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Narrative medicine in surgical education: a qualitative study of medical interns' experiences

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Abstract

Background & Objective: Narrative Medicine (NM) is increasingly recognized as an educational approach that promotes reflection, empathy, and the integration of theoretical knowledge with clinical practice. Although NM programs have been widely implemented in Western medical schools, empirical evidence on learners' lived experiences with such programs in developing countries, particularly in clinical settings, remains limited. This study explored medical interns' experiences with narrative-reflective writing as implemented in a surgical ward in Iran.

Materials & Methods: This qualitative process-evaluation study was conducted from 1 September 2023 to 20 June 2024. Sixteen medical interns (9 females, 7 males) participated in a three-phase NM program comprising an introductory orientation, structured narrative-reflective writing assignments based on a modified Gibbs reflective cycle, and individualized faculty feedback. Data were collected through semi-structured, in-depth interviews focusing on participants' perceptions, reactions, and immediate learning outcomes, consistent with Kirkpatrick Level 1 evaluation. Coding and categorization followed a structured codebook to ensure transparency, consistency, and analytic rigor.

Results: Analysis revealed four main themes: (1) cognitive deepening and evidence-integrated learning; (2) emotional and professional growth, encompassing confronting emotions, ethical awareness, and professional confidence; (3) movement toward patient-centered care, reflecting a more holistic perspective and an orientation toward quality improvement; and (4) structural constraints and contextual barriers, including workload, limited resources, and variable instructor support. Participants reported that NM strengthened reflective thinking, reinforced clinical reasoning, enhanced professional identity, and supported patient-centered, ethically informed care.

Conclusion: Engagement in NM supported interns' reflective capacity, professional identity formation, and critical thinking skills, contributing to both personal and professional growth. Sustained institutionalization of NM requires structured programming, adequate infrastructure, committed faculty involvement, and access to scientific resources.

Keywords: education, medical; internship and residency; general surgery; qualitative research; reflective practice; patient-centered care; professional competence

Introduction

When the American Medical Association recommended a revised medical education curriculum at the beginning of the 20th century, leading universities such as Harvard and Johns Hopkins emphasized goals including ethical behavior, communication skills, critical thinking, and compassionate care [1]. Achieving these objectives depends on listening and reading skills mediated through patients' narratives. Since the early days of modern medical education, the integration of the humanities has been proposed as a means of improving care [2].

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In contemporary healthcare models, which sometimes fall short of delivering comprehensive, patient-centered care, the core principles of Narrative Medicine (NM) have been proposed as a means to enhance clinical practice and promote health [3]. NM is a framework within medicine and the health sciences that recognizes individuals' stories and lived experiences as integral to understanding health and illness [4]. Effective clinical practice requires narrative competence: the ability to acknowledge, absorb, interpret, and act on the stories and circumstances of others. Medicine practiced with narrative competence, referred to as narrative medicine, has been proposed as a model for more humane and effective care [5]. Reflective practice is central to narrative medicine and has been recognized as essential for the professional development of healthcare providers across disciplines [6]. In medicine, it enables physicians to examine their actions and recognize how thoughts, emotions, and feelings influence decision-making, clinical reasoning, and professionalism [7]. Integrating narrative and medicine allows traditional medical practice to draw on literature's capacity to enhance clinical competence, cultivate moral imagination, and foster interpersonal understanding [8]. NM has shown promise for improving communication, cultural competence, and empathy [9], as well as professionalism [10], vitality, and burnout prevention [11]. It has also been associated with enhanced critical thinking and deeper learning among students [12], improved attention to patients' signs and symptoms, greater diagnostic accuracy, and reduced reliance on unnecessary tests [13], ultimately contributing to more patient-centered care [9]. These benefits may be particularly relevant in surgical education, where high-pressure clinical environments offer limited opportunities for reflection and patient-centered engagement.

Despite these promising outcomes, surgical training presents specific contextual challenges. Surgical environments are typically characterized by technical demands, time pressure, hierarchical structures, performance expectations, and emotionally intense clinical situations. While essential for patient safety and procedural mastery, these features may inadvertently limit students' opportunities to process experiences, articulate emotions, and engage in patient-centered dialogue. Integrating NM into surgical rotations may therefore provide a structured space for reflection, emotional processing, and meaning-making within a technically demanding clinical context. Although NM in medical education has received growing attention in Western contexts, rigorous quantitative and qualitative evaluation of NM-based programs remains limited [4].

