BMC Medical Education

RESEARCH

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# Navigating hidden barriers in clinical medical education in Iran: a qualitative study

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## Abstract

**Introduction** Clinical education is the foundation of medical training, transforming theoretical knowledge into practical skills. In Iran, as in many other countries, clinical education faces significant challenges due to systemic inefficiencies and changing perceptions of the medical profession. This study explores the barriers to effective clinical education from the perspectives of both faculty members and medical students.

**Methods** Using a qualitative content analysis approach, data were collected through purposive sampling and semi-structured interviews with 13 clinical faculty members from diverse specialties, academic ranks, and teaching experience and 11 medical students across different training levels (externs, interns, and residents) at Tabriz University of Medical Sciences. Interviews continued until data saturation was achieved. Analysis followed Graneheim and Lundman's six-step framework, with coding and categorization conducted using MAXQDA10. The study ensured trustworthiness through the principles of credibility, dependability, confirmability, and transferability.

**Results** Three major themes emerged: (1) ineffective management of clinical education, including (a) limited resources for clinical education, (b) lack of coherent planning aligned with curricular competencies, (c) poor integration between teaching and clinical service, and d) selection mechanisms for faculty and students that do not support educational goals (2) limited focus on training socially responsive physicians including (a) overemphasis on technology and scientific content, (b) neglect of societal health needs, (c) insufficient assessment of clinical competence and (3) shifts in professional perspectives in medicine, including (a) reduced faculty engagement in mentoring and (b) broader societal influences affecting professional values.

**Conclusion** Overcoming the hidden barriers in clinical education demands a comprehensive approach that addresses structural inefficiencies, ensures accountability, and aligns training environments with curricular goals. Policy reforms should focus on redesigning clinical education settings, strengthening faculty mentorship, and fostering professional values. Bridging the gap between theory and real-world practice is essential to prepare competent and socially responsive physicians.

**Keywords** Clinical education, Medical students, Qualitative research, Faculty mentorship, Medical professionalism

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## Introduction

Clinical education is a vital pillar of medical sciences training, serving as the bridge between theoretical knowledge and practical application [1]. It involves the direct instruction and supervision of learners in authentic clinical environments, where they apply classroom knowledge to real-world patient care scenarios [2]. The effectiveness of clinical education is critical to developing skilled healthcare practitioners capable of delivering exceptional patient care.

In clinical settings, the role of the educator extends far beyond mere instruction [3]. Their duties encompass mentoring students through intricate patient interactions and guiding them in clinical decision-making processes [4]. This mentorship is key to building learners' confidence as they transition from academic study to clinical practice [3].

However, the dynamic and multifaceted nature of clinical settings introduces numerous challenges that educators must address to achieve desired learning outcomes [5].

One of the most persistent challenges is the disconnect between theoretical instruction and clinical practice. Students frequently encounter disparities between classroom teachings and clinical realities, potentially leading to uncertainty and apprehension when applying their knowledge in actual healthcare situations [6, 7]. Moreover, the dynamic and rapid pace of clinical environments can limit opportunities for reflection—a critical component of experiential learning and professional development.

Institutional factors such as curriculum structure and instructor support also significantly influence the quality of clinical education [8]. A rigid, outdated curriculum may fail to address the evolving needs of healthcare systems, restricting students' learning opportunities [9]. Additionally, inadequate mentorship and support systems may result in students experiencing isolation during their clinical training period [10]. Clinical education is an intricate phenomenon that is influenced by numerous interrelated factors, such as medical educators, students, the educational environment, and professional culture. Its effectiveness is shaped by the dynamic interplay among these elements. In Iran, the integration of education and healthcare delivery presents a unique context in which clinical education takes place.

In Iran, clinical education occurs within a distinctive context shaped by the country's centralized higher education system, which integrates medical education directly with healthcare service delivery. While this structure is designed to align learning with community health needs, it often creates tension between service provision and educational priorities. Systemic challenges—including limited resources, recurring economic crises, international sanctions, and inequities across institutions—further complicate the maintenance of high-quality clinical training. Within this broader context, Tabriz University of Medical Sciences represents a particularly suitable site for investigation. As one of Iran's type-1 universities and a major referral center in the northwest region, it attracts students from diverse backgrounds and encompasses multiple teaching hospitals that serve both urban and rural populations. Its pivotal role in shaping future physicians, combined with the diversity of its clinical environments, underscores its relevance as a setting to examine the hidden barriers of clinical medical education in Iran.

