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Relationship between Empathy, Academic Performance and Self-esteem of Undergraduate Medical Students

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Abstract

This study explored the relationship between empathy, self-esteem, and academic performance among undergraduate medical students in Pakistan. A total of 339 students from two accredited medical colleges in Rawalpindi and Lahore participated in this quantitative correlational research. Data were collected using the Jefferson Scale of Physician Empathy – Student Version and the Rosenberg Self-Esteem Scale. Academic performance was self-reported based on the most recent professional or pre-admission examination results. Students were categorized into high and low academic performers. Non-parametric statistical analyses revealed a statistically significant positive correlation between empathy and self-esteem ($p < .05$), indicating that students with higher self-esteem were more likely to exhibit stronger empathic attitudes. However, no significant correlation was found between empathy and academic performance. Self-esteem was found to have a weak but significant positive association with academic performance ($p < .05$). Comparisons across academic years showed fluctuations in both empathy and self-esteem levels, with the lowest scores reported in the second year, suggesting increased psychological stress during this period. These findings highlight the importance of promoting self-esteem as a pathway to sustain empathy throughout medical training. Integrating emotional development alongside cognitive learning may support the cultivation of more compassionate and effective physicians.

Keywords: Academic performance, empathy, medical education, self-esteem, undergraduate medical students

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Introduction

Empathy is a foundational element of the physician–patient relationship and is widely regarded as a critical component of effective and ethical medical practice. It facilitates trust, enhances communication, improves diagnostic accuracy, and supports optimal patient management outcomes (Howick et al., 2018; Thirioux et al., 2016). Hojat et al. (2017) define empathy as a predominantly cognitive attribute that involves understanding the patient's experiences, concerns, and perspectives, with the capacity to communicate this understanding and an intention to help. Empathy is widely viewed as a measurable and teachable skill. Multiple studies have shown that empathic engagement contributes to improved patient satisfaction, adherence to treatment, and even better clinical outcomes (Canale et al., 2012). Moreover, physicians who demonstrate higher empathy are reported to experience greater job satisfaction, lower levels of burnout, and enhanced emotional well-being (Spilg et al., 2022).

Despite its established value, a growing body of international and local research has reported a decline in empathy levels among medical students as they progress through their education. This trend is especially noticeable during the transition from pre-clinical to clinical years, when students are exposed to more demanding workloads, emotionally challenging patient interactions, and the rigors of clinical environments. Contributing factors include increased academic pressure, emotional fatigue, competitive atmospheres, and the so-called "hidden curriculum" that emphasizes technical competence over humanistic care (Neumann et al., 2007). A recent thematic synthesis by Howick et al. (2023) concluded that empathy decline in medical students is consistently linked to curriculum design, stress, and lack of supportive structures within medical schools. Similar findings have emerged from within Pakistan. For instance, Tariq et al. (2017) observed moderate empathy levels among medical students in multiple cities, with a notable decline during mid-clinical years.

One relevant Pakistani study by Javaeed et al. (2022), conducted at Poonch Medical College, found no significant correlation between empathy scores and academic performance among undergraduate medical students, although female students scored significantly higher on the empathic concern subscale. These findings align with some international literature, yet contrast with others, reflecting an ongoing ambiguity regarding the relationship between academic performance and empathy. Some researchers suggest a positive correlation, theorizing that more empathetic students may perform better due to superior communication and emotional regulation skills (Hojat et al., 2009). Others report no relationship, or even an inverse association, especially in high-stress academic settings where cognitive overload may suppress emotional availability (Ferreira-Valente et al., 2017).

Beyond academic performance, self-esteem is another psychological construct that may influence empathic capacity in medical students. Rosenberg (2015) defines self-esteem as a stable sense of self-worth and self-acceptance. It is closely related to emotional regulation, resilience, and interpersonal competence (Khattak, Amin & Mustafa, 2022). Research has found that students with higher self-esteem tend to display greater empathy, lower stress, and better professional attitudes (Huang et al., 2019). Self-esteem may also mediate the effects of academic pressure on student well-being and interpersonal functioning. For instance, students with stronger self-esteem are less likely to succumb to burnout, more likely to cope constructively with stress, and often exhibit more compassionate attitudes toward patients (Martos Martínez et al., 2021).