Prior Iranian studies, such as those by Daryazadeh et al., have contributed to the field by developing assessment checklists and measuring quantitative shifts in empathy and reflection [14, 15]. However, a significant gap remains regarding the process and depth of these educational experiences. Most existing research uses predetermined scales that may overlook the nuanced challenges interns face during NM implementation in high-pressure environments such as surgery. Qualitative evidence exploring not only whether NM works, but how it is experienced and which program elements resonate with learners, is largely absent. By adopting a qualitative process-evaluation approach, this study addresses that gap and offers a more granular understanding than quantitative measures alone can provide. The intervention was conceptualized within a design–implementation–evaluation framework, describing how the educational program was planned, delivered, and assessed in a real clinical setting. The evaluation component was informed by Kirkpatrick's Level 1 (Reaction), which focuses on participants' perceptions, satisfaction, and immediate responses to an educational intervention. This framework provides a theoretically grounded and methodologically transparent basis for evaluating students' experiences. To achieve a deep and inductive understanding of these experiences, conventional content analysis was employed. This approach allows categories and themes to emerge directly from the data without being constrained by pre-existing theoretical frameworks. Given the novelty of integrating NM into surgical rotations in Iran, this inductive method ensures that participants' perspectives and unanticipated reactions are authentically captured. The aim of this study was therefore to explore the lived experiences of medical students participating in a narrative medicine–based surgical rotation. The central research question was: "How do medical students perceive and react to the integration of narrative medicine within surgical clinical education?"

Materials & Methods

Design and setting(s)

This study was designed as a qualitative process-oriented evaluation of a narrative medicine–based educational intervention. Process-oriented evaluation focuses on understanding how participants experience, perceive,

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and engage with an intervention during its implementation, rather than primarily assessing measurable outcomes. This approach was appropriate given the study's aim to explore medical interns' reflections, emotional responses, perceived learning experiences, and contextual challenges related to narrative-reflective writing. Conventional (inductive) content analysis was employed to analyze participants' experiences and immediate reactions, aligned with Kirkpatrick's Level 1 (Reaction) framework. This method was selected because NM integration within surgical rotations remains relatively unexplored in the local educational context. By using a conventional approach, the researchers allowed categories and themes to emerge directly from participants' narratives rather than being shaped by pre-existing frameworks. The study was conducted from September 1, 2023, to June 20, 2024, at Fatemi Hospital, Ardabil, Iran.

Intervention: Course design and implementation

The educational intervention followed a three-phase design: (1) orientation, (2) narrative-reflective writing, and (3) individualized feedback.

In the first phase (orientation), a modified Gibbs reflective cycle was introduced at the beginning of each clinical rotation. The aims and steps of narrative-reflective writing were explained in detail. Students were informed that participation was an integral part of the rotation's formative learning process; however, narrative content was not numerically graded and did not affect summative clinical evaluation. Confidentiality and respectful engagement were emphasized throughout. In the second phase (implementation), students completed reflective narratives structured around four stages:

a. Description of the learning experience: A detailed account of a clinical event or performance.

b. Analysis: Exploration of emotional responses and reflection on the reasons behind those feelings.

c. Reconstructing the experience: Organization of lessons learned and reformulation of appropriate behavior based on evidence.

d. Outcomes and action plan: Evaluation of alternative actions and articulation of what the student would do differently in similar future situations.

Students submitted one narrative per week during the rotation. Narratives were expected to be approximately 500–1,000 words, though flexibility was permitted to preserve authenticity.

Topics were semi-structured: students could reflect on any impactful clinical encounter, such as pre-operative consultations, operating room experiences, communication with patients or families, or ethical dilemmas, guided by the reflective stages introduced during orientation. In the third phase (feedback), the faculty member reviewed each student's reflective writing and provided individualized feedback. Feedback was written directly on the submitted narratives and, when necessary, supplemented by brief face-to-face discussions (15–20 minutes per student) at the end of the rotation. It focused on depth of reflection, emotional insight, ethical reasoning, linkage to clinical evidence, and feasibility of proposed action plans. All feedback was provided by the same faculty member to ensure consistency. **Table 1** summarizes session objectives, duration, activities, facilitator roles, and assessment methods.

Table 1. Course plan and implementation details of the narrative medicine program

Session	Timing (when)	Duration	Learning objectives	Activities / Facilitator tasks	Assessment / Output
Orientation	Day 1 (rotation start)	45–60 min	Introduce NM goals; explain Gibbs cycle; confidentiality	Lecture + Q&A + short exercise	Attendance; baseline expectations
Reflective writing	Ongoing (weekly during rotation)	Students produce 1 narrative per week	Apply reflective steps: description, feelings, analysis, action plan	Individual writing (student)	Written narratives (collected)
Feedback	End-rotation	15–20 min per student	Provide individualized feedback; correct misconceptions	One-to-one feedback based on narratives	Surgery faculty

Note: NM indicates narrative medicine; Q&A, question and answer. All feedback was provided by the same faculty member to ensure consistency.
Abbreviations: NM, narrative medicine; Q&A, question and answer; min, minutes.

