Original Article

An Epidemiological Study on Empathy and its Correlates: A Cross-sectional Assessment among Medical Students of a Government Medical College of India

Bijit Biswas, Anima Haldar[1], Aparajita Dasgupta, Nazrul Mallick, Anubrata Karmakar

ABSTRACT

Background: Empathy is a desirable quality in every clinician. It is a crucial determinant of patient–physician communication and relation. There are very few existent Indian studies on empathy of medical students and its correlates. **Aim:** The aim of the study was to assess empathy level of medical students and its correlates. **Methodology:** It was a cross-sectional, hospital-based, analytical observational study conducted from July to November 2017. In total, 249 undergraduate medical students of a medical college of Kolkata were interviewed with a structured schedule. The schedule comprised of the sociodemographic questionnaire, career satisfaction, future career choice, and Jefferson Scale of Empathy. **Results:** The mean empathy score was 98.5 ± 12.5. Third-semester students had higher empathy scores (102.4 ± 12.4) compared to fifth (97.2 ± 12.9) and seventh semester (95.0 ± 10.9) students. The difference between the mean scores of different semesters was statistically significant. Female students were more empathic than male students. In the multivariable linear regression model, sex, semester, residence, career satisfaction, future career choice, and current place of living were significant predictors of empathy scores. **Conclusion:** Empathy level of medical students of our study was quite low compared to other studies conducted outside India. Empathy eroded with semester, which supports earlier pieces of evidence in this regard.

Key words: *Career choice, empathy, medical students*

INTRODUCTION

The word "empathy" is derived from Greek word "empatheia" meaning "affection or passion with a quality of suffering."[1] Hojat defined empathy in the context of patient care as a "predominantly cognitive (rather than an emotional) attribute that involves an understanding (rather than feeling) of the patient's

Access this article online	
Website: www.ijpm.info	**Quick Response Code**
DOI: 10.4103/IJPSYM.IJPSYM_109_18	

How to cite this article: Biswas B, Haldar A, Dasgupta A, Mallick N, Karmakar A. An epidemiological study on empathy and its correlates: A cross-sectional assessment among medical students of a government medical college of India. Indian J Psychol Med 2018;40:364-9.

Department of Preventive and Social Medicine, All India Institute of Hygiene and Public Health, [1]Department of Community Medicine, Nil Ratan Sircar Medical College and Hospital, Kolkata, West Bengal, India

Address for correspondence: Dr. Bijit Biswas
Sarat Sarani More (G. T. Road), Post-Bandel, Hooghly, Kolkata - 712 123, West Bengal, India. E-mail: drbijitbiswas@gmail.com

perspectives, experiences, and concerns of the patient, combined with a capacity to communicate this understanding."[2]

Empathy is a desirable quality in every clinician as it is an important determinant of patient–physician communication and relation. Empathic communication helps in the development of trust and openness between a health-care provider and patient. An empathic communication between a doctor and patient results in a more accurate diagnosis and greater compliance to treatment. Therefore, it is crucial concerning treatment outcome and quality of health care.[3-6]

Empathy in medical students is determined by various factors, i.e., age, gender, year of medical education, specialty choice, burn out, quality of life, personality trait, emotional intelligence, and mental health.[7-13] With the advancement of medical education, empathy is expected to improve. Despite that, various studies had reported empathy erosion of medical students with the advancement of medical training, which is unacceptable.[14,15] Some stipulated reasons for empathy decline over the years of medical education are less interaction with patients, lack of role models, and academic stress.[16-18]

It is believed that empathy can be taught and measured. It should be integrated and regularly assessed in various stages of medical education as per recommendations of Association of American Medical Colleges.[19-21] The student version of the Jefferson Scale of Physician Empathy-S was developed by the researchers associated with Jefferson Medical College in the United States. It was designed explicitly for assessing empathy in medical students.[22]

There are very little published data related to empathy and its correlates of medical students of India. The recent rising trend of violence against doctors in India[23] indicates the existence of some communication gap between doctors and patients. Empathic communication may help to avoid such doctor–patient miscommunications leading to violence. Thus, to intervene at the earliest, it is crucial to find empathy level of doctors and its correlates right from the beginning of their medical education. A prior study in India found a progressive decline in empathy levels with years in medical college.[13] It also reported higher empathy among girls compared to boys. The study failed to demonstrate relationship in between empathy and specialty choice, unlike some Western studies.[8,11,15,16] With this background, the current study was designed to assess empathy level of medical students and its correlates. The results of the study will help policymakers to better understand empathy and its correlates of medical students in the Indian context. The results of the study will help in the efficient planning of interventions and curricular design to produce more empathic doctors in future.