Given the complexity and contextual nature of clinical education, a qualitative research approach is particularly well-suited to exploring its underlying challenges and nuances. While numerous qualitative studies have investigated clinical education issues in the field of nursing [11], the structure and expectations of nursing education differ considerably from those in medical education. One prior study conducted at the University of Birjand examined clinical education challenges from the perspective of medical sciences [12]. However, it focused primarily on student viewpoints and overlooked the critical experiences of clinical educators.

To address this gap, the present qualitative study aims to explore the hidden barriers to clinical medical education in Iran by examining the perspectives of both clinical teachers and medical students. Clinical education in teaching hospitals plays a vital role in preparing competent healthcare professionals for contemporary practice. However, this process is often hindered by a range of systemic and contextual challenges. Identifying and addressing these barriers is essential to enhancing the clinical training experience and ensuring the readiness of future medical practitioners.

## Materials and methods

### Study participants and sampling method

A purposive sampling method was employed to select participants with extensive and relevant experience in clinical education, including faculty from multiple specialties and ranks, and students at different stages of clinical training (externs, interns, and residents), who were willing to share their insights. Semi-structured interviews were conducted with clinical faculty members at Tabriz University of Medical Sciences. To ensure diversity, faculty participants were drawn from different specialties (e.g., surgery, psychiatry, internal medicine, emergency medicine, infectious disease, and social medicine), academic ranks (assistant, associate, and full professors), and a wide range of teaching experience (15–29 years). To enrich and complete the emerging categories, additional interviews were held with medical students at different

stages of training, including externs, interns, and residents. Sampling and data collection continued until data saturation was achieved—that is, no new information emerged from subsequent interviews.

### Data collection and analysis

Semi-structured interviews served as the primary data collection method (Supplementary file 1). Interviews were conducted in quiet, comfortable settings at times convenient for the participants, and scheduled in advance. Prior to each session, participants were informed about the study objectives and methods, and their voluntary and informed consent was obtained. With participants' permission, all interviews were audio-recorded.

Each interview was transcribed verbatim. Two members of the research team (H, B) independently read and listened to the transcripts multiple times to become deeply familiar with the content. Semantic units were identified by highlighting key sentences in each paragraph. Open coding (Level 1) was performed to capture both explicit and implicit meanings, assigning codes to each semantic unit. These codes were then grouped into subcategories and categories based on shared characteristics and thematic similarities.

Throughout the data analysis process, coding and category placement were continuously reviewed and refined. Discrepancies were resolved through discussion among the research team. MAXQDA10 software was used for data organization and management, while the generation of codes, subcategories, categories, and overarching themes was performed manually by the research team through iterative review and discussion to ensure analytical rigor.

### Data analysis method

Qualitative content analysis was conducted following the six-step approach proposed by Graneheim and Lundman [13]. In the first step, interview data were compiled into Word documents and used as the primary research material. In the second step, transcripts were repeatedly read and listened to, allowing the researchers to extract semantic units. In the third step, these semantic units were abstracted and subjected to open coding, revealing both manifest and latent content. In the fourth step, similar codes were clustered into categories through constant comparison, and categories and subcategories were refined accordingly.

In the fifth step, at the interpretive level, summary categories and overarching concepts were identified. Codes were reviewed in the context of internal themes and the full dataset to extract main and abstract concepts. In the final step, the interpreted findings were reported. Selected codes and conceptual categories were illustrated using participants' statements to enhance the credibility and clarity of the findings.

### Trustworthiness

To ensure the trustworthiness of this qualitative study, we adhered to the four established criteria of credibility, dependability, confirmability, and transferability, as proposed by Lincoln and Guba [14]. Multiple strategies were employed to uphold the rigor of the research process and findings.

Credibility was enhanced through prolonged engagement, triangulation, member checking, and iterative analysis leading to thematic saturation. The first author, an experienced qualitative researcher, conducted all interviews, fostering an atmosphere of trust that encouraged participants to reflect deeply on their experiences. Open-ended questions guided the conversations, allowing participants to articulate personal narratives about their challenges in clinical education as students and educators. To enrich the depth and breadth of data, we incorporated diverse perspectives through purposive sampling of faculty members from various specialties and students at different stages of training. Methodological triangulation was further reinforced by involving three independent coders in the analysis process, with coding discrepancies resolved through collaborative discussions to reach consensus. Member checking was employed by presenting preliminary codes and themes to selected participants, ensuring that our interpretations resonated with their intended meanings.

The iterative nature of the analysis, conducted in sequential phases (initial 11 interviews, followed by 8 and then 5), allowed for continuous refinement of themes until data saturation was reached. No new concepts emerged in the final interviews, confirming thematic sufficiency.