Participants and sampling

The study population comprised medical interns rotating through the surgical ward. Participants were recruited through purposive sampling with maximum variation across three consecutive internship rotations. Variation was sought in terms of gender, academic performance (grade point average (GPA) range), and diversity of clinical exposure to enhance breadth of perspectives.

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Inclusion criteria were active participation in the NM-based educational program and provision of written informed consent. Data collection and analysis proceeded concurrently.

After each interview, newly generated codes were compared with the existing codebook to monitor conceptual emergence. Data collection continued until thematic saturation was reached; defined as the point at which no new codes or insights emerged from successive interviews.

Saturation was observed after the 13th interview; three additional interviews were conducted to confirm thematic stability. In total, 16 medical interns participated. Participant characteristics, including gender, year of university entry, GPA range, and rotation period, are presented in **Table 2**.

Table 2. Demographic characteristics of medical interns participating in the narrative medicine program (n = 16)

Participant ID	Gender	Academic Cohort (Year of Entry)	GPA Range (out of 20)	Surgical Rotation Period
P1	Female	2018	16–14	September
P2	Male	2018	16–14	September
P3	Female	2018	18–16	September
P4	Male	2018	16–14	September
P5	Female	2018	20–18	September
P6	Male	2018	16–14	December
P7	Female	2018	18–16	December
P8	Female	2018	16–14	December
P9	Male	2018	16–14	December
P10	Female	2018	20–18	December
P11	Male	2017	16–14	March
P12	Female	2017	16–14	March
P13	Female	2017	18–16	March
P14	Male	2015	16–14	March
P15	Female	2017	18–16	March
P16	Male	2015	16–14	March

Note: Data are presented as individual participant characteristics. GPA ranges are presented as the minimum–maximum score out of 20.
Abbreviations: GPA, grade point average; ID, identification; n, number of participants.

Tools/Instruments

Data were collected using a semi-structured interview guide comprising open-ended questions on participants' experiences with reflective writing, perceived educational value, emotional responses, and perceived influence on patient-centered thinking in surgical practice. Questions were developed from relevant literature on NM and medical education and refined through expert consensus to ensure content relevance and clarity. The final guide is provided in **Appendix 1**.

Data collection methods

In-depth interviews were conducted within two weeks of completing each surgical rotation to minimize recall bias while allowing adequate time for reflection. Interviews took place in a private room at the hospital and lasted between 30 and 90 minutes. All interviews were audio-recorded with participants' permission. The interviewer was a trained qualitative researcher not involved in students' summative assessments. To ensure reflexivity, the research team explicitly acknowledged a positive predisposition toward NM as a tool for humanizing medical education, particularly in technically driven fields such as surgery. To mitigate this bias, the interviewer maintained a neutral stance during questioning. Detailed field notes were recorded during and immediately after each interview, documenting non-verbal behaviors (e.g., pauses, tone of voice, emotional expressions) and environmental context, which enriched interpretive depth during analysis.

Data analysis

Analysis followed the conventional content analysis approach described by Hsieh & Shannon [16] and proceeded through five steps: (1) verbatim transcription and repeated reading of transcripts to achieve immersion; (2) identification of meaning units; (3) open coding through condensation of meaning units; (4) constant comparison and grouping of codes into subcategories; and (5) abstraction of categories into overarching themes.

To strengthen rigor, the researchers practiced bracketing, explicitly identifying and setting aside professional preconceptions and clinical backgrounds in surgery, so that analysis reflected participants' perspectives rather than researchers' expectations.

Analytic memos were maintained throughout coding and categorization to document the evolution of the codebook, the rationale for merging codes, and the emergence of latent themes, forming an audit trail that grounded findings in the raw data. No dedicated qualitative analysis software was used; data management

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relied on a structured codebook. Two researchers independently coded the data, with discrepancies resolved through discussion or adjudication by a third qualitative expert. An illustrative example of the analytic procedure from raw data to final themes is presented in **Table 3**.

