

Original Research Article

PROSOCIAL BEHAVIOUR AND ITS CORRELATION WITH EMPATHY, SOCIAL DESIRABILITY AND SOCIAL DEPENDENCE AMONG FIRST AND FINAL YEAR MEDICAL AND NURSING STUDENTS: A CROSS SECTIONAL STUDY FROM WESTERN MAHARASHTRA

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ABSTRACT

Background: Prosocial behaviour is an important attribute for students entering patient facing professions. Empathy, social desirability and social dependence may influence self-reported prosocial behaviour, yet data from Indian medical and nursing students remain limited. The aim is to estimate prosocial behaviour, empathy, social desirability and social dependence among first year and final year MBBS and BSc Nursing students and to assess the correlation of prosocial behaviour with these determinants.

Materials and Methods: This descriptive analytical cross sectional study included students from a rural university in western Maharashtra. Participants completed a structured questionnaire that recorded demographic details, prosocial behaviour score, empathy score, social desirability and social dependence. Prosocial behaviour was measured using the Adult Prosocialness Behaviour Scale. Empathy was measured using the Jefferson Scale of Empathy for medical students and the Jefferson Scale of Empathy for health professions students. Social desirability and social dependence were assessed using 5 point Likert scales. Group comparisons used Welch independent sample t tests. Pearson correlation and multiple linear regression were used for association analyses.

Results: The final analysis included 240 students. The mean age was 19.53 (2.11) years; 145 students were from MBBS and 95 were from BSc Nursing. The mean prosocial behaviour score was 65.60 (10.12) and the mean empathy score was 98.93 (13.90). BSc Nursing students had higher prosocial behaviour scores than MBBS students, 69.09 (9.61) versus 63.31 (9.82), $p < 0.001$. MBBS students had higher empathy scores than BSc Nursing students, 101.60 (13.28) versus 94.86 (13.91), $p < 0.001$. Prosocial behaviour correlated positively with empathy, $r = 0.144$, $p = 0.026$ and social desirability, $r = 0.339$, $p < 0.001$. Social dependence was not significantly correlated with prosocial behaviour. In adjusted analysis, empathy, social desirability and BSc Nursing faculty were independently associated with higher prosocial behaviour.

Conclusion: Prosocial behaviour was higher among nursing students and was associated with empathy and social desirability. The association with social desirability indicates that self-reported prosociality in healthcare students

should be interpreted with attention to response bias. Educational strategies that strengthen empathy and promote authentic professional helping behaviour may be useful in medical and nursing training.

Keywords: prosocial behaviour; empathy; social desirability; social dependence; medical students; nursing students; healthcare education.

INTRODUCTION

Prosocial behaviour refers to voluntary actions intended to benefit another person or a group.^[1] It includes helping, sharing, cooperation and comfort giving, and it has been studied across psychology, social behaviour and health professions education.^[1,2] Caprara et al. developed an adult prosocialness scale to measure individual differences in prosocial dispositions and actions.^[3] Current theory also places prosocial behaviour within wider personality and situational frameworks rather than treating it as a single uniform trait.^[4]

Prosocial behaviour has relevance beyond social psychology because patient care depends on interpersonal responsiveness and cooperative professional conduct. Indian data on prosocial behaviour are still limited and much of the available evidence has focused on school age adolescents.⁵ Nursing literature has linked prosocial behaviours with work environment optimization, organizational performance and quality of care.^[6] Global health agencies emphasize that quality health services need more than infrastructure and technical competence; they also require patient centred interactions and trustworthy care processes.^[7]

Empathy is closely related to prosocial behaviour in clinical settings. Mercer and Reynolds described clinical empathy as the capacity to understand a patient's situation, perspective and feelings and to communicate that understanding in care.^[8] Larson and Yao framed empathy as a central element of the patient physician relationship and noted its relevance to emotional labor in clinical encounters.^[9] Hojat et al. defined physician empathy as a cognitive attribute that includes understanding of patients' experiences and the capacity to communicate this understanding.^[10] The Jefferson Scale of Physician Empathy was developed to measure empathy in patient care contexts among medical learners and practitioners.^[11] Ward et al. later showed that a Jefferson scale adaptation had acceptable psychometric properties among undergraduate nursing students.^[12]