METHODOLOGY

It was a cross-sectional, hospital-based, analytical observational study conducted from July to November 2017. In total, 249 undergraduate medical students of a medical college of Kolkata were interviewed with a structured schedule. The schedule comprised of the sociodemographic questionnaire, career satisfaction, future career choice, and Jefferson Scale of Empathy (medical students version). Students of the third, fifth, and seventh semesters were chosen as they were regularly visiting community medicine department for attending classes. Three lecture classes (one for each semester) were selected for data collection in the last week of October 2017. The data were collected within a week's time to prevent percolation of knowledge related to the responses of the questionnaire and to avoid response bias. In total, 265 students (3rd semester – 96, 5th semester – 92, and 7th semester – 77) attended the said lecture classes. Among 265 students, 16 did not agree to participate, while 249 students (93.9%) (3rd semester-93 [96.8%], 5th semester-86 [93.4%] and 7th semester-70 [90.9%]) gave informed written consent and volunteered to participate in the study.

At first, the study participants were appreciated for their participation in the study. Then, they were briefed by the researcher regarding the purpose and importance of the study. It was followed by obtainment of informed written consent from each of the study participants. Then, the schedule was self-administered by the study participants. Finally, the study participants were thanked for their participation.

In the present study, Jefferson Scale of Empathy (medical students version)[24] was used to assess empathy level of the medical students. It is a 20-item scale having 7 possible responses for each item. The minimum and maximum empathy scores obtained were 67 and 129, respectively, with mean ± standard deviation (SD) of 98.5 ± 12.5. The empathy score was normally distributed as Shapiro–Wilk test (P = 0.127) was not significant.

Operational definitions used in the study

Career satisfaction

Study participants were asked to indicate their satisfaction with their present career (medical) in a dichotomous response of either "yes" or "no."

Future career choice

Students were asked about their future career choice by an open-ended question. Later on, the answers were divided into "People-oriented" and "Technology-oriented" specialties. People-oriented specialties included: pediatrics, psychiatry, internal medicine, emergency medicine, neurology, obstetrics and gynecology, cardiology, ophthalmology, and dermatology. Technology-oriented specialties included anesthesiology, general surgery, neurosurgery, orthopedic surgery, radiology, pathology, and nuclear medicine. Such categorizations were as per categories used in prior studies.[21,25-27]

Ethical issues

Ethical clearance from the respective Institutional Ethics Committee was taken before conducting the survey. Similarly, permission of inventors of Jefferson's Scale of Empathy (© Thomas Jefferson University, 2001. All rights reserved) was obtained before its use in the study. Informed written consent of the study participants was taken before their participation. The data were collected anonymously to assure its confidentiality, during and after its collection.

Statistical analysis

Data were analyzed using IBM SPSS (Chicago, USA) (version 16). First, a bivariate analysis with ANOVA, Independent Samples *t*-test, and Spearman rho correlation were done to ascertain the relationship between empathy score and its various attributes. Only those attributes found to be significant were entered into the multiple linear regression model by forced entry method. The strength of association was assessed by unstandardized beta and standard error at 95% confidence interval. Statistical significance for all statistical tests was set at $P < 0.05$.

RESULTS

The mean ± SD of the age of the study participants was 20.9 ± 1.2 years. There was a slight male preponderance (58.2%). Most of the samples belonged to an urban area and were satisfied with their career choice.