Dependability was ensured by maintaining a comprehensive audit trail detailing the research procedures, including data collection, coding, and analytical decisions. To verify coding consistency, two researchers independently coded a subset of transcripts (20%), achieving a Cohen's Kappa coefficient of 0.72, reflecting substantial inter-coder agreement. Discrepancies were addressed through team discussions to consolidate coding frameworks.

Confirmability was strengthened through external auditing by a qualitative research expert who reviewed the study design, data collection processes, and analytic procedures for alignment with qualitative rigor standards. Additionally, a panel of research team members critically evaluated the coding processes to mitigate researcher bias and reinforce analytic transparency.

To enhance transferability, we employed purposive sampling to capture diverse participant demographics,

including variations in university affiliation, specialty, academic rank, age, and gender. Semi-structured interviews were guided by a flexible interview framework, iteratively developed and refined through pilot testing, which allowed participants to elaborate on foundational clinical experiences, systemic challenges, and teaching obstacles. The inclusion of pilot interviews in the final analysis was justified by their thematic consistency and contribution to the richness of data. All interviews ($n = 24$) were conducted by the first author between May 2022 and June 2023, with durations ranging from 42 to 90 min, and were audio-recorded to ensure accuracy.

Transferability was further supported through the inclusion of verbatim participant quotations to provide contextual grounding and facilitate the transfer of findings to other similar educational settings.

Reflexivity was maintained throughout the study by documenting researchers' professional backgrounds and potential biases before data collection commenced. Regular debriefing sessions were conducted within the research team to critically reflect on emerging interpretations, ensuring that subjective influences were continuously examined and minimized during the analysis process.

## Results

### Study participants

A total of 24 individuals participated in the study, including 13 faculty members from Tabriz University of Medical Sciences and 11 medical students (Table 1.).

### Thematic overview of challenges in clinical medical education

The major challenges in clinical education were categorized into three overarching themes: (1) ineffective management of clinical education, (2) limited focus on training socially responsive physicians, and (3) shifts in professional perspectives in medicine. Each theme encompassed several categories and subcategories, derived through qualitative analysis of the interview data. These themes reflect multiple systemic and cultural dynamics in Iranian clinical medical education, and they are interpreted below with reference to competency-based medical education (CBME), social accountability frameworks, and cultural-historical activity theory (CHAT), alongside classic learning theories.

### Theme 1: ineffective management of clinical education

This theme includes four major categories: (a) limited resources for clinical education, (b) lack of coherent planning aligned with curricular competencies, (c) poor

**Table 1** Cognitive personal information of study participants

| Group/number | academic rank | Professional position | Work experience (Year) | Age |
|---|---|---|---|---|
| Surgery/4 | Professor | Faculty member of ENT group, Head of the ENT Department& Director of medical school Education Development Office | 20-28 | 45-58 |
| | Professor | Faculty member of Internal Surgery-Urology, Head of Urology group | | |
| | Professor | Faculty member of Internal Urology - Surgery-Head of medical school &Evidenced based Medicine center | | |
| | Professor | Faculty of Neurosurgery group-Head of Neurosurgery group | | |
| Psychiatry/2 | Professor | Head of the Research Center / Director of Educational Development Center | 25-28 | 45-55 |
| | Associate Professor | Head of the Department of Psychiatry | | |
| Social Medicine/1 | Professor | Former Director of the Educational Development Center - Head of the Research Center | 22-24 | 45-50 |
| Emergency medicine/3 | Associate Professor | Faculty of Emergency medicine department/ Director of Continuing Education Officer | 15-18 | 40-45 |
| | Associate Professor | Faculty of Emergency medicine department/ Director of the Emergency Medicine Department | | |
| | Associate Professor | Faculty member of Emergency Medicine | | |
| Infection Disease/1 | Professor | Faculty of Infection Disease group/ Former Vice Challenor for Education and Department Director | 15-29 | 40-60 |
| Internal Medicine/2 | Associate Professor | Faculty of Endocrine and metabolic | | |
| | Associate Professor | Faculty of Gastroenterology and Master of Medical Education | | |
| Medical students/9 | -4 interns<br>-5 externs | - | - | 22-28 |
| Residents/2 | -Internal resident of the 3rd year<br>-Internal resident of the 4rd. year | - | - | 30-34 |

integration between teaching and clinical service, and d) selection mechanisms for faculty and students that do not support educational goals (Table 2.).

#### Limited resources for clinical education

Two subcategories emerged under this category: inadequate physical facilities and restricted human resources. Faculty emphasized shortages of essential equipment and the absence of sufficient nursing staff to support teaching. As one instructor (P8) noted: *"Even basic tools like blood pressure cuffs are insufficient or broken."* Overcrowding in clinical settings further limited student engagement, as another participant described: *"Some students stand at the back, unseen, and are excluded from participation."*

From a CBME perspective, these resource limitations obstruct students' ability to achieve minimum competencies, as consistent access to supervised, hands-on practice is essential for skill acquisition.

