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The Impact of Reflective Writing on Empathy Development among Medical Students: A Systematic Review and Narrative Synthesis

Shomaila[1], Badar Akram[2*], Sarah Amin[3], Sidrah Shaukat[4], Sadaf Saleem[3] and Sadia Fatima[5]

[1]Department of Medical Education, Women's Medical College, Abbottabad, Pakistan
[2]Department of Anatomy, School of Health Sciences, National University of Sciences and Technology, Islamabad, Pakistan
[3]Department of Medical Education, NUST School of Health Sciences, National University of Sciences and Technology, Islamabad, Pakistan
[4]Department of Community and Preventive Dentistry, Watim Dental College, Rawalpindi, Pakistan
[5]Department of Medical Education, Abbottabad International Medical Institute, Abbottabad, Pakistan

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***Corresponding Author:**
Badar Akram
Department of Anatomy, School of Health Sciences, National University of Sciences and Technology, Islamabad, Pakistan
b.akramkhan@gmail.com

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ABSTRACT

Empathy is central to patient-centered care but often declines during medical training. Reflective writing has emerged as a strategy to strengthen empathy by fostering emotional awareness, ethical reasoning, and self-reflection. **Objectives:** To evaluate the effectiveness of reflective writing in enhancing empathy among undergraduate medical students and identify features influencing its success. **Methods:** A systematic search of PubMed, ScienceDirect, ERIC, and Google Scholar (January 2020–July 2025) was conducted following PRISMA 2020 guidelines. Thirty-four records were identified, 4 duplicates removed, and 16 excluded during screening. Eighteen full texts were reviewed, and 15 studies met eligibility criteria. Eligible designs included qualitative, quantitative, and mixed-methods research; conceptual contributions with structured reflective models were also retained. Data on participants, interventions, reflective frameworks, and empathy measures were extracted. Risk of bias was assessed using adapted CASP and ROBINS-I criteria. **Results:** Of the 15 included studies, 3 demonstrated statistically significant empathy improvements using validated tools ($p<0.0125$, $p=0.04$). One study showed no significant change, while 9 reported descriptive or thematic improvements, such as enhanced ethical reasoning and emotional engagement. Two studies provided anecdotal evidence, and 2 were theoretical. Risk-of-bias assessment indicated most studies were of moderate quality, limited by small samples, self-reported outcomes, and absence of controls. **Conclusion:** Reflective writing is a promising, low-cost educational tool for nurturing empathy in medical students, especially when structured, facilitated, and supported by feedback. Future studies should employ validated instruments, larger sample sizes, and longitudinal follow-up to confirm sustained effects.

INTRODUCTION

Empathy, the ability to understand and share the feelings of others, is fundamental to the physician-patient relationship and is consistently linked with improved diagnostic accuracy, treatment adherence, patient satisfaction, and professional well-being [1]. However, there is growing concern that empathy tends to decline during medical training, particularly in the clinical years, due to academic pressures, emotional fatigue, and the dominance of biomedical teaching models [2, 3]. To address this issue, medical educators worldwide have introduced reflective writing as a pedagogical tool that enables learners to process clinical experiences through

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introspective narrative. Structured reflection has been shown to foster critical thinking, enhance emotional resilience, and promote ethical awareness [4, 5]. In high-income countries, reflective writing is embedded into professionalism modules, narrative medicine curricula, and interdisciplinary humanities programs [6]. In contrast, evidence from low- and middle-income countries (LMICs) remains limited, with small-scale reports highlighting cultural stigma around emotional expression, limited faculty training, and curricular overload as common barriers [7, 8]. These challenges underline the need for context-sensitive strategies, but the primary scope of this review is global. The decision to restrict the review to studies published between 2020 and 2025 was deliberate, aiming to synthesize the most recent evidence and capture innovations that emerged in medical education following the COVID-19 pandemic, which accelerated the integration of reflective and humanities-based learning [9]. Against this backdrop, the present systematic review evaluates whether and how reflective writing contributes to empathy development among undergraduate medical students worldwide. By analyzing studies conducted across diverse cultural and educational settings, this review seeks to identify effective strategies, highlight methodological strengths and weaknesses, and offer recommendations for implementing reflective pedagogy in medical curricula.