Empathy during health professions training has been examined with mixed findings. Hojat et al. reported erosion of empathy during medical school.^[13] Neumann et al. reviewed studies among medical students and residents and described declines during training with possible links to the clinical learning environment.^[14] Ferreira-Valente et al. found that empathy change throughout medical school was not uniform across settings and that effect sizes were often small.^[15] Indian studies have reported variation in empathy by gender, year of study and academic

context among medical students.^[16,17] Bhatia and Shetty described changes in empathy among Indian medical students over two years.^[18] Smith et al. found that empathy in medical students predicted charitable donation behaviour and provided behavioural evidence for an empathy prosociality link.^[19]

Social desirability may complicate self reported prosocial behaviour. Crowne and Marlowe developed a scale to measure the tendency to provide socially desirable responses.^[20] Van de Mortel noted that social desirability response bias can distort questionnaire results and obscure or create associations between variables.^[21] Paulhus described response bias as a major concern in self report measurement.^[22] Fleming and Zizzo found that social desirability and approval can affect contributions in public good contexts.^[23] Social dependence may also matter in healthcare education because patient physician relationships can be affected by expectations, trust and perceived dependence within the clinical encounter.^[24]

Medical and nursing students interact with patients early in their professional development. A comparison of first year and final year students can show whether prosocial behaviour and empathy differ across training stages. This study estimated prosocial behaviour, empathy, social desirability and social dependence among first year and final year MBBS and BSc Nursing students in a rural university in western Maharashtra and assessed the correlation of prosocial behaviour with empathy, social desirability and social dependence.

MATERIALS AND METHODS

Study design and setting: This descriptive analytical cross sectional study was conducted among students of MBBS and BSc Nursing faculties at a rural university in western Maharashtra. The study used a structured self-administered questionnaire and quantitative analysis.

Participants and sampling: Students from first year and final year MBBS and BSc Nursing were eligible. Students diagnosed with psychiatric or psychological disorders and students who were extremely reluctant to participate were excluded. Non probability universal convenience sampling was used. Participation was voluntary and informed consent was obtained in Hindi, Marathi and English.

Study variables and tools: The questionnaire recorded age, gender, faculty, year of study, sibling status, family type and residence. Prosocial behaviour was measured using the Adult Prosocialness Behaviour Scale by Caprara et al.³ Empathy among MBBS students was measured using the Jefferson

Scale of Empathy Medical Student version. Empathy among BSc Nursing students was measured using the Jefferson Scale of Empathy Health Professions Student version. These Jefferson scale versions are supported by psychometric work in medical, nursing and health professions student populations^{11,12,25}. Social desirability and social dependence were measured using 5 point Likert scales. A score of 1 indicated strongly disagree and a score of 5 indicated strongly agree.

Statistical analysis: Participant characteristics recorded as groups were summarized as frequencies and percentages. Numerical measures were summarized as mean with standard deviation and median with interquartile range. Group comparisons used Welch independent sample t tests because this approach does not assume equal variances. Pearson correlation coefficient assessed the association of prosocial behaviour score with empathy, social desirability and social dependence. An exploratory multiple linear regression model used prosocial behaviour score as the dependent variable. Predictors included empathy score, social desirability, social dependence, faculty, year of study, gender, residence, family type, sibling status and age. A p value below 0.05 was considered statistically significant.

Ethical considerations: The study was conducted after Institutional Ethics Committee approval. Participation was voluntary and informed consent was obtained before data collection.

RESULTS

Participant characteristics: The dataset contained 241 participant like records. One record had a missing prosocial behaviour score and was excluded from PSB based analyses. Two rows without demographic information were non participant rows. The final analysed sample consisted of 240 students.

The mean age was 19.53 (2.11) years and the median age was 19 years. Males constituted 135 (56.3%) participants and females constituted 105 (43.8%). The sample included 145 MBBS students and 95 BSc Nursing students. First year students formed 173 (72.1%) records and final year students formed 67 (27.9%) records. The participant distribution by faculty and year is shown in [Figure 1].