In univariate analysis, third-semester students were having higher empathy scores (102.4 ± 12.4) compared to fifth (97.2 ± 12.9) and seventh semester (95.0 ± 10.9) students. The difference between the mean score of different semesters was statistically significant. Female students were more empathic than male students. Similarly, those who belonged to a rural area, currently living with their family, satisfied with their career choice, and preferred doing people-oriented specialities in future were having significantly higher mean empathy score compared to others [Table 1].

In multivariable model, sex, semester, residence, career satisfaction, future career choice, and current place of living were significant predictors of empathy score adjusted with each other. Age of the study participants was not included in the final model due to its strong correlation ($\rho = 0.0.82$) with the semester. The model explained 19% variance of the empathy score [Tables 2 and 3].

Considering the collinearity statistics, variance inflation factor values of all the independent variables were well

Table 1: Distribution of the study participants according to their background characteristics and empathy scores (*n*=249)

Variable	Frequency (%)	Empathy score Mean±SD	*P*
Age (completed years)			
18-19	35 (14.1)	104.6±12.4	0.003†
20-21	127 (51.0)	98.5±13.0	
≥22	87 (34.9)	96.1±11.0	
Sex			
Male	145 (58.2)	96.9±12.0	0.017‡
Female	104 (41.8)	100.7±12.9	
Semester			
3	93 (37.3)	102.4±12.4	<0.001†
5	86 (34.5)	97.2±12.9	
7	70 (28.1)	95.0±10.9	
Place of residence			
Urban	183 (73.5)	97.5±11.8	0.044‡
Rural	66 (26.5)	101±13.9	
Career satisfaction			
Yes	216 (86.7)	99.5±12.2	0.001‡
No	33 (13.3)	91.7±12.7	
Future career choice			
People-oriented	153 (61.4)	99.9±11.7	0.026†
Technical oriented	79 (31.7)	96.3±13.5	
Others/undecided	17 (6.9)	95.1±15.7	
Currently living			
With family	101 (40.6)	99.6±11.3	0.023†
Hostel	133 (53.4)	98.6±13.6	
Rent	15 (6.0)	90.2±6.9	

†ANOVA; ‡Independent Samples *t*-test. SD – Standard deviation

Table 2: Spearman rho correlation matrix showing various correlates of empathy of the study participants (*n*=249)

	Age*	Sex†	Sem*	Res‡	Car§	Fut‖	Liv¶	Emp**
Age	1.00	0.82‡‡	−0.00	−0.05	−0.11	−0.01	−0.04	−0.16††
Sex		1.00	0.05	0.00	0.05	0.07	0.07	0.22‡‡
Sem			1.00	−0.16††	−0.04	−0.02	0.12	−0.14††
Res				1.00	0.10	0.12	−0.19‡‡	0.08
Car					1.00	0.04	−0.04	0.20‡‡
Fut						1.00	0.02	0.13††
Liv							1.00	0.18‡‡
Emp								1.00

*Age (increasing); †Sex (female); ‡Residence (rural); §Career satisfaction (yes); ‖Future career choice (people oriented); ¶Living with (family); **EMPATHY score (increasing); ††Correlation is significant at the 0.05 level; ‡‡Correlation is significant at the 0.01 level

Table 3: Multiple linear regression analysis showing predictors of empathy of the study participants (*n*=249)

Variables	Unstandardized coefficients		*P*	95.0% CI for *B**	
	B*	SE		Lower bound	Upper bound
Age in completed years (increasing)‡	-	-	-	-	-
Sex (female)	3.4	1.5	0.022	0.5	6.4
Semester (increasing)	−1.5	0.4	0.001	−2.4	−0.7
Residence (rural)	4.2	1.7	0.016	0.8	7.5
Career satisfaction (yes)	7.3	2.1	0.001	3.1	11.6
Future career choice (people oriented)	3.9	1.5	0.011	0.9	6.8
Currently living (with family)	5.8	1.6	<0.001	2.7	9.0

*Unstandardized beta, ‡Not included in the model due to multicollinearity with semester (ρ=0.82). SE – Standard error; CI – Confidence interval

below 5 (range: 1.012–1.026). Durbin Watson value of 1.56 indicated independence of observations. An insignificant Breusch–Pagan test (P = 0.67) ensured homoscedasticity, while Cook's distance range of 0.00–0.029 nullifies chances of an influencing outlier.