METHODS

This systematic review followed PRISMA 2020 guidelines to synthesize recent evidence on the role of reflective writing in enhancing empathy among undergraduate medical students. A comprehensive search was conducted in PubMed, ScienceDirect, ERIC, and Google Scholar (supplementary), using Boolean operators with the following PubMed string: ("reflective writing" OR "narrative writing" OR "journaling" OR "reflection") AND ("empathy" OR "empathic" OR "compassion") AND ("medical students" OR "undergraduate medical education"), with filters set to English-language studies published between January 2020 and July 2025; the first 200 results per query were reviewed for reproducibility. Eligible studies included original research involving undergraduate medical students where reflective writing (structured or unstructured) was the intervention and empathy was a measured outcome; conceptual papers and narrative reviews were also included if they presented structured reflective models (e.g., Gibbs, Kolb) or theoretical frameworks, which were classified separately as "theoretical evidence." Studies were excluded if they involved non-medical students, lacked a reflective writing component, did not assess empathy, were not in English, or lacked full-text availability. Screening was conducted at title/abstract and full-text stages, with data extracted on study design, participants, intervention structure, use of frameworks, facilitator involvement, feedback, comparison groups, empathy measures, timing, and outcomes. Study quality and risk of bias were evaluated using an adapted framework from ROBINS-I (for non-randomized studies) and CASP (for qualitative studies) across four domains: selection bias, measurement bias, confounding, and reporting bias, with narrative/conceptual papers assessed for transparency and theoretical coherence. Due to heterogeneity in design and outcomes, a narrative synthesis was undertaken, summarizing quantitative results through p-values or effect sizes and categorizing qualitative findings into themes such as emotional engagement, ethical reasoning, patient-centered communication, and professional identity development, with comparisons based on intervention features including reflective models, facilitator involvement, and feedback provision (Figure 1).

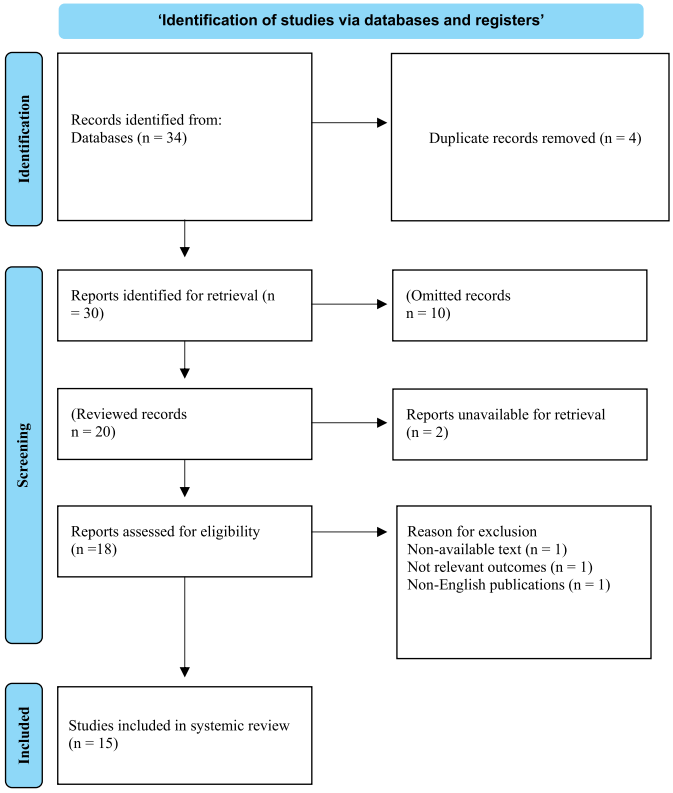

Figure 1: PRISMA 2020 Flow Diagram Illustrating the Process of Study Identification, Screening, and Inclusion

RESULTS

Table 1 a summarizes the characteristics of the 15 studies published between 2020 and 2025 that examined the impact of reflective writing on empathy among medical students. The included studies were conducted across diverse geographical regions, including Asia, Europe, North America, and Africa, reflecting the global interest in empathy development. Study designs varied from interventional pre-post (n=1), experimental or quasi-experimental (n=3), mixed-methods (n=2), and longitudinal courses (n=1) to qualitative analyses (n=5) and

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conceptual/narrative contributions (n=3). Sample sizes ranged from 28 participants to 192 reflective essays, while some studies did not specify participant numbers. The participant groups included both preclinical (1st–2nd year) and clinical (final-year clerks, 3rd–6th year) students, demonstrating the integration of reflective writing across different stages of medical training. Most interventions were guided or structured, such as ethics vignettes, clinical exposure reflections, or visual arts–based activities. In contrast, free-form and creative writing approaches were explored in a smaller number of studies [11-13]. Notably, 10 of 15 studies (66%) incorporated facilitator involvement and feedback, while five relied on self-directed writing. The presence of facilitation and structured feedback appeared more frequently in studies reporting positive outcomes (Table 1).