Table 3. Inductive coding process from raw data to final themes

Raw Data (Excerpts from Participants)	Condensed Meaning Unit	Initial Code	Sub-theme	Overarching Theme
"Reviewing clinical encounters helps reinforce information... we learned how to use up-to-date sources and articles for complex patients."	Narrative reflection as a bridge between clinical encounters and evidence-based learning.	Use of evidence-based resources for cases.	Bridging theory and clinical experience	Cognitive Deepening and Evidence-Integrated Learning
"I felt regret over negligence... but over time this feeling turns into self-assurance and confidence."	Transformation of negative emotions (guilt/regret) into professional self-efficacy.	Transformation of regret into confidence	Developing professional confidence and self-efficacy	Emotional Processing and Professional Identity Development
"This method leads us to consider the patient's interests... such as focusing on the costs imposed on the patient."	Expanding clinical focus from technical procedures to the patient's socio-economic reality.	Considering patient's economic constraints	Seeing the patient beyond the procedure	Movement Toward Holistic and Patient-Centered Care
"The intern's role is mostly to complete report writing. There is no time to review patients."	Conflict between the requirement for reflection and the heavy administrative/clinical workload.	Dominance of administrative tasks (report writing)	Time pressure and workload	Structural and Contextual Constraints Affecting Implementation

Abbreviations: No nonstandard abbreviations used in this table.

Trustworthiness

Trustworthiness was ensured through strategies addressing credibility, dependability, confirmability, and transferability [17]. Credibility was strengthened through prolonged engagement with the data, independent coding by two researchers, and member checking: summary interpretations were returned to five participants, all of whom confirmed that the themes accurately reflected their experiences, with minor clarifications incorporated into the final analysis. Dependability was enhanced through peer debriefing sessions held at three stages: after initial coding, during category development, and during theme abstraction. Confirmability was supported by maintaining an audit trail comprising analytic memos, reflexive notes, and documentation of coding decisions. Transferability was facilitated through maximum-variation sampling across three rotations and provision of thick contextual descriptions and illustrative quotations.

Results

Table 3 presents the demographic characteristics of the sample. Sixteen medical interns participated (9 females, 7 males), with a mean age of 25.17 ± 2.06 years and a mean GPA of 16.22 ± 1.15.

Conventional content analysis yielded 61 initial codes inductively derived from meaning units identified across the interview transcripts. Iterative comparison of codes across interviews revealed patterns of similarity and variation in participants' experiences. Conceptually related codes were clustered into 12 subthemes reflecting shared experiential meanings; subthemes with higher-level conceptual convergence were further synthesized into four overarching themes representing broader interpretive dimensions of how interns experienced NM integration within surgical education (**Table 4**).

These themes collectively illustrate students' reactions to NM integration within surgical training, consistent with Kirkpatrick Level 1 evaluation. Participants' reactions, however, extended beyond simple satisfaction or dissatisfaction. Their accounts reflected perceived cognitive, emotional, professional, and contextual consequences of engaging in structured reflective writing.

Across the four themes, an overarching interpretive pattern emerged, Reframing Surgical Learning Through Structured Reflection, suggesting that narrative writing functioned not as an isolated cognitive or emotional exercise, but as a structured reflective process through which routine clinical experiences were revisited, reinterpreted, and invested with new educational and professional meaning.

Through this process, students described a shift away from a predominantly task-oriented approach to surgical training and toward a more reflective, analytical, emotionally aware, and ethically attentive orientation. Participants reported pausing to reconsider the rationale behind routine surgical decisions, attending more carefully to patients' emotional and psychosocial concerns, and engaging more deliberately in communication with patients and clinical team members. Routine clinical activities were thus no longer

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experienced solely as procedural tasks, but as opportunities for deeper understanding of surgical practice and of their own evolving professional identities. Structural and contextual barriers were also identified, but these did not negate the perceived educational value of narrative reflection; rather, they highlighted conditions that may facilitate or constrain its sustained integration into clinical training.

Table 4. Overarching theme, themes, and subthemes derived from the inductive content analysis

Overarching Theme	Themes	Subthemes
Reframing Surgical Learning Through Structured Reflection	1. Cognitive Deepening and Evidence-Integrated Learning	Bridging theory and clinical experience
		Strengthening clinical reasoning and evaluative thinking
		Promoting research orientation and evidence use
	2. Emotional Processing and Professional Identity Development	Confronting emotions and learning from errors
		Strengthening ethical awareness and responsibility
		Developing professional confidence and self-efficacy
	3. Movement Toward Holistic and Patient-Centered Surgical Care	Seeing the patient beyond the procedure
		Enhancing responsiveness and quality of care
	4. Structural and Contextual Constraints Affecting Implementation	Time pressure and workload
		Limited access to scientific resources
		Instructor support and educational culture

Abbreviations: No nonstandard abbreviations used in this table.

Theme 1: Cognitive deepening and evidence-integrated learning

The first major dimension of participants' experiences concerned cognitive enrichment through reflective writing.