#### Lack of coherent planning aligned with curricular competencies

This category is composed of 5 subcategories: failure in implementing curriculum goals, disconnection between basic sciences and clinical training, inappropriate clinical education settings, marginalization of general medical training, limited opportunities for active learning.

##### *Failure in implementing curriculum goals*

Clinical faculty expressed concerns over the absence of structured, competency-based programming, especially in outpatient and community settings. A faculty member (P3) stated: *"Students rotate through subspecialty wards like endocrinology without clear objectives for general practice."* The concurrent teaching of externs, interns, and residents was frequently described as chaotic, with content skewed toward the needs of residents, leaving medical students disengaged.

This reflects a misalignment between curricular intent and workplace learning environments, a contradiction well captured by CHAT: institutional rules and service demands clash with educational objectives, leading to "hidden curricula" that deprioritize undergraduate learning.

##### *Disconnection between basic sciences and clinical training*

A recurring challenge was the disconnect between basic science instruction and clinical practice. Faculty lamented the absence of communication among clinical educators across departments. For example, a faculty member (P11) remarked: *"On the first day, I should know what clinical scenarios students have already covered, but there's no such system."* Students echoed this concern, reporting difficulties in applying theoretical knowledge to real clinical situations (P2): *"What we learn in basic sciences often feels disconnected from the clinic, making it hard to apply during patient care."*

##### *Inappropriate clinical education settings*

Participants criticized the delegation of undergraduate teaching to residents, who often lacked formal teaching skills. A medical student (P1) commented: *"In the emergency department, we're often tasked with writing orders but miss opportunities to engage in clinical reasoning."* Another faculty member (P11) noted the gap between academic guidelines and real-world resource limitations: *"I was unprepared for situations where prescribed medications were simply unavailable."*

##### *Marginalization of general medical training*

Participants described a systemic bias where educational priorities were overshadowed by hospital service demands. Teaching responsibilities often fell on residents, who were not adequately trained as educators. Medical students reported feelings of neglect, as captured by P7: *"Sometimes residents are told to do tasks they find boring, leaving us with no one to turn to for guidance."*

##### *Limited opportunities for active learning*

High student-to-faculty ratios and overlapping levels of trainees hindered opportunities for active, student-centered learning. A student (P4) expressed the desire for more interactive instruction: *"I want to examine patients with supervision and receive feedback—not just read a history."* Another (P2) highlighted the need for hands-on procedural practice.

#### Poor integration between teaching and clinical service

Two critical issues were identified: (1) weak education–service integration and (2) insufficient monitoring of educational standards. Faculty (P5) described the strain of balancing clinical productivity with teaching: *"Pressure to increase patient loads compromises educational quality."* Participants also pointed to the lack of performance-based evaluations for faculty, as P12 observed: *"Good and poor educators are treated the same; there's no reward or consequence system."*

Within a CBME lens, this absence of structured supervision and performance-based feedback hinders the stepwise development of competence. CHAT further highlights the contradiction between institutional reward systems (research, service revenue) and the activity of teaching.

#### Selection mechanisms for faculty and students

Two critical issues were identified: (1) excessive reliance on exam-based student selection (2) research-centered criteria in faculty recruitment and promotion. The selection processes for both medical students and teaching