Table 1: Characteristics of Included Studies (2020–2025)

Sr. No.	References	Country	Design	Sample Size (N)	Participants	Intervention	Facilitator/ Feedback
1	[10]	Taiwan	Qualitative	28	Medical students	Reflection on correctional school visits	No / No
2	[11]	Turkey	Qualitative	192 essays	5th-year students	Reflection on clinical year experiences	No / No
3	[12]	UK	Qualitative	Not reported	2nd-year students	Storytelling with patient educators	Yes / Yes
4	[13]	Spain	Longitudinal (3 years)	Not reported	4th–6th-year students	Professionalism course with reflection	Yes / Yes
5	[14]	UAE	Pre-post interventional	73	Final-year clerks	Free-form reflective writing during clerkship	None / No
6	[15]	Uganda	Narrative report	Not reported	Medical students	Creative writing, journaling	Yes / Yes
7	[16]	India	Qualitative	150	1st-year students	Guided reflective narratives post clinical exposure	Yes / Yes
8	[17]	USA	Mixed methods	128	1st-year students	Visual arts + reflective writing	Yes / Yes
9	[18]	India	Mixed methods	150	1st-year students	Ethics vignettes + guided reflection	Yes / Yes
10	[19]	USA	Experimental	Not reported	3rd-year students	Reflection rounds (4 sessions)	Yes / Yes
11	[20]	Russia	Quasi-experimental	60	Med students (English course)	Narrative writing (10–13 assignments)	Yes / Yes
12	[21]	Sweden	Qualitative	69 essays	Final-year students	Critical reflection essays	No / No
13	[22]	Ireland	Content analysis	80 essays	Undergrad psychiatry students	Graded reflective essays	Yes / Yes
14	[23]	Thailand	Narrative review	Not applicable	Medical students (general)	Reflection models	Encouraged / Yes

Not reported = Study did not specify participant number, not applicable = Conceptual/narrative review without participants. And Facilitator/Feedback = First entry = facilitator present (Yes/No), Second entry = feedback provided (Yes/No).

The study results showed the empathy-related outcomes and findings across the 15 included studies. Of these, 3 studies (20%) demonstrated statistically significant improvements in empathy scores using validated scales: Rezaei [17] ($p<0.0125$), Menezes ($p=0.04$ [19]), and Torubarova ($p<0.05$ [20]). One study reported no statistically significant change (NS, $p>0.05$), though qualitative themes indicated emotional engagement [24]. Nine studies (60%) described descriptive or thematic improvements in empathy or related domains such as teamwork, ethical reasoning, and compassion; Donohoe quantified reflections, showing that 56% of essays demonstrated dialogic and 19% critical reflection [22]. Two studies provided anecdotal or narrative impressions without statistical analysis [12, 15]. Finally, 2 studies were conceptual/theoretical, emphasizing reflective models or poetic expression as strategies for empathy development [14, 23]. Taken together, the evidence base suggests that empathy gains were most robust when validated measurement tools were applied, but descriptive and thematic data consistently highlighted perceived improvements in empathic capacity, professional identity, and patient-centered attitudes (Table 2).

Table 2: Empathy Outcomes and Findings (2020–2025)

Sr. No.	References	Empathy Measure	Timing	Main Outcome	Statistical Result	Risk of Bias
1	[10]	Reflective journals	Post	Gendered empathy patterns (♀ relational> ♂ practical)	Descriptive	Moderate
2	[11]	Thematic analysis of essays	Post	Empathy + stress themes	Descriptive (qualitative categories)	Moderate
3	[12]	Reflection essays	Post	↑ Compassion, ↑ engagement	Anecdotal	Moderate