Students consistently described narrative writing as more than a descriptive exercise—as a mechanism for consolidating theoretical knowledge with clinical encounters, strengthening analytical thinking, and fostering a more deliberate orientation toward evidence-based practice.

Subtheme 1: Bridging theory and clinical experience: Students reported that writing about real cases required them to revisit and integrate biomedical knowledge within authentic patient contexts.

> *"Reviewing clinical encounters helps reinforce information. Through this method, we learned how to use up-to-date sources and articles for complex patients and apply the gained experiences in future patient care."* (P2, Male, GPA 14–16)
>
> *"One of the strengths of this method is that it leads to the internalization of clinical content both experientially and scientifically."* (P4, Male, GPA 14–16)

These accounts suggest that reflective writing helped students actively connect conceptual knowledge with clinical practice, transforming routine encounters into opportunities for deeper cognitive engagement. Rather than passively receiving information, participants described becoming more intentional in relating theory to the specifics of patient care.

Subtheme 2. Strengthening clinical reasoning and evaluative thinking: Participants described developing habits of questioning their own decisions, reassessing diagnostic reasoning, and critically reviewing care plans.

> *"I learned to always ask myself: Why did I make that choice? Could I have done something better?"* (P14, Male, GPA 14–16)

This reflective questioning supported a more deliberate and analytical approach to clinical reasoning. Students did not merely recall events; they re-examined them, assessed the logic behind their actions, and considered alternatives. Some participants indicated that this process also improved their ability to evaluate outcomes and revise management strategies in light of new evidence, suggesting that reflection functioned as a cognitive tool for refining diagnostic and decision-making processes.

Subtheme 3. Promoting research orientation and evidence use: Narrative writing encouraged the formulation of clinical questions and active consultation of scientific resources.

> *"This method causes us to review theoretical knowledge daily, face new symptoms, and resolve arising questions using evidence." (P5, Female, GPA 18–20)*

Participants described a shift from passive reception of knowledge toward more active, question-driven inquiry. Reflective writing appeared to encourage learners to seek evidence not as an abstract academic task, but as a practical necessity arising directly from patient care; a

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dimension of the experience that students found both intellectually stimulating and educationally meaningful.

Theme 2: Emotional processing and professional identity development

A second major dimension concerned the affective and identity-related functions of reflective writing. Narrative reflection provided a space in which students could confront emotional responses, process ethically challenging experiences, and negotiate their emerging sense of professional responsibility within the demanding context of surgical training.

Subtheme 1. Confronting emotions and learning from errors: Students frequently described feelings of regret, guilt, or inadequacy when revisiting clinical encounters, yet these emotions were reframed as catalysts for growth.

> *"I felt regret over negligence towards the patient... but over time this feeling turns into self-assurance and confidence." (P4, Male, GPA 14–16)*

Reflective writing appeared to enable participants to transform emotionally difficult experiences into structured learning opportunities. By naming and analyzing their responses, students were able to reinterpret challenging encounters in ways that supported both personal coping and professional development.

Subtheme 2. Strengthening ethical awareness and responsibility: Participants reported heightened sensitivity to professional duties and patient welfare.

> *"In the early stages… a feeling of negligence and guilt arises… encouraging more searching in scientific articles and databases." (P1, Female, GPA 14–16)*

Ethical reflection was consistently associated with increased accountability and deeper engagement with professional standards, suggesting that narrative writing encouraged learners to attend more deliberately to the moral dimensions of clinical practice.

Subtheme 3. Developing professional confidence and self-efficacy: Re-examining cases and planning improved future responses enhanced students' sense of competence.

> *"Re-encountering the patient has intensified my sense of responsibility and confidence." (P8, Female, GPA 14–16)*

Students described moving from uncertainty toward a more coherent and confident professional identity. The reflective process was experienced not only cognitively but also affectively, with participants reporting increased self-awareness and greater engagement with their developing professional roles.

Theme 3: Movement toward holistic and patient-centered surgical care

Participants described a broader and more patient-centered understanding of surgical care emerging through reflective writing.

Subtheme 1. Seeing the patient beyond the procedure: Narrative writing encouraged attention to psychosocial and economic dimensions of care.

> *"This method leads us to consider the patient's interests in management, such as focusing on the costs imposed on the patient." (P7, Female, GPA 16–18)*

Students reported greater awareness of patients' lived realities beyond biomedical indicators, suggesting that reflective engagement broadened their perspective on clinical decision-making.

Subtheme 2. Enhancing responsiveness and quality of care: Reflective review of cases prompted greater anticipation of complications and reinforced the importance of timely intervention.