Distribution of study variables: The mean prosocial behaviour score was 65.60 (10.12) and the mean empathy score was 98.93 (13.90). Social desirability scores were concentrated toward higher Likert

values; 111 participants scored 5. Social dependence scores were concentrated toward lower Likert values; 98 participants scored 1. [Table 2] shows the distribution of the main study variables.

Group comparisons: BSc Nursing students had significantly higher prosocial behaviour scores than MBBS students, 69.09 (9.61) versus 63.31 (9.82), $p < 0.001$. MBBS students had significantly higher empathy scores than BSc Nursing students, 101.60 (13.28) versus 94.86 (13.91), $p < 0.001$. Figure 2 shows the mean prosocial behaviour and empathy scores by faculty.

Prosocial behaviour did not differ significantly between first year and final year students. Females had significantly higher empathy scores than males, $p < 0.001$, but gender based differences in prosocial behaviour were not significant. Rural students had higher prosocial behaviour scores than urban students, $p = 0.012$. Urban students had higher empathy scores than rural students, $p < 0.001$. Nuclear family students had higher empathy scores than students from joint families, $p = 0.015$. No significant differences in prosocial behaviour or empathy were found by sibling status. Table 3 summarizes the group comparisons for all main study variables.

Correlation and regression analysis: Prosocial behaviour had a weak positive correlation with empathy in the overall sample, $r = 0.144$, $p = 0.026$. Prosocial behaviour had a moderate positive correlation with social desirability, $r = 0.339$, $p < 0.001$. Social dependence did not correlate significantly with prosocial behaviour, $r = -0.016$, $p = 0.811$. [Figure 3] shows the association between prosocial behaviour and social desirability.

Faculty wise analysis showed that among MBBS students, prosocial behaviour correlated significantly with empathy, $r = 0.250$, $p = 0.002$ and social desirability, $r = 0.415$, $p < 0.001$. Among BSc Nursing students, correlations of prosocial behaviour with empathy, social desirability and social dependence did not reach statistical significance.

The exploratory linear regression model was statistically significant, adjusted R square = 0.166, $p < 0.001$. After adjustment, empathy score, social desirability and BSc Nursing faculty were independently associated with higher prosocial behaviour score. Social dependence, year of study, gender, residence, family type, sibling status and age were not independently associated with prosocial behaviour. [Table 4] shows the correlation and regression findings.

Table 1: Demographic and academic characteristics of participants

Characteristic	Category	n (%) or summary
Total sample		240 (100.0)
Age, years	Mean (SD)	19.52 (2.11)
Age, years	Median (IQR)	19 (18 to 21)
Gender	Male	135 (56.2)
Gender	Female	105 (43.8)
Faculty	MBBS	145 (60.4)
Faculty	BSc Nursing	95 (39.6)
Year of study	First year	173 (72.1)

Year of study	Final year	67 (27.9)
Faculty by year	MBBS first year	112 (46.7)
Faculty by year	MBBS final year	33 (13.8)
Faculty by year	BSc Nursing first year	61 (25.4)
Faculty by year	BSc Nursing final year	34 (14.2)
Residence	Rural	130 (54.2)
Residence	Urban	110 (45.8)
Family type	Joint	75 (31.2)
Family type	Nuclear	165 (68.8)
Siblings	No	27 (11.2)
Siblings	Yes	213 (88.8)

SD = standard deviation; IQR = interquartile range

Table 2: Distribution of prosocial behaviour, empathy, social desirability and social dependence

Variable	n	Mean (SD)	Median (IQR)	Range
Prosocial behaviour score	240	65.60 (10.12)	66 (60 to 73)	23 to 80
Empathy score	240	98.93 (13.90)	98 (88 to 109)	69 to 134
Social desirability score	240	4.03 (1.10)	4 (3 to 5)	1 to 5
Social dependence score	240	2.11 (1.22)	2 (1 to 3)	1 to 5

Table 2: Likert score distribution for social desirability and social dependence

Likert score	Social desirability n (%)	Social dependence n (%)
1	6 (2.5)	98 (40.8)
2	20 (8.3)	67 (27.9)
3	45 (18.8)	44 (18.3)
4	58 (24.2)	13 (5.4)
5	111 (46.2)	18 (7.5)

A Likert score of 1 indicated strongly disagree and a score of 5 indicated strongly agree. SD = standard deviation; IQR = interquartile range.