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4	[13]	Self-assessment + SP encounters	Multi-year (3 yrs)	↑ Empathy sustained	Significant (longitudinal trend, no p reported)	Moderate
5	[14]	Poetic reflection (conceptual)	N/A	Empathy enhancement suggested	Theoretical	Low
6	[15]	Creative journaling	N/A	↑ Self-awareness, ↑ empathy	Descriptive	Moderate
7	[16]	Not specified	Post	↑ Empathy, ↑ teamwork	Descriptive (student themes)	Moderate
8	[17]	Interpersonal Reactivity Index (IRI)	Pre/Post	↑ Perspective-taking	$p < 0.0125$	Moderate
9	[18]	Custom rubric (Likert scale)	Post	↑ Ethical reasoning, ↑ empathy	Descriptive (Mean Likert > 4/5)	Moderate
10	[19]	Jefferson Scale of Empathy (JSE)	Pre/Post (clerkship)	↑ Empathy in intervention vs control	$p = 0.04$	Moderate
11	[20]	Empathy/Communication tolerance scale	Pre/Post (13 weeks)	↑ Empathy, ↑ communication tolerance	$p < 0.05$	Moderate
12	[21]	Critical reflection essays	Retrospective	Empathy preserved or ↑	Descriptive	Moderate
13	[22]	Reflection coding scale	Cross-sectional	56% dialogic, 19% critical reflections	Numerical descriptive	Moderate
14	[23]	Reflection models (review)	N/A	Supports empathy development	Theoretical	Low
15	[24]	Toronto Empathy Questionnaire	Pre/Post	No improvement in empathy	NS ($p > 0.05$)	Moderate

*NS = Not Significant ($p>0.05$), JSE = Jefferson Scale of Empathy, IRI = Interpersonal Reactivity Index, SP = Standardized Patients Descriptive = Reported qualitatively or with descriptive scores/percentages (no inferential testing), Anecdotal = Narrative impressions without systematic analysis, Theoretical = Conceptual or framework-based evidence only

The majority of studies (12/15) were judged as having moderate overall risk of bias, largely due to limitations in study design, absence of control groups, reliance on self-reported empathy outcomes, and potential confounding from concurrent clinical experiences. Three studies were classified as low overall risk, this rating was qualified (*Low**), since conceptual/narrative studies did not lend themselves to traditional bias domains but were transparent in reporting [14, 23, 21]. One study showed a high risk of bias across selection, measurement, and confounding domains due to its narrative report format and lack of methodological detail. Measurement bias was low in studies using validated empathy tools [17, 19, 24], but high in conceptual and narrative works that relied on self-reflection without standardized tools. Confounding bias was commonly moderate, reflecting limited control for external factors such as prior exposure to communication skills training or clinical rotations.

Overall, the risk-of-bias profile demonstrates that while reflective writing shows promise, much of the evidence base rests on studies with moderate methodological rigor, emphasizing the need for future randomized controlled trials with standardized empathy measures and long-term follow-up (Table 3).

Table 3: Risk of Bias Assessment for Included Studies (2020–2025)

Sr. No.	References	Design	Selection Bias	Measurement Bias	Confounding	Reporting Bias	Overall Risk
1	[10]	Qualitative	Moderate	Moderate	Moderate	Low	Moderate
2	[11]	Qualitative	Low	Moderate	Moderate	Low	Moderate
3	[12]	Qualitative	Moderate	Moderate	High	Low	Moderate
4	[13]	Longitudinal	Low	Low	Moderate	Low	Moderate
5	[14]	Conceptual (essay)	Low	High	High	Low	Low*
6	[15]	Narrative report	High	High	High	Moderate	Moderate
7	[16]	Qualitative	Low	Moderate	Moderate	Low	Moderate
8	[17]	Mixed methods	Moderate	Low	Low	Low	Moderate
9	[19]	Experimental	Low	Low	Moderate	Low	Moderate
10	[20]	Quasi-experimental	Moderate	Moderate	Moderate	Low	Moderate
11	[21]	Qualitative	Low	Moderate	Moderate	Low	Moderate
12	[22]	Content analysis	Low	Low	Moderate	Low	Moderate
13	[23]	Narrative review	Low	High	High	Low	Low*
14	[24]	Pre-post interventional	Moderate	Low	Moderate	Low	Moderate

*Selection bias = Representativeness of participant selection. Measurement bias = Use of validated empathy tools (low = validated tool, high = only self-report or unclear). Confounding = Adjustment for external factors (e.g., concurrent modules, clinical exposure, gender differences). Reporting bias = Completeness of outcome reporting.