**Table 2** Categories and sub-categories of the theme of ineffective management of Clinical Education

| Category | Sub-Category | Open Codes |
|---|---|---|
| Limited resources for clinical education | Inadequate physical facilities | - Inadequate physical facilities relative to the number of students<br>-Few and low-quality examination and diagnostic tools and equipment in educational settings |
| | Restricted human resources | - Not enough nurses to attend rounds to explain discussions and nurse feedback<br>- Inadequate patient-to-professor ratio<br>- Inadequate student-to-professor ratio |
| Lack of coherent planning aligned curricular competencies | Failure in implementing curriculum goals | - Lack of a specific program for each level of education in each clinical department<br>- Interference of educational programs of different levels<br>- Failure to organize learning experiences based on the minimum requirements for clinical competency<br>- Teaching without lesson plans in clinical settings<br>- Lack of attention to clinical competency-based education<br>- Personalized clinical education is subjective<br>- Failure to define minimum learning requirements in the educational planning wards |
| | Disconnection between basic sciences and clinical training | - Repetition and recall of basic sciences in clinical practice due to lack of integrated teaching<br>- Inability to generalize learning experiences to new situations (2)<br>- Students' weakness in applying theoretical knowledge in real-world settings<br>- Lack of a coherent educational program in clinical education |
| | Inappropriate clinical teaching settings | - General medical training in specialized teaching hospitals<br>- Limited internship days in the emergency department<br>- Poor planning for general medical education in general clinics and level 1 health centers<br>- Little attention for general medical education in rural centers and general practitioners' offices<br>- Inadequacy of specialized hospital cases for general medicine course |
| | Marginalization of general medical training | - Turning rounds into classrooms for students and watching resident and professor discussions<br>- The presence of residents is a factor in losing intern treatment authority<br>- Not allowing interns to think and reason due to the presence of residents<br>- Resident-centered and abandoning the general medicine course<br>- Student confusion due to complex discussions in work rounds<br>- Emphasis of hospital education on residency instead of general medicine<br>- Resident-centered clinical education without considering all levels of students<br>- Waste of student time due to specialized rounds and complex patients<br>- Incompatibility of specialized hospital cases for the general medicine course<br>- Student confusion in discussions with the resident professor<br>- Difficulty in selecting educational materials for externs and interns in subspecialty departments<br>- Resident-oriented education in subspecialty departments |
| | Limited opportunities for active learning | - Low interaction of the clinical teachers in the bedsides and challenging the students<br>- No opportunity to observe how the history and physical examination are taken and provide feedback on his/her mistakes<br>- No opportunity for interactive discussions between students and clinical teachers<br>- No ability to design reasoning questions to strengthen the clinical reasoning of the students due to the large number of students and the treatment load<br>- No opportunity for the clinical teachers to perform the procedure and emphasize its key points<br>- No questioning of the student about paraclinical requests and how to manage the treatment |
| Poor integration between teaching and clinical service | Weak education–service integration | - Priority of treatment over education in teaching hospitals<br>- Interference of treatment with education due to large number of patients and decrease in quality of clinical education<br>- Imposing high treatment burden on clinical teachers and learners<br>- Received clinical teachers allowance based on treatment workload and the number of medical services provided, not educational burden<br>- Overshadowing of teaching duties by dealing with imposed treatment duties<br>- Attention to income generation in teaching hospitals<br>- Failure to pay attention to reducing the treatment burden of teaching faculty members |
| | Insufficient monitoring of educational standards | - The lack of monitoring of the vice-chancellor to the clinical teaching of faculty members<br>- Absence of intrusive visits by vice-chancellor or education deputy of the medical school / teaching hospitals on the way of teaching in the clinical settings.<br>- Lack of punitive or encouraging tools for the performance of clinical teachers<br>- Good and bad clinical teachers are the same<br>- Absence of monitoring the implementation of course plans in the clinical education settings |

**Table 2** (continued)

| Category | Sub-Category | Open Codes |
|---|---|---|
| Inefficient selection mechanisms for educational faculty and medical students | Excessive reliance on exam-based student selection | - Admission of fee-paying students with poor academic levels for medicine<br>- Increase in quota students in the education system<br>- Admission of untalented learners due to quotas<br>- Admission to the medical field only with academic scores without assessing personality traits |
| | Research-centered criteria in faculty recruitment and promotion | - Selection of teaching faculty members based on the number of articles and projects<br>- Low score of teaching activities not related to research<br>- Same selection criteria for research and teaching faculty members |

faculty were perceived as misaligned with educational priorities. Faculty criticized the student selection system for focusing solely on standardized test scores, ignoring essential humanistic and ethical qualities. A clinical professor remarked: *"Unlike some countries where community service matters, we only look at exam scores."* Similarly, faculty selection was seen as overly reliant on research credentials, sidelining teaching competencies. A student (P5) noted: *"Professors with great CVs may lack communication and teaching skills, often leaving us to learn passively."* Faculty members also expressed frustration that academic promotions prioritized research output over educational contributions.

This systemic focus on academic credentials over professional and social attributes undermines the social accountability mandate of medical schools, which is to admit and prepare students who can meet community health needs.

### Theme 2: limited focus on training socially responsive physicians

This theme consists of three categories: (a) overemphasis on technology and scientific content, (b) neglect of societal health needs, (c) insufficient assessment of clinical competence (Table 3.).

#### Overemphasis on technology and scientific content

Participants described how current educational practices emphasize scientific content and technological reliance, while neglecting humanistic, ethical, and social aspects of medical practice. This imbalance contributes to the development of physicians whose clinical identity is narrowly focused on biomedical knowledge and paraclinical diagnostics, at the expense of patient-centered care.