Table 4: Group comparisons of prosocial behaviour, empathy, social desirability and social dependence

Comparison	Outcome	n1	n2	Group 1 mean (SD)	Group 2 mean (SD)	Mean difference (95% CI)	p value
Faculty							
MBBS vs BSc Nursing	PSB score	145	95	MBBS: 63.31 (9.82)	BSc Nursing: 69.09 (9.61)	-5.78 (-8.31 to -3.26)	<0.001
MBBS vs BSc Nursing	Empathy score	145	95	MBBS: 101.60 (13.28)	BSc Nursing: 94.86 (13.91)	6.74 (3.18 to 10.29)	<0.001
Year of study							
First year vs Final year	PSB score	173	67	First year: 65.23 (10.22)	Final year: 66.57 (9.87)	-1.34 (-4.18 to 1.50)	0.351
First year vs Final year	Empathy score	173	67	First year: 99.39 (12.41)	Final year: 97.75 (17.22)	1.65 (-2.93 to 6.22)	0.477
Gender							
Male vs Female	PSB score	135	105	Male: 66.18 (11.00)	Female: 64.86 (8.87)	1.32 (-1.21 to 3.85)	0.304
Male vs Female	Empathy score	135	105	Male: 95.37 (12.43)	Female: 103.51 (14.40)	-8.14 (-11.63 to -4.66)	<0.001
Residence							
Rural vs Urban	PSB score	130	110	Rural: 67.10 (10.12)	Urban: 63.83 (9.88)	3.27 (0.72 to 5.82)	0.012
Rural vs Urban	Empathy score	130	110	Rural: 96.04 (13.80)	Urban: 102.35 (13.28)	-6.32 (-9.77 to -2.86)	<0.001
Family type							
Joint vs Nuclear	PSB score	75	165	Joint: 65.07 (10.59)	Nuclear: 65.84 (9.92)	-0.78 (-3.64 to 2.09)	0.593
Joint vs Nuclear	Empathy score	75	165	Joint: 95.65 (13.96)	Nuclear: 100.42 (13.66)	-4.77 (-8.59 to -0.95)	0.015
Siblings							
No vs Yes	PSB score	27	213	No: 64.85 (12.15)	Yes: 65.69 (9.87)	-0.84 (-5.81 to 4.12)	0.731
No vs Yes	Empathy score	27	213	No: 100.41 (15.34)	Yes: 98.75 (13.73)	1.66 (-4.66 to 7.98)	0.596

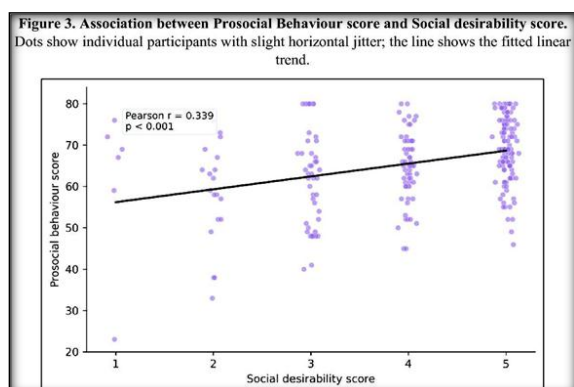
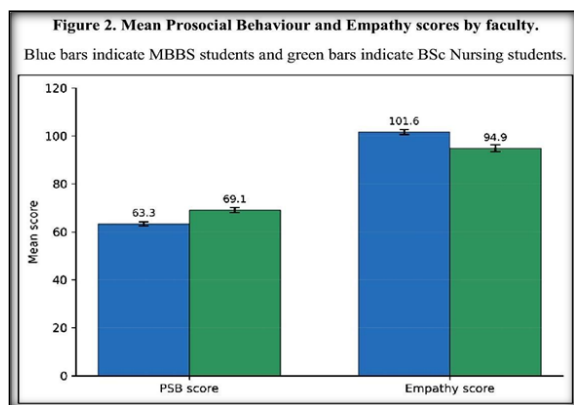
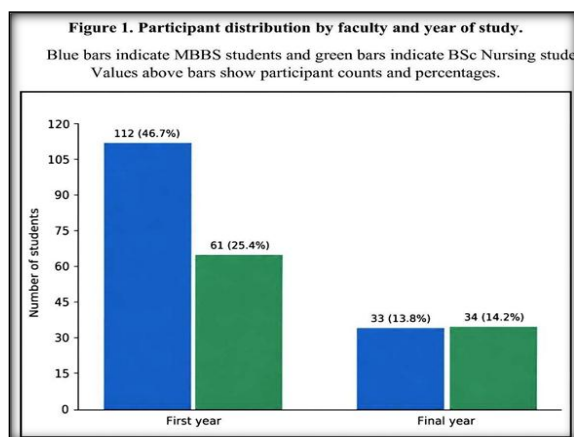
Welch independent sample t tests were used. Mean difference is group 1 minus group 2. CI = confidence interval; PSB = prosocial behaviour; SD = standard deviation.