DISCUSSION

The study was a hospital-based cross-sectional analytical observational study which explored empathy level of undergraduate medical students and its correlates.

The mean empathy level of undergraduate medical students in the current study was 98.5. It was quite low compared to studies conducted by Santos *et al*.[8] (119.7), Quince *et al*.[28] (113.03), Mostafa *et al*.[11] (110.4), and Wen *et al*.[29] (109.6). Empathy level of medical students in the current study was similar to the findings of Shashikumar *et al*.[13] (102.9) and Benabbas *et al*.[15] (101.2). The variability of the findings may be due to differences in cultural factors, custom, ethnicity, spiritual belief, and educational system.

With the advancement of age, empathy level of medical students eroded. It was in concordance with the study conducted in Iran by Khademalhosseini *et al*.[14] but discordant with the findings of Bangash *et al*.[30] Mean empathy score was also found to be declined with the advancement of medical education, which had similarities with findings of Benabbas *et al*.,[15] Khademalhosseini *et al*.,[14] and Wen *et al*.[29] On the other hand, Santos *et al*.,[8] Bangash *et al*.,[30] and Imran *et al*.[31] did not find such association between semester and empathy score. The reason for empathy erosion with the semester in the current study may be that, during data collection, fifth and seventh-semester students had their semester examinations within a month's time. Hence, examination-related stress may have influenced the results of our study as stress is a well-known cause of empathy erosion.[10]

Female medical students had higher empathy scores. It was similar to the findings of Santos *et al*.,[8] Raof and Yassin[32] Quince *et al*.,[28] Youssef *et al*.,[33] Mostafa *et al*.,[11] Bangash *et al*.,[30] Wen *et al*.,[29] and Dehning *et al*.[34] On the other hand, the study conducted by Benabbas *et al*.[15] reported no significant association between gender and empathy. It had been observed that women tend to better elicit the emotional status of a patient compared to men. Besides, women are more skilled in developing interpersonal relationships with patients.[35-38] These may be the reasons for such observation in our study.

In the current study, students who belonged to a rural area had significantly higher empathy score. There are only limited pieces of prior evidence in this regard. A study conducted in Columbia among nursing students reported findings similar to ours.[39] It may be because students who belong to a rural area are more likely brought up in an environment where social cohesion exists between neighbors and people are more of helping nature. Thus, they are expected to be better communicators. This may have resulted in better empathy scores in the later course of their lives.

Similarly, those who were currently living with their family were more empathic. The possible explanation could be, family members' moral and psychological support may have helped in the reduction of their academic stress.

Those who were satisfied with their career had more empathy score. It may be because those who were not satisfied with their medical career were likely to be suffering from frustration to distress. This may have resulted in an erosion of their empathy and vice versa.

In the present study, those who preferred to do people-oriented specialty in future had more empathy score. This was concordant with the findings of Santos *et al*.[8] and Raof *et al*.[32] On the other hand, Benabbas *et al*.,[15] Mostafa *et al*.,[11] and Magalhaes *et al*.[16] did not find such association between specialty choice and empathy. The possible explanation could be, people-oriented specialties require more patient contact. Hence, empathy is a desirable skill for this kind of specialties. In addition, students with higher empathy may naturally prefer to do specializations that require more patient contact.

Strengths

The study was one of the fewer studies in India which assessed empathy level of medical students and its correlates. It enriched the existing literature in this aspect.

Limitations

The sample size was small. All the data were self-reported by study participants. Data were not cross-verified. Thus, there may be over- or under-reporting, and chances of social desirability bias cannot be overlooked. Medical students' future specialty choice showed significant correlation with their empathy score. The findings were merely based on their current specialty choice, which may change with their progress in medical education. There may be other specific, vital determinants of empathy, such as psychological morbidities, which we did not examine. Further, longitudinal study design assessing empathy across semesters could probably better report empathy erosion rather than a cross-sectional study design.