> *"Appropriate interventions should be done at the earliest opportunity… complications could have been avoided." (P12, Female, GPA 14–16)*

These accounts suggest that reflective writing not only deepened empathy but also sharpened students' awareness of how attentiveness and timely action influence patient outcomes.

Participants perceived reflection as fostering a stronger quality-of-care orientation, in which anticipation of complications and thoughtful clinical management became central concerns. Overall, this theme points to a transition from procedure-focused participation toward a more holistic and patient-centered orientation within surgical training.

Theme 4: Structural and contextual constraints affecting implementation

Although participants described predominantly positive educational experiences, they also identified systemic barriers that complicated the implementation and sustainability of reflective practices. These constraints were not experienced as minor logistical inconveniences; they stood in direct tension with the cognitive, emotional, and patient-centered learning described in the preceding themes. The educational value of reflection was recognized, but the clinical environment did not

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consistently provide conditions in which it could be fully enacted.

Subtheme 1. Time pressure and workload: The most immediate barrier was the heavy workload characteristic of surgical training. Extensive documentation requirements, clinical duties, and service demands frequently left little room for thoughtful reflection or deeper patient engagement.

> *"The intern's role in the hospital is mostly to complete report writing. There is no time to review patients." (P15, Female, GPA 16–18)*

This account illustrates that the barrier extended beyond mere inconvenience. The dominance of administrative and task-based activities risked pulling learners back toward the procedural, efficiency-driven orientation that reflective writing had begun to challenge.

Subtheme 2. Limited access to scientific resources: A second barrier concerned restricted access to scientific literature and digital learning tools. Although reflective writing stimulated participants to seek evidence, institutional limitations often undermined this motivation.

> *"We do not have internet access in many wards… and the library computers do not meet our needs." (P10, Female, GPA 18–20)*

This finding reveals a tension between learners' developing research orientation and the infrastructural limitations of the setting. Where Theme 1 described reflection as motivating evidence-informed inquiry, in practice the absence of adequate resources made it difficult to act on that motivation; a mismatch between educational aspiration and environmental support.

Subtheme 3. Instructor support and educational culture: Participants expressed uncertainty about whether reflective learning would receive sustained faculty support. While individualized feedback was valued as essential to the depth of reflection, some doubted whether instructors would be able to maintain that engagement over time.

> *"The method is good, but I doubt that instructors will support this since they do not have the time to provide detailed feedback." (P11, Male, GPA 14–16)*

This concern suggests that reflective learning was perceived not solely as an individual practice, but as a relational and pedagogical process dependent on mentorship, responsiveness, and institutional recognition. Without faculty time and cultural support, the professional and emotional growth described in Theme 2 risks remaining fragile and episodic rather than becoming embedded in routine surgical training. Participants' accounts thus indicate that the sustainability of NM depends not only on student motivation, but on whether the educational system legitimizes reflective work as a meaningful component of clinical learning.

Taken together, these contextual tensions suggest that while narrative reflection was valued as an educationally meaningful experience, its integration into surgical training remains highly dependent on structural and cultural conditions. The reframing of surgical learning through structured reflection is not produced by individual effort alone; it is shaped by the interaction between learners' reflective engagement and the institutional environment in which that engagement takes place.

Discussion

This study provides a qualitative, process-oriented evaluation of medical students' reactions to integrating narrative medicine into surgical education. Process-oriented evaluation examines how learners interpret and make meaning of an intervention during participation, rather than focusing solely on outcome measures such as satisfaction or knowledge gain.

The findings suggest a multidimensional shift in how students perceived their learning, professional responsibility, and approach to patient care within surgical training. Consistent with Kirkpatrick's Level 1 framework, this shift was expressed at the level of students' interpretations and mental representations of their clinical experiences, not as objectively measured behavioral change. The overarching theme—*Reframing surgical learning through structured reflection*—indicates that narrative writing functioned as a reflective mechanism through which students cognitively revisited clinical encounters, processed emotional responses, and reconsidered aspects of their emerging professional roles. Although Level 1 is commonly associated with immediate satisfaction, participants' accounts reflected perceived cognitive activation, emotional engagement, and an emerging awareness of professional responsibility. These findings therefore represent students' interpreted responses to the educational experience rather than objectively verified changes in cognition or behavior. Comparison with prior literature helps clarify the distinction between superficial

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satisfaction and the deeper perceived engagement reported here. Multiple systematic reviews indicate that NM interventions generate high learner satisfaction and perceived empathy gains, yet evidence for behavioral or performance-level change remains inconsistent. The present findings do not resolve this gap; rather, they offer insight into how learners interpret and experience narrative writing, providing a possible explanation for why strong perceived engagement does not always translate into measurable behavioral outcomes [4]. Milota et al. (2019) concluded that while narrative interventions reliably enhance reflective capacity and empathy, objective behavioral outcomes are rarely assessed [18]. This methodological gap may partly explain why prior studies observed attitudinal shifts without documented behavioral progression.