Table 4: Correlation and adjusted regression analysis for prosocial behaviour

Variable	n or coefficient	Effect estimate	p value
Panel A. Pearson correlation of prosocial behaviour with study variables			
Overall			
Empathy score	240	r = 0.144	0.026
Social desirability	240	r = 0.339	<0.001
Social dependence	240	r = -0.016	0.811
MBBS			

Empathy score	145	$r = 0.250$	0.002
Social desirability	145	$r = 0.415$	<0.001
Social dependence	145	$r = -0.102$	0.224
BSc Nursing			
Empathy score	95	$r = 0.190$	0.066
Social desirability	95	$r = 0.108$	0.300
Social dependence	95	$r = 0.118$	0.256
Panel B. Multiple linear regression with prosocial behaviour score as dependent variable			
Empathy score	0.120	95% CI: 0.03 to 0.21	0.013
Social desirability	2.571	95% CI: 1.42 to 3.72	<0.001
Social dependence	0.006	95% CI: -1.05 to 1.06	0.992
BSc Nursing faculty	5.187	95% CI: 1.47 to 8.90	0.006
Final year	-1.399	95% CI: -7.35 to 4.55	0.643
Female gender	-0.268	95% CI: -2.93 to 2.40	0.843
Urban residence	-1.319	95% CI: -4.40 to 1.76	0.400
Nuclear family	0.764	95% CI: -1.87 to 3.40	0.568
Has siblings	-0.630	95% CI: -4.54 to 3.28	0.751
Age	0.716	95% CI: -0.50 to 1.93	0.247

Adjusted R square = 0.166; overall model $p < 0.001$. Regression predictors were empathy score, social desirability, social dependence, faculty, year of study, gender, residence, family type, sibling status and age. CI = confidence interval.



DISCUSSION

This study examined prosocial behaviour among first year and final year MBBS and BSc Nursing students and assessed its relationship with empathy, social desirability and social dependence. Nursing students showed higher prosocial behaviour than MBBS students, whereas MBBS students showed higher empathy scores. Prosocial behaviour was associated with empathy and social desirability in the total sample. Social dependence did not show a significant association with prosocial behaviour.

The higher prosocial behaviour among nursing students is consistent with the caring orientation that is central to nursing education and practice. Feather et al. described nurses' prosocial behaviors as relevant to work environment quality and organizational performance.^[6] Nunes et al. found empathy decline among students from several health disciplines during the first year of training, which suggests that professional socialization can shape interpersonal attributes early in education.^[26] Williams et al. also reported empathy variation across health professional student groups.^[27] The present findings add data from an Indian rural university context and indicate that faculty background may be associated with self-reported prosociality.

Empathy findings require a cautious interpretation. Females scored higher on empathy than males, which is consistent with earlier work using the Jefferson scale among health professions students.^[10,12] Indian studies by Chatterjee et al. and Biswas et al. also reported empathy patterns that varied by student characteristics.^[16,17] The absence of a significant overall year wise difference in empathy aligns with literature showing that empathy trajectories are not uniform across institutions.^[15] Bhatia and Shetty described change across a two-year period among Indian medical students.^[18] Training environment, workload, patient exposure and hidden curriculum factors may influence these trajectories.^[14]

The positive correlation between empathy and prosocial behaviour supports theoretical and empirical evidence that empathic understanding can motivate helping behaviour.^[2,19] Stepien and Baernstein reviewed empathy education and reported that targeted educational strategies can improve empathy among medical learners.^[28] Derksen et al. found evidence that empathy in general practice is linked with patient satisfaction, adherence and other care outcomes.^[29] Howick et al. described qualitative evidence on why empathy may change during medical training and emphasized the role of educational culture.^[30] These links are clinically relevant because prosocial behaviour in healthcare students may indicate readiness for cooperative and patient centred professional conduct.