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The interconnection between empathy, academic performance, and self-esteem remains underexplored, particularly in South Asian and Pakistani contexts where academic pressures are high, mental health stigma persists, and emotional competencies are often under-emphasized in medical curricula. Existing research tends to investigate these variables in isolation rather than through an integrated framework. Moreover, cultural norms, gender roles, and institutional variations may further influence these relationships, calling for context-specific research. Given the pivotal role these factors play in shaping the professional and emotional development of future physicians, understanding their interaction is crucial for designing effective medical education strategies.

Therefore, this study aims to examine the relationship between empathy, academic performance, and self-esteem among undergraduate medical students in Pakistan. By exploring how these three constructs relate to each other and how they vary across academic years, this research seeks to provide evidence that can inform policies, teaching methods, and support systems aimed at producing not only academically competent but also emotionally intelligent and empathetic healthcare professionals.

Methodology

This quantitative correlational study was conducted among undergraduate medical students enrolled in accredited institutions located in the cities of Rawalpindi and Lahore, Pakistan. Ethical approval was obtained from the Institutional Review Boards of both participating institutions, and administrative permissions were secured prior to data collection. Informed consent was obtained from all students who volunteered to participate in the study. Additionally, formal permission was acquired from the respective authors and organizations to use the Jefferson Scale of Physician Empathy – Student Version (JSPE-S) and the Rosenberg Self-Esteem Scale (RSES) as standardized assessment tools. All responses were anonymized to ensure confidentiality, and data were securely stored and analyzed in compliance with ethical research standards.

Participants were recruited through a convenience sampling method and included MBBS students from the first through fifth academic years. A total of 460 students were invited to participate. After the exclusion of incomplete or unusable responses, the final sample consisted of 339 students who had completed all components of the survey. Inclusion criteria required students to be currently enrolled in the MBBS program at two accredited medical colleges located in Rawalpindi and Lahore. Students who were physically or psychologically unwell during the relevant examination period, or at the time of data collection, were excluded from the study.

Empathy was assessed using the Jefferson Scale of Physician Empathy – Student Version, which contains 20 items rated on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.” The scale evaluates three domains: perspective taking, compassionate care, and standing in the patient’s shoes. Total scores range from 20 to 140, with higher scores reflecting greater empathy (Hojat et al., 2001). Self-esteem was measured using the Rosenberg Self-Esteem Scale, a 10-item instrument employing a 4-point Likert scale. This scale assesses global self-worth and includes both positively and negatively worded items. Scores range from 0 to 30, with scores below 15 suggesting low self-esteem (Rosenberg, 2015).

Students self-reported their most recent academic examination results. For those in the second through fifth years, professional examination scores were recorded, while first-year students provided their FSc scores. Based on these academic performance indicators,

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students were ranked and then divided into two equal groups: high academic performers (top 50%) and low academic performers (bottom 50%).

All participants completed the demographic form along with the empathy and self-esteem scales in a single session. The data were anonymized to maintain confidentiality and stored securely for analysis. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 22. As the data did not meet the assumptions for normality, non-parametric statistical methods were applied. Spearman's rank-order correlation was used to examine associations between empathy, self-esteem, and academic performance. The Mann–Whitney U test was used to compare empathy and self-esteem scores between high and low academic performance groups, and the Kruskal–Wallis H test was applied to examine differences across academic years. A p-value of less than 0.05 was considered statistically significant.

Results

The results of the study are presented below through correlation and group comparison analyses. These findings explore the associations among empathy, self-esteem, and academic performance, as well as how these variables vary across different academic years.

