughout the curriculum
4. Regular assessment of empathy levels to monitor and address any declining trends

Further longitudinal studies are needed to better understand the temporal changes in empathy levels and the effectiveness of interventions designed to enhance empathy among medical students.

References

1. Bellet PS, Maloney MJ. The importance of empathy as an interviewing skill in medicine. JAMA. 1991; 266(13):1831–2.
2. Singer T, Klimecki OM. Empathy and compassion. Curr Biol. 2014; 24(18):R875–8.
3. Stepien KA, Baernstein A. Educating for empathy. A review. J Gen Intern Med. 2006; 21(5):524–30.
4. Yan Z, et al. A meta-analysis of the relationship between empathy and executive function. Psych J. 2020; 9(1):34–43.
5. Lamm C, Batson CD, Decety J. The neural substrate of human empathy: effects of perspective-taking and cognitive appraisal. J Cogn Neurosci. 2007; 19(1):42–58.
6. Gerace A, et al. An exploratory investigation of the process of perspective taking in interpersonal situations. J Relationships Res. 2013; 4:e6.
7. Roth-Hanania R, Davidov M, Zahn-Waxler C. Empathy development from 8 to 16 months: early signs of concern for others. Infant Behav Dev. 2011;34(3):447–58
8. Syed Shahzad Hasan, Muneer Gohar Babar, Kheng Kai Chan, Syed Imran Ahmed, and Shahid Mitha: An assessment of pharmacy students‟ empathy levels in Malaysia. Journal of advanced pharmacy education and research, Oct-Dec 2013; 3(4):531.
9. M Boyle, B Williams, T Brown, A Molloy, L McKenna, L Molloy, B Lewis: Levels of empathy in undergraduate health science students. The internet journal of medical education, volume 1, number1-5, ISPUB.COM
10. Chen D, et al. A cross-sectional measurement of medical student empathy. J Gen Intern Med. 2007; 22(10):1434–8.
11. Baron-Cohen S, Wheelwright S. The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. J Autism Dev Disord. 2004; 34(2):163–75.
12. Reniers RL, et al. The QCAE: a Questionnaire of Cognitive and Affective Empathy. J Pers Assess. 2011; 93(1):84–95.
13. Yeo S, Kim KJ. A validation study of the Korean version of the Toronto empathy questionnaire for the measurement of medical students' empathy. BMC Med Educ. 2021; 21(1):119.
14. Costa P, Magalhães E, Costa MJ. A latent growth model suggests that empathy of medical students does not decline over time. Adv Health Sci Educ Theory Pract. 2013; 18(3):509–22.
15. Park KH, et al. Empathy in Korean medical students: findings from a nationwide survey. Med Teach. 2015;37(10):943–8
16. Li D, et al. Empathy in Chinese eight-year medical program students: differences by school year, educational stage, and future career preference. BMC Med Educ. 2018; 18(1):241.
17. Iqbal MZ, et al. Measuring empathy in medical students: a cross-sectional study. J Pak Med Assoc. 2022; 72(6):1101–5.
18. Shashikumar R, et al. Cross sectional assessment of empathy among undergraduates from a medical college. Med J Armed Forces India. 2014; 70(2):179–85.
19. Chatterjee A, et al. Clinical empathy in medical students in India measured using the Jefferson Scale of Empathy-Student Version. J Educ Eval Health Prof. 2017; 14:33.
20. Williams B, Sadasivan S, Kadirvelu A. Malaysian Medical Students' selfreported Empathy: a cross-sectional comparative study. Med J Malaysia. 2015; 70(2):76–80.