Three subcategories emerged:

##### *Diminished focus on humanistic education relative to scientific content*

Faculty and students expressed concern that teaching human values, empathy, and ethical practice was largely absent from formal curricula and left to chance. Participant 10 remarked: *"When applying abroad, students are asked about their community service experience—something we overlook here."*

Another faculty member (P6) questioned whether students are adequately prepared for emotionally challenging patient interactions: *"Do we have a plan to teach students how to comfort a patient during invasive exams or to deliver bad news empathetically? This responsibility is often left to individual professors' discretion."*

Students also reported witnessing behaviors that undermined humanistic practice. A medical student (P1) recounted: *"In the oncology clinic, a patient asked about his test results. The doctor, without looking up, told him he wouldn't survive long. The young man replied: 'That patient is me.' This way of delivering bad news deeply affects us."*

##### *Prioritization of theoretical knowledge over practical competencies*

Many participants highlighted that clinical rounds have shifted from hands-on teaching to abstract, theory-heavy sessions. A student (P3) noted: *"Even at the bedside, the focus is on theory, not practice."*

Faculty echoed this concern. Participant 2 stated: *"We have a real urology patient, yet faculty spend time lecturing on bladder physiology instead of addressing the patient's specific condition."*

Assessment methods were also criticized for overemphasizing memorization. A faculty member (P8) shared an incident: *"I reviewed patient files and found identical, templated notes. When I asked which patient it referred to, no one could answer."* This reflects a system that prioritizes administrative documentation over critical clinical engagement.

##### *Excessive dependence on paraclinical diagnostics*

Participants described how excessive dependence on lab tests and imaging has eroded students' clinical reasoning skills. Faculty member (P3) observed: *"Students no longer attempt a clinical diagnosis first. They default to ordering tests and scans."*

Another faculty member (P11) highlighted the economic implications: *"Patients arrive carrying bags of unnecessary test results, adding financial burdens to both the health system and families. Students perceive this as the norm."*

**Table 3** Categories and subcategories of limited focus on training socially responsive physicians

| Category | Sub-Category | Open Codes |
|---|---|---|
| Overemphasis on technology and scientific content | Diminished focus on humanistic education relative to scientific content | - Lack of attention to fostering social aspects of education, including altruism.<br>- Weakness in teaching the human dimension of medicine and greater focus on scientific topics.<br>- Lack of attention to professional ethics education and promotion of immorality through hidden curriculum |
| | Prioritization of theoretical knowledge over practical competencies | - Training individuals with strong theoretical and practical scientific mastery and poor patient management skills<br>- High emphasis on theoretical issues compared to practical issues<br>- Emphasis on knowledge and cognitive issues instead of clinical reasoning in educational rounds<br>- General practitioner's reliance on reserves instead of practical learning requirements<br>- Training students with low capabilities in patient management after graduation |
| | Excessive dependence on paraclinical diagnostics | - Physicians' dependence on paraclinics<br>- The diminishing of taking medical history and physical examination in diagnosing patients and reliance on paraclinics<br>- Not providing opinions on the patient's condition without using paraclinics |
| Neglect of societal health needs competencies | Opportunistic teaching practices that deviate from formal curricula | - Differences in graduates' abilities with those defined in the curriculum<br>- Formality of the educational curriculum<br>- Incomplete implementation of the educational curriculum<br>- Failure to organize learning experiences based on the minimum requirements for obtaining clinical competence<br>- Lack of a coherent educational program in clinical education<br>- Clinical education being tasteful<br>- Failure to define minimum learning requirements in the educational programs of the departments<br>- Failure to pay attention to competency-based education<br>- General practitioners' reliance on reservations instead of practical learning requirements<br>- Teaching without lesson plans in the departments |
| | Role modeling without considering the national medical priorities | - Failure to learn medicine without considering local conditions<br>- Borrowing medical knowledge from other countries<br>- Modeling from foreign countries without preparing basic infrastructure<br>- Students' lack of familiarity with national protocols |
| Insufficient assessment of clinical competence | Faded clinical competence-based exams | - The use of MCQ in final and intra-departmental exams<br>- Low use of performance-based exam such as DOPs Mini-CEX during intermeshing<br>- Failure to adhere to the correct implementation of the portfolio<br>- Approve of the students' portfolios at the end of the internship without observing the student's performance by clinical teachers |
| | Lack of professional competence certification systems for learners before entering the job market | - Absence of the professional Competency Assessment at the end of the medical course and getting a license to enter the labor market<br>- Absence of clinical centers for under supervision treatment graduates for a certain period before entering the community to provide independent service<br>- Absence of a plan to use doctors' offices after graduation to work under supervision and confirm the professional competence of graduates by them. |

Faculty emphasized the importance of clinical judgment, as noted by Participant 1: *"Our professors used to diagnose through careful observation, but now decisions are based entirely on lab reports, which can be misleading."*

Participant 5 added: *"Hospitals are inundated with imaging requests, consuming resources while critical findings, like a lung tumor, can go unnoticed amidst the overload."*

This reflects a failure of CBME to integrate humanistic and ethical competencies as equally important domains of physician training. Social accountability frameworks similarly stress that future doctors must embody both technical expertise and patient-centered values.