Social desirability showed a stronger association with prosocial behaviour than empathy in the total sample. This finding is important because prosocial behaviour was assessed by self-report. Crowne and Marlowe's early work and later response bias literature show that respondents may answer in ways that appear socially acceptable.^[20-22] Fleming and Zizzo also showed that approval and social desirability can influence public good contribution.^[23] A positive relationship between social desirability and prosocial behaviour may therefore indicate both genuine prosocial orientation and favourable self-presentation.

Social dependence did not show a significant association with prosocial behaviour. The result does not exclude a role for dependence in patient care relationships, but it suggests that the single social dependence score used in this study did not explain prosocial behaviour in this sample. Kumar et al. described the complexity of doctor patient relationships in the Indian setting and noted issues related to trust, expectations and communication.^[24] More detailed instruments may be needed to study dependence within clinical relationships and student professional development.

The regression model indicated that empathy, social desirability and BSc Nursing faculty were independently associated with higher prosocial behaviour after adjustment for demographic and academic variables. The model explained a modest proportion of variance. This suggests that prosocial behaviour is influenced by factors not fully captured in the dataset. Curriculum exposure, personality, family environment, clinical experiences, role modelling and institutional culture may be relevant and should be considered in future research.

Limitations: This study had several limitations. The cross-sectional design prevents causal inference. The findings come from one rural university and may not generalize to all medical and nursing students. The use of self-reported questionnaires may introduce response bias. Social desirability was associated with prosocial behaviour and this strengthens the need for cautious interpretation. Subgroup sizes were unequal, especially for final year students. Social desirability and social dependence were assessed through Likert

items rather than full validated multi item scales. Longitudinal and multicentric studies with behavioral measures of prosociality would provide stronger evidence.

CONCLUSION

Prosocial behaviour was higher among BSc Nursing students than MBBS students in this sample. Empathy and social desirability showed positive associations with prosocial behaviour, whereas social dependence was not significantly associated with prosocial behaviour. In the adjusted analysis, empathy, social desirability and nursing faculty remained independent correlates of prosocial behaviour. These findings indicate that prosociality among healthcare students is related not only to empathic orientation but also to the tendency to provide socially desirable responses. Educational strategies aimed at strengthening patient centred behaviour should therefore include structured attention to empathy development, communication and reflective professional formation. Self-reported prosociality should also be interpreted with caution, since social desirability may influence how students report helping attitudes and behaviours.

REFERENCES

1. Penner LA, Dovidio JF, Piliavin JA, Schroeder DA. Prosocial behavior: multilevel perspectives. *Annu Rev Psychol.* 2005;56:365-392.
2. Eisenberg N, Miller PA. The relation of empathy to prosocial and related behaviors. *Psychol Bull.* 1987;101(1):91-119.
3. Caprara GV, Steca P, Zelli A, Capanna C. A new scale for measuring adults' prosocialness. *Eur J Psychol Assess.* 2005;21(2):77-89.
4. Thielmann I, Spadaro G, Balliet D. Personality and prosocial behavior: a theoretical framework and meta-analysis. *Psychol Bull.* 2020;146(1):30-90.
5. Harikrishnan U, Sailo GL. Assessment of prosocial behaviour of school-going adolescents: a cross-sectional survey. *Indian J Community Med.* 2022;47(3):453-455.
6. Feather J, McGillis Hall L, Trbovich P, Baker GR. An integrative review of nurses' prosocial behaviours contributing to work environment optimization, organizational performance and quality of care. *J Nurs Manag.* 2018;26(7):769-781.
7. World Health Organization, Organisation for Economic Co-operation and Development, World Bank. Delivering quality health services: a global imperative for universal health coverage. Geneva: World Health Organization; 2018.
8. Mercer SW, Reynolds WJ. Empathy and quality of care. *Br J Gen Pract.* 2002;52 Suppl:S9-S12.
9. Larson EB, Yao X. Clinical empathy as emotional labor in the patient-physician relationship. *JAMA.* 2005;293(9):1100-1106.
10. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement and relationship to gender and specialty. *Am J Psychiatry.* 2002;159(9):1563-1569.
11. Hojat M, Mangione S, Nasca TJ, Cohen MJM, Gonnella JS, Erdmann JB, et al. The Jefferson Scale of Physician Empathy: development and preliminary psychometric data. *Educ Psychol Meas.* 2001;61(2):349-365.
12. Ward J, Schaal M, Sullivan J, Bowen ME, Erdmann JB, Hojat M. Reliability and validity of the Jefferson Scale of Empathy in undergraduate nursing students. *J Nurs Meas.* 2009;17(1):73-88.

