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Empathy among Undergraduate Medical Students and Its Relationship with Academic Performance

Danish Rastogi[1], Abhishek Kumar Singh[2], Shraddha Singh[3]

[1,2,3]Department of Physiology, King George's Medical University, Lucknow, UP, India.

Corresponding Author: Dr. Danish Rastogi

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ABSTRACT

Background: Empathy is a vital attribute for physicians, facilitating effective communication and improving patient care. However, several studies report a decline in empathy as students progress through medical school. This study assessed empathy levels among undergraduate medical students and examined their correlation with academic performance.
Methodology: A cross-sectional study was conducted on 291 MBBS students (first year to internship) at King George's Medical University, Lucknow. Empathy was measured using the Interpersonal Reactivity Index (IRI), which assesses four subscales: Perspective Taking, Empathic Concern, Fantasy, and Personal Distress. Academic performance was assessed using the percentage obtained in the most recent professional examination. Statistical analysis included one-way ANOVA, independent t-tests, and Pearson correlation. A p-value < 0.05 was considered significant.
Results: The overall mean IRI empathy score among students was 63.17 ± 6.03. A significant decline in empathy scores was observed across academic years, decreasing from 65.07 ± 6.12 in first-year students to 59.25 ± 4.02 in interns ($p = 0.00053$). When comparing genders across all batches, no significant difference in total empathy scores was found between males (62.93 ± 9.45) and females (63.49 ± 8.44) ($p > 0.05$). Additionally, no significant correlation was observed between empathy scores and academic performance, with a Pearson correlation coefficient of $r = -0.089$ ($p > 0.05$).
Conclusion: Empathy scores decreased significantly as students advanced in their medical education, but no significant relationship was found between empathy and academic performance. These findings underscore the need for curricular interventions to preserve empathy during medical training.

Keywords: Physician-patient relationship, academic performance, interpersonal reactivity index, medical students, empathy.

INTRODUCTION

Empathy, defined as the cognitive and emotional ability to understand and share others' experiences and feelings, is recognized as a cornerstone of the physician-patient relationship and a highly desirable professional trait in medical practice [1]. Effective empathic communication enhances patient satisfaction, improvement in treatment outcomes, trust building, and better adherence to clinical regimens, while also reducing the likelihood of malpractice claims [2,3]. For physicians, empathy is associated with personal growth, increased career satisfaction, and lower rates of burnout [4]. Multiple professional organizations,

including the Medical Council of India and the Association of American Medical Colleges, advocate the incorporation of empathy training as a core competency in undergraduate and postgraduate medical curriculum [5].

Despite its importance, conceptual ambiguity exists regarding whether empathy in medicine is predominantly cognitive or affective, though most definitions emphasize the cognitive aspect of understanding patient perspectives and communicating that understanding in a therapeutic manner [6]. The Jefferson Scale of Physician Empathy (JSE-S) and the Interpersonal Reactivity Index (IRI) are widely employed, validated questionnaires to assess empathy levels in medical students across cultural contexts [7,8]. However, a recurring finding in international and Indian studies is that empathy may decline as students' progress through medical school, possibly due to factors like academic stress, reduced patient contact, and lack of role models [9-13]. Empathy levels also vary across gender, with most studies reporting higher scores in females [13,14].

Studies evaluating the relationship between empathy and academic performance in medical students yield inconclusive results, with several reporting no significant correlation between the two [7,15]. On the other hand, empathy remains strongly linked with clinical competence and patient-centered care, underscoring its enduring significance in medical education [9,16]. Given the potential for empathy to be nurtured during training, the integration of specific educational interventions is recommended to foster empathy among future physicians [10,17].

MATERIALS & METHODS

A cross-sectional study was conducted over a period of 6 months (Jan 2023- Jun 2023). The study aimed to assess empathy score amongst undergraduate medical students and to correlate with their academic performance. Ethical approval was taken from the institutional ethical committee (Ref. No. XXIII-PGTSC-IIA/P7). All M.B.B.S. students (batch 2019-2023) from first year to internship were eligible. Using Krejcie and Morgan's sample determination chart [18]. Since the total population is 1200 (approx.) Therefore, sample size= 291. All M.B.B.S. students aged 18-25 years who were willing to fill forms were included in this study. All students who had a history of psychiatric illness or use of psychotropic medication or those who had given incomplete responses to the questionnaire were excluded.