Table 1: ***Correlation Between Empathy, Self-Esteem, and Academic Performance***

Variables	Correlation (r)	p-value
Empathy – Self-esteem	.10	.02
Academic Performance – Empathy	.02	.35
Self-esteem – Academic Performance	.09	.04

Note. Spearman's correlation; p < .05 considered statistically significant.

In addition, the correlation between empathy and self-esteem was examined separately for students with high and low academic performance. A significant positive correlation was found in the high academic performance group ($r = .12$, $p < .05$), while the correlation was not significant in the low academic performance group ($r = .08$, $p > .05$).

Table 2: ***Comparison of Empathy and Self-Esteem Between High and Low Academic Performance Groups***

Variables	High Performers (Mean Rank)	Low Performers (Mean Rank)	p-value
Empathy	169.00	170.00	.85
Self-esteem	173.00	166.00	.53

Note. Mann–Whitney U test; no statistically significant differences observed.

There were no statistically significant differences in empathy or self-esteem scores between students with high and low academic performance. This suggests that academic standing alone may not be a strong determinant of these psychological traits.

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Table 3: ***Correlation Between Empathy and Self-Esteem by Year of Training***

Year of Training	Correlation (r)	p-value
1st Year	−.00	.46
2nd Year	.31*	.02
3rd Year	−.10	.20
4th Year	.21*	.03
5th Year	.07	.32

*Note. Spearman's correlation; $p < .05$.

When examined by academic year, a significant positive correlation between empathy and self-esteem was found among 2nd- and 4th-year students. In other years, the correlation was either weak or non-significant.

Table 4: ***Empathy Scores Across Years of Training (Kruskal–Wallis Test)***

Year of Training	N	Mean Rank	p-value
1st Year	118	185.25	
2nd Year	43	120.45	
3rd Year	68	169.66	
4th Year	75	160.81	
5th Year	35	199.79	.001*

Note. Significant difference found in empathy across training years, $H(4) = 17.75$, $p = .001$.

Empathy scores differed significantly across the academic years. The highest mean rank for empathy was found in 5th-year students, while the lowest was seen in 2nd-year students, indicating a potential dip during early clinical exposure.

Table 5: ***Self-Esteem Scores Across Years of Training (Kruskal–Wallis Test)***

Year of Training	N	Mean Rank	p-value
1st Year	118	187.17	
2nd Year	43	121.70	
3rd Year	68	191.88	
4th Year	75	158.43	
5th Year	35	153.74	.001*

Note. Significant difference found in self-esteem across training years, $H(4) = 19.55$, $p = .001$.

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Self-esteem also varied significantly across training years. Students in the 3rd year had the highest self-esteem, whereas 2nd-year students had the lowest, mirroring trends observed in empathy and suggesting this year may present heightened psychological challenges.

Discussion

This study examined the interrelationship between empathy, self-esteem, and academic performance among undergraduate medical students in Pakistan. The results revealed a statistically significant positive correlation between empathy and self-esteem, suggesting that students who possess a higher sense of self-worth may also exhibit greater emotional responsiveness toward others. This finding aligns with previous research conducted among Chinese nursing and college students, which found that higher self-esteem was associated with increased empathy scores (Huang et al., 2019; Panczyk et al., 2020). These results support the understanding that self-esteem is a foundational psychological construct that enhances social connectedness, emotional regulation, and perspective-taking; skills essential for empathic practice in medicine. Recent research has further emphasized that self-esteem may serve as a protective factor against emotional fatigue and professional burnout in clinical environments, thus preserving empathic engagement (Cairns et al., 2024).

Despite empathy's widely recognized role in effective patient care, the results did not support a statistically significant relationship between empathy and academic performance. This challenges traditional assumptions that students who excel academically also possess stronger interpersonal skills. Similar findings have been reported in both regional and international studies. For example, Javaeed et al. (2022) found no significant correlation between academic performance and empathy in a sample of Pakistani medical students. This discrepancy may stem from the nature of academic assessments, which predominantly evaluate cognitive performance while often overlooking emotional intelligence or clinical communication. Prior studies have observed that empathy correlates more strongly with clinical competence and professionalism than with written or standardized exam scores (Ferreira-Valente et al., 2017; Hojat et al., 2017).