13. Hojat M, Vergare MJ, Maxwell K, Brainard G, Herrine SK, Isenberg GA, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. *Acad Med.* 2009;84(9):1182-1191.
14. 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(8):996-1009.
15. Ferreira-Valente A, Monteiro JS, Barbosa RM, Salgueira A, Costa P, Costa MJ. Clarifying changes in student empathy throughout medical school: a scoping review. *Adv Health Sci Educ Theory Pract.* 2017;22(5):1293-1313.
16. Chatterjee A, Ravikumar R, Singh S, Chauhan PS, Goel M. Clinical empathy in medical students in India measured using the Jefferson Scale of Empathy-Student Version. *J Educ Eval Health Prof.* 2017;14:33.
17. 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(4):364-369.
18. Bhatia G, Shetty JV. Trends of change in empathy among Indian medical students: a two-year follow-up study. *Indian J Psychol Med.* 2023;45(2):162-167.
19. Smith KE, Norman GJ, Decety J. Medical students' empathy positively predicts charitable donation behavior. *J Posit Psychol.* 2020;15(6):734-742.
20. Crowne DP, Marlowe D. A new scale of social desirability independent of psychopathology. *J Consult Psychol.* 1960;24:349-354.
21. van de Mortel TF. Faking it: social desirability response bias in self-report research. *Aust J Adv Nurs.* 2008;25(4):40-48.
22. Paulhus DL. Measurement and control of response bias. In: Robinson JP, Shaver PR, Wrightsman LS, editors. *Measures of personality and social psychological attitudes.* San Diego: Academic Press; 1991. p. 17-59.
23. Fleming P, Zizzo DJ. Social desirability, approval and public good contribution. *Pers Individ Dif.* 2011;51(3):258-262.
24. Kumar B, Paul UK, Pal DK. Perception of doctor-patient relationship in the present time from the viewpoint of doctors: a qualitative study at a tertiary health-care center in Eastern India. *Indian J Community Med.* 2020;45(1):100-103.
25. Kiersma ME, Chen AMH, Yehle KS, Plake KS. Validation of an empathy scale in pharmacy and nursing students. *Am J Pharm Educ.* 2013;77(5):94.
26. Nunes P, Williams S, Sa B, Stevenson K. A study of empathy decline in students from five health disciplines during their first year of training. *Int J Med Educ.* 2011;2:12-17.
27. Williams B, Brown T, McKenna L, Boyle M, Palermo C, Nestel D, et al. Empathy levels among health professional students: a cross-sectional study at two universities in Australia. *Adv Med Educ Pract.* 2014;5:107-113.
28. Stepien KA, Baernstein A. Educating for empathy: a review. *J Gen Intern Med.* 2006;21(5):524-530.
29. Derksen F, Bensing J, Lagro-Janssen A. Effectiveness of empathy in general practice: a systematic review. *Br J Gen Pract.* 2013;63(606):e76-e84.
30. Howick J, Dudko M, Feng SN, Ahmed AA, Alluri N, Nockels K, et al. Why might medical student empathy change throughout medical school? a systematic review and thematic synthesis of qualitative studies. *BMC Med Educ.* 2023;23(1):270.