Students perceived narrative writing as a catalyst for metacognitive engagement, reporting active questioning of diagnostic decisions and revisiting of theoretical foundations. This aligns with literature suggesting that reflective writing enhances self-regulated learning and diagnostic reasoning [19]. Unlike programs evaluated solely through satisfaction surveys, the present intervention incorporated structured cycles of reflection linked to clinical cases and individualized feedback. Participants emphasized the role of this structure in deepening engagement; one noted that writing about a specific patient "made me rethink my approach," while another described it as "forcing me to go deeper than usual, connecting theory with what actually happened." Educational theory holds that reflection influences higher-order cognition when it is structured and iterative [20]. This structural element may help explain why students described perceived shifts in diagnostic logic rather than simply reporting enjoyment, though this remains an interpretive explanation grounded in self-reported experience rather than a causal conclusion.

Participants also described perceived shifts in diagnostic logic that may represent forms of cognitive engagement preceding observable behavioral change. One plausible explanation lies in the modified Gibbs reflective cycle and individualized feedback, which encourage movement from description to critical analysis. Emerging evidence suggests that such structured reflection is more likely to influence the perceived development of clinical reasoning than unstructured journaling alone [21]. The high-stakes surgical environment may also account for these findings.

Situated learning theory holds that reflection embedded within authentic, responsibility-laden contexts enhances the perceived transferability of learning [22]. This contextual immediacy may explain why students described a perceived readiness to modify their clinical approach, with several referring to intentions to reconsider diagnostic steps or reassess assumptions; a form of perceived behavioral readiness distinct from the predominantly affective gains reported in classroom-based settings.

Drawing on Theme 1 (Cognitive Deepening and Evidence-Integrated Learning), students consistently described consulting scientific resources as part of the reflective process. Narrative writing appeared to bridge experiential learning and evidence-based medicine, with participants describing how the task encouraged formulation of clinical questions. One participant noted that the method "causes us to review theoretical knowledge daily… and resolve arising questions using evidence" (P5), suggesting a perceived shift from passive reception toward intentional evidence-seeking. This interpretation aligns with Charon's conceptualization of narrative competence as integrating interpretation with action [5], and extends prior literature by indicating that narrative reflection may serve as an entry point to evidence-seeking behavior in surgical contexts. Educational scholarship emphasizes that evidence-based practice depends on epistemic curiosity [23], and Wells et al. (2022) demonstrated that reflective prompts significantly increased reported evidence-search behavior [24]; consistent with participants' accounts of consulting literature after identifying diagnostic uncertainty.

These findings complement prior studies [4] by illuminating a perceived improvement in clinical judgment. The integration of reflection with action planning likely strengthened translational thinking. Prior work has identified knowledge acquisition [25], academic confidence [14], and professional development [26] as outcomes associated with evidence engagement, and students here also linked evidence-based reflection with perceived improvements in treatment planning [27, 28]. Together, these observations suggest that narrative writing may support the perceived development of clinical reasoning in surgical contexts.

The discrepancy between satisfaction without behavioral change and perceived cognitive progression, both remaining self-reported outcomes, may reflect differences in measurement focus. Where prior studies relied on short-term surveys, the present findings offer a more detailed account of students' subjective interpretations of their own cognitive development. A

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recent scoping review notes that current research frequently lacks longitudinal assessment and consistent structuring, both of which are necessary to evaluate outcomes beyond initial reactions [7]. The absence of measured behavioral change in some studies may therefore reflect methodological limitations rather than a lack of meaningful perceived transformation.

Reflective practice has similarly been linked to Professional Identity Formation (PIF) processes that unfold gradually and resist capture by short-term behavioral measures [29]. The absence of documented behavioral change may thus reflect measurement constraints, though insufficient intervention duration remains an alternative explanation that warrants consideration.

Narrative reflection provided a space for students to engage with the emotional dimensions of surgical training. Participants described a trajectory from guilt and uncertainty toward perceived confidence and professional responsibility, suggesting that narrative writing functioned as a structured means of processing difficult clinical encounters and supporting emerging professional identity. This is consistent with Cassel's argument that recognition of suffering is foundational to care [29]; participants reframed emotional discomfort as a stimulus for improvement. PIF theory holds that reflection mediates integration of the personal and professional self [30], and recent research confirms that emotionally charged experiences, when processed through guided reflection, can accelerate perceived identity consolidation [31].