CONCLUSION

Empathy level of medical students of our study was quite low compared to other studies conducted outside India. Empathy eroded with semester, which supports earlier shreds of evidence in this regard. Gender and future career choice were important determinants of empathy score. The medical curriculum should give more focus to the promotion of empathy and other humanistic values among the medical students. This would enable them to serve humanity in a better way in the future.

Acknowledgment

The authors want to express their gratitude toward all the study participants.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Barrett-Lennard GT. The empathy cycle: Refinement of a nuclear concept. J Couns Psychol 1981;28:91-100.
2. Hojat M. Empathy in Health Professions Education and Patient Care. Cham: Springer International Publishing; 2016. Available from: http://www.link.springer.com/10.1007/978-3-319-27625-0. [Last accessed on 2017 Nov 29].
3. Hojat M. Empathy and Patient Outcomes. In: Empathy in Health Professions Education and Patient Care. Cham: Springer International Publishing; 2016. p. 189-201. Available from: http://www.link.springer.com/10.1007/978-3-319-27625-0_11. [Last accessed on 2017 Nov 29].
4. Stewart MA. Effective physician-patient communication and health outcomes: A review. CMAJ 1995;152:1423-33.
5. Thom DH; Stanford Trust Study Physicians. Physician behaviors that predict patient trust. J Fam Pract 2001;50:323-8.
6. Kim SS, Kaplowitz S, Johnston MV. The effects of physician empathy on patient satisfaction and compliance. Eval Health Prof 2004;27:237-51.
7. Ren GS, Min JT, Ping YS, Shing LS, Win MT, Chuan HS, *et al*. Complex and novel determinants of empathy change in medical students. Korean J Med Educ 2016;28:67-78.
8. Santos MA, Grosseman S, Morelli TC, Giuliano IC, Erdmann TR. Empathy differences by gender and specialty preference in medical students: A study in Brazil. Int J Med Educ 2016;7:149-53.
9. Bertram K, Randazzo J, Alabi N, Levenson J, Doucette JT, Barbosa P, *et al*. Strong correlations between empathy, emotional intelligence, and personality traits among podiatric medical students: A cross-sectional study. Educ Health (Abingdon) 2016;29:186-94.
10. Park KH, Kim DH, Kim SK, Yi YH, Jeong JH, Chae J, *et al*. The relationships between empathy, stress and social support among medical students. Int J Med Educ 2015;6:103-8.
11. Mostafa A, Hoque R, Mostafa M, Rana MM, Mostafa F. Empathy in undergraduate medical students of Bangladesh: Psychometric analysis and differences by gender, academic year, and specialty preferences. ISRN Psychiatry 2014;2014:375439.
12. Rahimi-Madiseh M, Tavakol M, Dennick R, Nasiri J. Empathy in Iranian medical students: A preliminary psychometric analysis and differences by gender and year of medical school. Med Teach 2010;32:e471-8.
13. Shashikumar R, Chaudhary R, Ryali VS, Bhat PS, Srivastava K, Prakash J, *et al*. Cross sectional assessment of empathy among undergraduates from a medical college. Med J Armed Forces India 2014;70:179-85.
14. Khademalhosseini M, Khademalhosseini Z, Mahmoodian F. Comparison of empathy score among medical students in both basic and clinical levels. J Adv Med Educ Prof 2014;2:88-91.
15. Benabbas R. Empathy in Iranian medical students: A comparison by age, gender, academic performance and specialty preferences. Med J Islam Repub Iran 2016;30:439.
16. Magalhães E, Salgueira AP, Costa P, Costa MJ. Empathy in senior year and first year medical students: A cross-sectional study. BMC Med Educ 2011;11:52.
17. Vallabh K. Psychometrics of the student version of the Jefferson Scale of Physician Empathy (JSPE-S) in final-year medical students in Johannesburg in 2008. S Afr J Bioeth Law 2011;4:63-8.
18. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, *et al*. Empathy decline and its reasons: A systematic review of studies with medical students and residents. Acad Med 2011;86:996-1009.
19. Cooke M, Irby DM, Sullivan W, Ludmerer KM. American medical education 100 years after the flexner report. N Engl J Med 2006;355:1339-44.
20. Epstein RM. Assessment in medical education. N Engl J Med 2007;356:387-96.
21. Hojat M, Gonnella JS, Maxwell K. Jefferson Scales of Empathy (JSE) Professional Manual & User's Guide. Jefferson Medical College Center for Research in Medical Education and Health Care; 2009.
22. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M, *et al*. Physician empathy: Definition, components, measurement, and relationship to gender and specialty. Am J Psychiatry 2002;159:1563-9.
23. Ambesh P. Violence against doctors in the Indian subcontinent: A rising bane. Indian Heart J 2016;68:749-50.
24. Hojat M. The Jefferson Scale of Empathy. In: Empathy in Health Professions Education and Patient Care. Cham:

Springer International Publishing; 2016. p. 83-128. Available from: http://www.link.springer.com/10.1007/978-3-319-27625-0_7. [Last accessed on 2017 Nov 29].
25. DiLalla LF, Hull SK, Dorsey JK; Department of Family and Community Medicine, Southern Illinois University School of Medicine, Carbondale 62901, USA. ldilalla@siu.edu. Effect of gender, age, and relevant course work on attitudes toward empathy, patient spirituality, and physician wellness. Teach Learn Med 2004;16:165-70.
26. Borges NJ, Stratton TD, Wagner PJ, Elam CL. Emotional intelligence and medical specialty choice: Findings from three empirical studies. Med Educ 2009;43:565-72.
27. Stratton TD, Saunders JA, Elam CL. Changes in medical students' emotional intelligence: An exploratory study. Teach Learn Med 2008;20:279-84.
28. Quince TA, Kinnersley P, Hales J, da Silva A, Moriarty H, Thiemann P, *et al.* Empathy among undergraduate medical students: A multi-centre cross-sectional comparison of students beginning and approaching the end of their course. BMC Med Educ 2016;16:92.
29. Wen D, Ma X, Li H, Liu Z, Xian B, Liu Y, *et al.* Empathy in Chinese medical students: Psychometric characteristics and differences by gender and year of medical education. BMC Med Educ 2013;13:130.
30. Bangash AS, Ali NF, Shehzad AH, Haqqi S. Maintenance of empathy levels among first and final year medical students: A cross sectional study. F1000Res 2013;2:157.
31. Imran N, Awais Aftab M, Haider II, Farhat A. Educating tomorrow's doctors: A cross sectional survey of emotional intelligence and empathy in medical students of lahore. Pak J Med Sci 2013;29:710-4.
32. Raof AM, Yassin BA. Measuring empathy levels among Kurdish medical students in Erbil city, Iraq: Cross-sectional study. Sultan Qaboos Univ Med J 2016;16:e62-7.
33. Youssef FF, Nunes P, Sa B, Williams S. An exploration of changes in cognitive and emotional empathy among medical students in the Caribbean. Int J Med Educ 2014;5:185-92.
34. Dehning S, Girma E, Gasperi S, Meyer S, Tesfaye M, Siebeck M, *et al.* Comparative cross-sectional study of empathy among first year and final year medical students in Jimma University, Ethiopia: Steady state of the heart and opening of the eyes. BMC Med Educ 2012;12:34.
35. Chen D, Lew R, Hershman W, Orlander J. A cross-sectional measurement of medical student empathy. J Gen Intern Med 2007;22:1434-8.
36. Austin EJ, Evans P, Magnus B, O'Hanlon K. A preliminary study of empathy, emotional intelligence and examination performance in MBChB students. Med Educ 2007;41:684-9.
37. Newton BW, Barber L, Clardy J, Cleveland E, O'Sullivan P. Is there hardening of the heart during medical school? Acad Med 2008;83:244-9.
38. Di Lillo M, Cicchetti A, Lo Scalzo A, Taroni F, Hojat M. The jefferson scale of physician empathy: Preliminary psychometrics and group comparisons in Italian physicians. Acad Med 2009;84:1198-202.
39. Madera-Anaya M, Tirado-Amador L, González-Martínez F. Empathy-related factors in nursing students of the cartagena university. Enferm Clin 2016;26:282-9.