The study also investigated the association between self-esteem and academic performance. Although some studies have shown that self-esteem can predict academic outcomes through enhanced motivation, resilience, and self-efficacy (Orth & Robins, 2014), our results indicated only a weak but statistically significant correlation. Furthermore, no significant difference in self-esteem was observed when comparing high and low academic achievers. This suggests that in the context of medical education where success often depends on high-stakes performance, external validation, and institutional rigor, self-esteem may be influenced more by personal coping mechanisms and institutional climate than by grades alone. It is also possible that medical students internalize achievement as an expected norm rather than a source of identity reinforcement, thereby reducing the direct impact of academic performance on self-esteem.

Another significant observation was the variation in empathy and self-esteem across academic years. Empathy scores were highest in the first and fifth years, while the lowest scores appeared in the second year. This pattern is consistent with prior literature indicating a decline in empathy during the middle years of medical training, often attributed to increased academic workload, emotional desensitization, and reduced patient contact (Howick et al., 2023). The dip in second-year scores could be linked to the

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stress of theoretical learning without corresponding clinical engagement, which may disconnect students from the humanistic aspects of their future profession. Interestingly, fifth-year students reported higher empathy, potentially due to increased clinical exposure and a more mature understanding of patient-centered care. These findings reinforce the idea that empathy can be modulated through the educational environment and is not fixed.

A similar trend was observed in self-esteem, with first- and third-year students reporting higher scores than those in the second and final years. This decline might be due to cumulative stress, academic fatigue, and a perceived lack of institutional support. Students at the end of their medical education may also experience uncertainty about their future careers or feel pressure to meet professional expectations. Other studies have highlighted that deteriorating self-esteem in senior medical students can be linked to burnout, performance anxiety, and lack of work-life balance (Pölczman et al., 2025).

Taken together, these findings emphasize the importance of addressing emotional and psychological well-being alongside academic progress. Educational interventions that support reflective practice, mentorship, and peer support may help students retain empathy and protect self-esteem throughout their training. Targeted interventions may be especially useful during the second and fourth years, which appear particularly vulnerable based on our results. Medical schools should consider formally integrating well-being curricula and developing training models that value both technical competence and emotional intelligence. By fostering self-esteem, institutions may also sustain empathy; ultimately leading to more compassionate and effective future physicians.

Conclusion

Empathy is a foundational element of effective and ethical medical practice. It facilitates the patient–physician relationship, enhances trust, and improves treatment outcomes. While academic performance remains a vital criterion for evaluating medical students, this study highlights that self-esteem is significantly and positively associated with empathy. Fostering self-esteem in medical students may enhance their capacity for empathic communication and improve the quality of care they provide. Therefore, alongside academic achievement, equal emphasis should be placed on supporting students' emotional and psychological well-being. An integrated approach that nurtures both cognitive excellence and emotional intelligence is essential for producing not only competent but also compassionate physicians.

Limitations

This study was limited to medical students from two private or semi-private institutions located in Rawalpindi and Lahore. As such, the findings may not fully represent the broader population of medical students in Pakistan, particularly those from public sector institutions. Additionally, a substantial number of incomplete responses were excluded from the final analysis, potentially reducing the statistical power and generalizability of the results. The use of self-report questionnaires may also be subject to response bias, and the cross-sectional design limits the ability to infer causality among the variables studied.

Recommendations

Future research should include a more diverse sample of medical students from public, private, and rural institutions across various regions of Pakistan. A longitudinal study design would allow researchers to track changes in empathy, self-esteem, and academic performance over time, offering deeper insights into their developmental trajectories.

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Moreover, incorporating qualitative methods, such as interviews or reflective writing, could help contextualize the emotional experiences of medical students and identify institutional factors that influence their psychological well-being and professional development. Implementing structured interventions aimed at boosting self-esteem and empathy should also be empirically tested within the medical education curriculum.

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