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DISCUSSION

This systematic review revealed that reflective writing, particularly when structured and supported, has a positive impact on the development of empathy among undergraduate medical students. The interventions varied in form, ranging from narrative reflections and journaling to guided essays and ethics-based vignettes. The outcomes collectively suggested improvements in students' ability to recognize emotions, engage compassionately, and reflect ethically on patient care. These findings were contextualized with recent 2025 studies outside the formal review window, cited to highlight convergent trends in medical education literature rather than as part of the systematic dataset. Earlier studies have shown that guided reflection significantly enhances empathic awareness, ethical reasoning, and patient-centered communication. This trend was mirrored by Ahmadpour and Shariati [24], who implemented Gibbs' reflective cycle in narrative writing and found measurable increases in empathy and communication skills among nursing students, and by Chan *et al.* [25], who observed that reflective writing mapped to ACGME competencies improved sensitivity toward interpersonal care. The value of structure and feedback was another recurrent theme. In this review, studies like Menezes *et al.* [19] and del Barrio *et al.* [13] showed statistically significant gains in empathy scores when reflection was embedded in structured educational settings. Comparable findings were reported by Mandal and Kundu [26], who demonstrated that rubrics enhanced emotional engagement, and by Artioli *et al.* [27], who confirmed that facilitator feedback amplified the depth of reflection. This review also showed that free-form reflections, while emotionally expressive, had mixed results in terms of measurable empathy gains. Earlier studies found no statistically significant improvements despite strong thematic insights into emotional awareness. Recent studies reported similar outcomes, where unstructured reflections lacked the consistency and depth seen in facilitated approaches [29, 30]. The influence of creative and humanities-based modalities was also noted. Previous studies described how poetry and journaling fostered emotional insight. This aligns with Malik *et al.* [31], who found that poetic reflection enhanced empathy by promoting emotional articulation among South Asian students, and with Rezaei *et al.* [17], who reported similar gains using visual prompts. Another notable theme was the role of cultural and gender variation. Hsu and Sung [10] reported gendered empathy patterns, which were further validated by McNally *et al.* [32], who found that sociocultural norms shaped empathetic narratives during debriefing sessions. Lastly, this review highlighted limitations in empirical rigor, including small sample sizes, absence of control groups, and inconsistent empathy measures. Similar limitations were reported by Imperato *et al.* [33] and Spaska *et al.* [34], who noted the difficulty of long-term evaluation, and by Zia *et al.* [35], who emphasized challenges in isolating reflection as the sole factor in improved interpersonal awareness. Limitations of this review itself should also be acknowledged. First, only English-language studies were included, which may have excluded relevant evidence published in other languages. Second, conceptual and narrative contributions were retained because of their theoretical value, but they lack empirical testing and should be interpreted cautiously. Third, due to heterogeneity in study designs, outcome measures, and reporting, a meta-analysis was not feasible, and a narrative synthesis was adopted instead. Taken together, the findings underscore the value of reflective writing as a pedagogical tool for enhancing empathy in medical education, particularly when thoughtfully designed, facilitated, and embedded within the curriculum. The evidence, both from this dataset and recent literature, strongly suggests that empathy is most likely to improve when reflective practices are intentional, supported, and evaluated using validated tools.

CONCLUSIONS

This review, enriched by recent contextual evidence, confirms that reflective writing, when well-structured, guided, and supported, plays a significant role in fostering empathy among medical students. The intervention is especially effective when based on established reflective models, embedded in clinical or humanities-based contexts, and coupled with facilitator feedback. However, methodological variability and limited long-term evaluation continue to constrain the evidence base. Future studies must prioritize methodological rigor by employing adequately powered sample sizes (ideally >100 participants per group), applying validated empathy instruments such as the Jefferson Scale of Empathy or Interpersonal Reactivity Index, and incorporating longitudinal follow-up of at least 6–12 months to evaluate the persistence of empathy gains. Until such evidence is available, reflective writing remains a promising, low-cost, and adaptable approach to nurturing empathy, a trait central to compassionate, patient-centered care.

Authors Contribution

Conceptualization: SA
Methodology: S, BA, SS[1]
Formal analysis: S, SS[2]
Writing review and editing: S, BA, SA, SS[1], SS[2], SF

All authors have read and agreed to the published version of the manuscript

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Conflicts of Interest

All the authors declare no conflict of interest.

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