**Neglect of societal health needs**

This category reflects a misalignment between the competencies expected of future physicians and the actual needs of the healthcare system. Two subcategories were identified:

***Opportunistic teaching practices that deviate from formal curricula***

Participants described a fragmented teaching approach, where learning is dictated by the availability of clinical cases rather than structured curricular goals. Faculty member (P12) explained: *"Although the curriculum specifies objectives for each rotation, in reality, we teach whatever patient happens to be on the ward that day."*

Students reported significant discrepancies in learning experiences. A student (P7) noted: *"In some rotations, you*

*get lucky if relevant cases show up. Otherwise, you end up observing cases that don't match your learning needs."*

Such opportunistic teaching widens the gap between curricular expectations and students' preparedness for real-world practice, creating inconsistencies in skill acquisition.

#### *Role modeling without considering the National medical priorities*

The over-reliance on foreign curricula and reference materials, without contextual adaptation, was frequently criticized. A student (P6) stated: *"Professors trained abroad teach according to those systems, which often don't fit our local realities."*

A clinical faculty member (P12) elaborated: *"While our reference books are comprehensive, they don't always translate into practical guidance for cases we encounter, such as brucellosis or rural healthcare challenges."*

This disconnection results in graduates who may excel in theoretical knowledge yet remain ill-prepared to address community-specific health concerns, especially in underserved areas.

This illustrates a disconnect between social accountability principles—which emphasize responsiveness to national and community health priorities—and the current educational approach, which is oriented toward hospital-based, specialized care.

### Insufficient assessment of clinical competence

Participants expressed concerns over the lack of robust mechanisms to assess and certify students' practical skills before entering the workforce. This category includes two subcategories:

#### *Faded clinical Competence-Based exams*

Current evaluation systems were criticized for emphasizing written, theory-based exams over practical clinical assessments. A student (P1) commented: *"The clinical logbook is often filled out retrospectively and signed off by faculty without real oversight."*

Faculty echoed this issue, highlighting the systemic neglect of performance-based evaluations. Participant 10 noted: *"We rely on multiple-choice exams instead of functional tests that assess clinical reasoning and procedural skills."*

#### *Lack of professional competence certification systems before job market entry*

Participants emphasized the absence of structured monitoring systems to ensure graduates' readiness for independent practice. Participant 10 proposed: *"A transitional supervised placement of 3–6 months under specialist mentorship should be mandatory before graduates can practice independently."*

Additionally, faculty pointed out systemic barriers that hinder educational quality. Participant 5 stated: *"We're expected to boost hospital revenue while also teaching. Academic promotion is tied to research output, not teaching quality. This ambiguity about whom we are accountable to makes it difficult to prioritize education."*

This indicates a gap in CBME implementation, where robust, performance-based assessments are critical for certifying readiness for independent practice.

### Theme 3: shifts in professional perspective in medicine

This theme captures how evolving professional perspectives among clinical faculty and medical students are reshaping the educational environment in ways that may undermine the traditional ethos of medical mentorship and the societal role of physicians. These shifts were categorized into two interrelated areas: (a) reduced faculty engagement in mentoring and (b) broader societal influences affecting professional values (Table 4.).

### Reduced faculty engagement in mentoring

Participants consistently emphasized a declining engagement of clinical faculty in active teaching and mentorship roles. This disengagement manifests through neglect of mentoring responsibilities, task-oriented attitudes replacing professionalism, delegation of authority to perform therapeutic tasks by learners without ensuring their professional competence, and premature delegation of clinical tasks.

#### *Neglect of mentoring responsibilities*

Multiple participants described the diminishing presence of senior faculty in clinical teaching environments, with educational duties often delegated to residents or left unfulfilled. A clinical professor (P3) remarked: *"Professors are often absent; residents manage the departments, and professors just sign off in clinics."*

Another faculty member (P6) observed: *"Rounds have become a formality. Faculty expect students to passively observe rather than engaging them in diagnostic reasoning or clinical discussions."*

#### *Task-oriented attitudes replacing professionalism*

Participants noted that clinical teaching increasingly revolves around completing immediate clinical tasks, with little emphasis on nurturing students' critical thinking or professional identity. A faculty member commented: *"Rounds include residents and interns, but the teaching is pitched too high for undergraduates and too basic for residents. There's no tailored approach."*

This task-centric mindset leads to superficial learning, where students are expected to follow instructions without understanding underlying clinical principles.