21. Lim BT, et al. How well do medical students rate and communicate clinical empathy? Med Teach. 2013; 35(2):e946–51.
22. Díaz Narváez VP, et al. Empathic orientation among medical students from three universities in Barranquilla, Colombia and one university in the Dominican Republic. Arch Argent Pediatr. 2014; 112(1):41–9.
23. Triffaux JM, Tisseron S, Nasello JA. Decline of empathy among medical students: dehumanization or useful coping process? Encephale. 2019; 45(1):3–8.
24. Hojat M, et al. An empirical study of decline in empathy in medical school. Med Educ. 2004; 38(9):934–41.
25. Stratton TD, Saunders JA, Elam CL. Changes in medical students' emotional intelligence: an exploratory study. Teach Learn Med. 2008; 20(3):279–84.
26. Hojat M, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. Acad Med. 2009; 84(9):1182–91.
27. Tavakol S, Dennick R, Tavakol M. Empathy in UK medical students: differences by gender, medical year and specialty interest. Educ Prim Care. 2011;22(5):297–303
28. Dhedhi, B.J., Gattavali, R., Nadukuru, G.N., Macharapu, R. and Mallepalli, P.K.R., 2022. A level of empathy and spirituality among undergraduate medical students of a tertiary hospital in Telangana: A cross-sectional study. Telangana Journal of Psychiatry
29. Spreng RN, McKinnon MC, Mar RA, Levine B. The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. J Pers Assess. 2009; 91(1):62-71.
30. Hasan S, Al-Sharqawi N, Dashti F, AbdulAziz M, Abdullah A, Shukkur M, et al. Level of empathy among medical students in Kuwait University, Kuwait. Med Princ Pract. 2013; 22(4):385-9.
31. Hojat M, Gonnella JS, Nasca TJ, et al. Physician empathy: definition, components, measurement, and relationship to gender and specialty. Am J Psychiatry. 2002; 159(9):1563-1569.
32. Chen DC, Kirshenbaum DS, Yan J, et al. Characterizing changes in student empathy throughout medical school. Med Teach. 2012; 34(4):305-311.
33. Paro, Helena & Silveira, Paulo & Perotta, Bruno & Gannam, Silmar & Enns, Sylvia & Giaxa, Renata & Bonito, Rosuita & Martins, Milton & Tempski, Patricia. (2014). Empathy among Medical Students: Is There a Relation with Quality of Life and Burnout?. PloS one. 9. E94133. 10.1371/journal.pone.0094133.
34. Bhatia G, Shetty JV. Trends of Change in Empathy among Indian Medical Students: A Two-Year Follow-Up Study. Indian J Psychol Med. 2023 Mar; 45(2):162-167. doi: 10.1177/02537176221104688. Epub 2022 Jul 15. PMID: 36925484; PMCID: PMC10011843.
35. Shapiro J. Walking a mile in their patients' shoes: empathy and othering in medical students' education. Philos Ethics Humanit Med. 2008 Mar 12; 3:10. doi: 10.1186/1747-5341-3-10. PMID: 18336719; PMCID: PMC2278157.
36. Andersen, F.A., Johansen, AS.B, Søndergaard, J. et al. Revisiting the trajectory of medical students' empathy, and impact of gender, specialty preferences and nationality: a systematic review. BMC Med Educ 20, 52 (2020). https://doi.org/10.1186/s12909-020-1964-5
37. Hojat M, Shannon SC, DeSantis J, et al. Does empathy decline in the clinical phase of medical education? A nationwide, multi-institutional, cross-sectional study of students at DO-granting medical schools. Acad Med. 2020; 95(6):911-918.
38. Brar S S, G R, Joshi A, et al. (May 12, 2024) Empathy among Medical Students: An Exploratory Cross-Sectional Survey. Cureus 16(5): e60166. DOI 10.7759/cureus.60166
39. Chhabra, N., Chhabra, S. & Archer, E. Medical Students' Perspectives on the Factors Affecting Empathy Development during Their Undergraduate Training. Med. Sci. Educ. 32, 79–89 (2022). https://doi.org/10.1007/s40670-021-01487-5
40. Tiwari K, Agarwal N, Pandey S (June 08, 2023) Clinical Empathy and Its Correlates among Indian Medical Students: A Cross-Sectional Study of Bihar. Cureus 15(6): e40159. DOI 10.7759/cureus.40159.