Students were enrolled using google forms. Empathy was measured using the Interpersonal Reactivity Index (IRI) questionnaire. The Interpersonal Reactivity Index (IRI)[19] is a widely used tool to measure empathy. It contains 28 questions; each answered on a 5-point Likert scale ranging from "does not describe me well" to "describes me very well." The questionnaire is divided into four areas, with seven questions in each: Fantasy, which reflects how much a person relates to fictional characters; Perspective-taking, which refers to the ability to see situations from others' points of view; Empathic concern, which captures feelings of care, warmth, and compassion for others; and Personal distress, which describes feelings of discomfort or unease when witnessing others' distress. Each subscale has a possible score of 0 to 28, and the total empathy score is calculated by adding all four subscales, with higher scores indicating greater empathy.

Academic performance was measured as the percentage obtained in the most recent professional examination (from second professional to interns, as first professional students just cleared their entrance examination).

Statistical Analysis

Data were analysed using SPSS version 26. ANOVA test was applied to compare empathy across academic years, unpaired t-test for gender comparisons, and Pearson's correlation test for total empathy (IRI scores) and academic performance. A p-value < 0.05 was considered statistically significant.

RESULT

Out of 291 samples, there is male dominance (M=169) on the responses (Females= 122). The mean age of students was 21.43 years with a standard deviation of 2.3. Participation was highest from the first professional year students. Table 1 shows the demographics.

Table 1: Demographics

		Number	Percentage
Gender	Males	169	58.08
	Females	122	41.92
Responses from respective batches	First	68	23.37
	Second	53	18.21
	Third	54	18.56
	Fourth	55	18.9
	Intern	61	20.96

Table 2 shows mean comparison of total IRI empathy scores of different batches with standard deviation. The overall mean IRI empathy score was 63.17 ± 6.03. ANOVA test was used to compare among different batches. Empathy scores declined significantly from first year students (65.07 ± 6.12) to interns (59.25 ± 4.02) ($p = 0.00053$).

Table 2: Mean total IRI Empathy scores among different batches

BATCH	Number of students	Mean IRI score	Standard Deviation
FIRST PROF.	68	65.07	6.12
SECOND PROF.	53	64.85	3.9
THIRD PROF.	54	64.87	5.07
FOURTH PROF.	55	61.87	6.59
INTERN	61	59.25	4.02

Table 3 shows comparison of empathy scores among males and females of all batches combined. Unpaired t-test was performed among males and females. There were no significant gender differences that were noted in total empathy scores ($p = 0.6045$, which is > 0.05).

Table 3: Mean total IRI scores among males and females of all batches combined

Gender	Number of students	Mean IRI score	Standard Deviation
MALE	169	62.93	9.45
FEMALE	122	63.49	8.44

Figure 1 shows a scatter plot showing correlation between total IRI scores of all students (from second prof. to interns) and percentage marks of last professional final examination. Pearson's correlation coefficient between total IRI scores and academic performance was $r = -0.089$ ($p > 0.05$), indicating no significant relationship.