Within the hierarchical surgical context, students described narrative writing as contributing to a more humanized experience of training. This shift was expressed not as abstract empathy but as concrete behavioral intentions; attention to patients' financial circumstances, for instance, and a heightened sense of responsibility toward outcomes. These accounts reflect students' intended approaches rather than confirmed behavioral changes, indicating a perceived readiness to act differently [5, 32].

Contextual barriers alone may not fully account for the limited uptake and sustainability of narrative writing within routine surgical training. While students primarily identified structural constraints such as workload and resource limitations, the present analysis also points to the potential influence of faculty attitudes and the degree to which reflective practice is modeled within the clinical environment. Similar infrastructural challenges have been reported elsewhere [27, 33]. A grounded theory study of undergraduate clinical education in Iranian teaching hospitals following the Health Transformation Plan described a structural misalignment in which service-oriented priorities competed with educational responsibilities, alongside crowded clinical settings and misaligned incentive structures; conditions that may constrain the routine integration of reflective practices [34]. Although this dimension was less explicitly articulated by participants, it aligns with educational change literature emphasizing that faculty development is critical to the integration and sustainability of reflective curricula [35]. The gap between positive learner reactions and limited institutional adoption in some settings may reflect organizational readiness rather than pedagogical inefficacy. Institutionalizing narrative writing therefore requires not only infrastructural investment but also cultural change within surgical departments, potentially supported through faculty development initiatives, protected time for reflective activities, and the formal embedding of NM within the surgical curriculum [36].

This study has several limitations. First, it was conducted at a single institution within one surgical training context; findings may reflect local educational culture and should be applied cautiously to other settings. Second, the data correspond primarily to Kirkpatrick Level 1 outcomes, capturing perceptions and subjective experiences rather than objectively measured behavioral or clinical performance changes. The reported cognitive, emotional, and professional shifts should therefore be interpreted as self-described perceptions rather than empirically verified transformations. Third, the internship environment, characterized by heavy workloads, time pressure, and hierarchical supervisory relationships, may have influenced both students' reflective engagement and their willingness to discuss uncertainty or offer critical views of the clinical learning context. Finally, although steps were taken to minimize power differentials, social desirability bias cannot be fully excluded given participants' awareness of faculty involvement. Despite these limitations, the use of maximum variation sampling, thematic saturation, peer debriefing, and member checking strengthens the credibility of the findings. Transferability should be considered primarily in contexts with comparable clinical training structures. Future research should extend evaluation to Kirkpatrick Levels 2 and 3 by examining measurable changes in clinical reasoning, diagnostic accuracy, and observed professional behavior.

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Comparative controlled designs could help clarify whether structured narrative writing yields more favorable outcomes than traditional surgical rotations. Longitudinal studies are needed to determine whether reflective engagement during internship influences residency performance, professional identity formation, and burnout trajectories. Implementation-focused research should also examine organizational and systemic factors, such as incentive alignment and protected educational time, to understand how individual readiness for change might be translated into institutional sustainability.

Conclusion

This study demonstrates that structured narrative writing can meaningfully reframe how medical students perceive and engage with surgical education, shifting their reported experience from technical exposure alone toward reflective and patient-centered learning. When systematically implemented and supported by faculty feedback, NM shows value as a pedagogical strategy even in high-intensity clinical environments. Sustainable integration, however, requires addressing the structural tension between service delivery and educational goals. Embedding structured reflection into surgical curricula represents a deliberate investment in developing physicians who are both clinically competent and humanistically oriented.

Ethical considerations

All participants were fully informed about the educational program. Participation in both the program and the interviews was voluntary, and students could withdraw at any stage without consequence. Written informed consent was obtained from all participants. The study protocol was approved by the Research Ethics Committee of Ardabil University of Medical Sciences (Ethics Code: IR.ARUMS.MEDICINE.REC.1402.069) and was conducted in accordance with the Declaration of Helsinki.

Artificial intelligence utilization for article writing

The authors declare that an AI tool (ChatGPT) was used solely for translation purposes during manuscript preparation. It was not used for data analysis, interpretation of results, or generation of scientific content. All AI-assisted translations were reviewed, edited, and verified by the authors, who take full responsibility for the integrity and accuracy of the final manuscript.

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Conflict of interest statement

The authors declare no conflict of interest.

Author contributions

AA and AK contributed to the literature search, study design, and manuscript review. AS collected the data and contributed to manuscript review. AK performed data analysis and prepared the manuscript.

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Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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