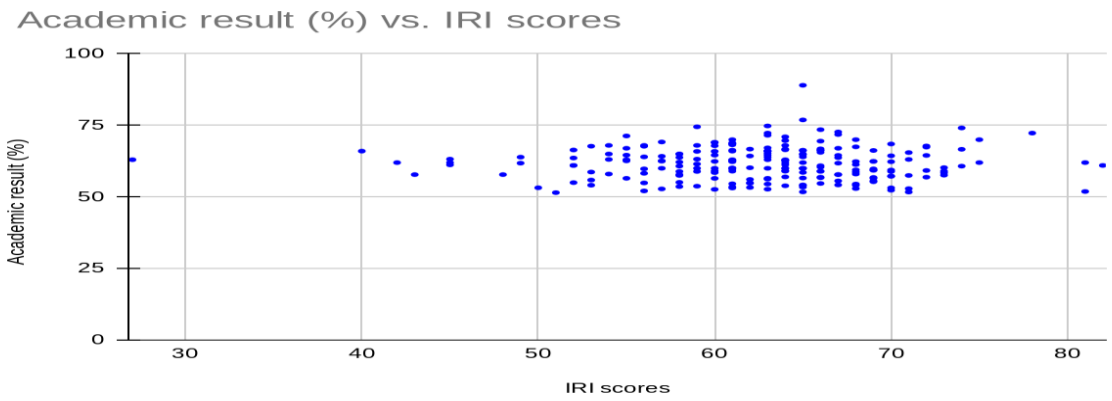

Figure 1: Correlation between total IRI scores and academic performance

DISCUSSION

The findings of this study, which revealed a decline in empathy with each advancing professional session, are consistent with international literature documenting a reduction in empathy scores as medical students progress through their training [20,21]. Multiple systematic reviews and cross-sectional studies confirm that the pressures of increased workload, exposure to patient suffering, and stress contribute to this decline. For example, Neumann et al. (2011) [10] and Howick et al. (2025) [22] illustrated that empathy loss is prevalent particularly during the transition from pre-clinical to clinical years. These trends are observed globally, transcending cultural and curricular differences [1,2,21]. Some evidence, however, indicates that select interventions can mitigate this decline, highlighting the importance of targeted empathy training [22,23]. Moreover, some studies as shown by Quince et al. (2016) [24], using JSE-S and IRI questionnaires, show that there are no significant differences in empathy scores observed between students at the beginning and the end of their courses in either group of schools. However, gender significantly predicted empathy scores, with females consistently scoring higher than males. Also, sometimes empathy actually improves with each successive batch, as shown by Haque et al. (2018) [25], that final-year students were found to be more empathetic than first-year students. Academic performance was significantly associated with empathy scores, with students achieving Grade A exhibiting higher empathy compared to those with Grade C.

Regarding gender differences, the present study's observation that there is no significant difference in empathy between males and females is noteworthy. While many previous investigations have reported higher empathy levels among female medical students [1,2], recent large-scale surveys and reviews have indicated that gender disparities may not always be significant [7,21], possibly depending on sample size, local educational culture, and the specific aspects of empathy measured. This points to the complex interactions between personal, academic, and sociocultural influences on empathy development [12,23].

Furthermore, this study found that empathy scores did not correlate with academic performance. This agrees with recent integrative reviews and cross-sectional analyses, which report no significant relationship between empathy (as measured by self-administered scales like the Jefferson Scale of Physician Empathy or the Interpersonal Reactivity Index) and examination performance among medical undergraduates [22,23]. Although some literature proposes a positive link between empathy and clinical competence-especially in areas like communication skills [2,23]-academic grades alone may not reflect these attributes [7,12].

While our study provides valuable insights, it is not without limitations. The reliance on self-reported empathy measures may introduce response bias. Longitudinal studies with larger, more diverse cohorts are needed to confirm these findings and explore the underlying factors contributing to the decline in empathy. Furthermore, future research should investigate the efficacy of specific interventions designed to sustain and enhance empathy throughout medical education.

CONCLUSION

This study set out to understand how empathetic undergraduate medical students are and whether their level of empathy has any link to their academic performance. Since empathy is such an important part of being a good doctor-helping to build trust with patients and improve care-it's crucial to see how it fits into medical education.

What we found is that empathy levels did vary among students from different years of study, but there wasn't a strong or consistent connection between how empathetic a student was and how well they performed academically. This suggests that doing well in exams doesn't necessarily mean a student is more empathetic-and vice versa.

These insights point to the importance of taking a more well-rounded approach to medical training. Empathy shouldn't be treated as an optional soft skill-it deserves attention and development just like any clinical or academic skill. Integrating empathy-focused activities like reflective writing, communication workshops, and patient-centered simulations into the curriculum could help students grow into more compassionate doctors.

In the long run, blending strong clinical knowledge with genuine human connection is what makes a truly effective physician. Future studies with broader, more diverse groups of students and long-term follow-up could give us even deeper insight into how empathy develops and how it ultimately affects patient care.

Declaration by Authors

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