**Table 4** Categories and subcategories of shifts in professional perspectives in medicine

| Category | Sub-Category | Open Codes |
|---|---|---|
| Reduced faculty engagement in mentoring | Neglect of mentoring responsibilities | - Non-applied teaching<br>- Prioritizing occupational therapy over education<br>- Teaching to solve homework<br>- Forcing fluency and practice to teach lower-level students |
| | Task-oriented attitudes replacing professionalism | - Lack of value on good and bad experiences<br>- Daily view of clinical education |
| | Delegation of authority to perform therapeutic tasks by learners without ensuring their professional competence | - Delegating treatment duties from clinical teachers to learners<br>- Provision of healthcare services by learners before ensuring sufficient skill of the learners due to the therapeutic workload<br>- Transferring the responsibility of the clinical teachers to the resident without supervision |
| | Premature delegation of clinical tasks | - Delegation of therapeutic responsibilities from instructors to learners due to the instructors' lack of attention to therapeutic duties.<br>- The performance of therapeutic work by learners before ensuring they have acquired sufficient skills due to the workload of therapeutic tasks.<br>- The assignment of clinical instructor responsibilities to residents without the supervision of a professor. |
| Broader societal influences on professional values | Public mistrust in physician competence | - Instilling a negative perception to doctors in society<br>- Losing the previously enviable position of the medical field in society<br>- Devaluation of medicine as a factor in student demotivation<br>- Skepticism in society by magnifying medical errors |
| | Deficit in long-term talent development | - Medical graduates migrate abroad due to loss of doctor positions<br>- Choosing abroad for the smart ones and leaving the weak ones in the country<br>- Good talents in the medical field but brain drain after graduation |
| | Increasing materialism in medicine | - Diminishing professional ethics compared to the past<br>- Loss of the main goal of education and treatment and attention to the material aspect<br>- Materialistic perspective in choosing a medical field among students |

#### *Delegation of authority to perform therapeutic tasks by learners without ensuring their professional competence*

A recurring concern was the early delegation of therapeutic tasks to students, often without proper supervision or assessment of their readiness. This practice not only jeopardizes patient safety but also impairs the students' professional development. Participant 5 noted: *"In many cases, students are asked to perform tasks without having been taught the necessary skills. There's an assumption they will learn by doing, but without proper feedback, these opportunities become missed learning moments."*

#### *Premature delegation of clinical tasks*

Participants also highlighted a concerning trend where senior faculty reduce their involvement in educational activities after achieving academic promotion. Participant 5 reflected: *"As professors advance, they disengage from morning reports, journal clubs, and direct teaching rounds. This deprives junior faculty of learning how to mentor, creating a culture where educational responsibilities are seen as diminishing with rank."*

Such attitudes risk perpetuating a cycle where educational duties are progressively devalued within academic medicine.

Within CHAT, this reflects contradictions between rules (promotion based on research/service), division of labor (delegating teaching to residents), and the intended educational outcome (high-quality mentorship). These structural tensions erode the apprenticeship model of clinical learning.

### Broader societal influences on professional values

The participants expressed concerns that the sociocultural perception of medicine is shifting away from its traditional values of service, dedication, and professional excellence, towards materialism and utilitarian motivations. This change influences both public trust and student aspirations.

#### *Public mistrust in physician competence*

Faculty members noted a growing skepticism among the public regarding physicians' clinical competence, driven in part by visible gaps in bedside clinical skills. Participant 5 mentioned: *"The public increasingly questions whether young doctors have the necessary practical experience, especially when patients feel neglected or see errors in basic clinical procedures."*

This erosion of trust further demotivates students who perceive a lack of societal respect for their future profession.

#### *Deficit in long-term talent development*

Participants expressed frustration over the absence of structured policies to retain and develop top medical

talent. A clinical teacher (P9) remarked: *"Our students pass one of the toughest exams in the country, but once they enter clinical fields, they see graduates struggling with job security and career growth. Many immediately start planning to leave the country."*

This systemic neglect contributes to a "brain drain," where highly capable students pursue opportunities abroad, depriving the national healthcare system of essential human resources.

#### *Increasing materialism and declining service ethos*

Several faculty members criticized a growing mindset among students that prioritizes personal comfort and financial gain over professional responsibility and patient care. Participant 13 observed: *"Students increasingly view medicine as a pathway to high income, yet they resist engaging in tasks they find uncomfortable, like rectal exams or direct patient care in underserved areas. Medicine is turning into a luxury career rather than a calling."*

This shift away from the service-oriented identity of the medical profession poses long-term challenges to maintaining the ethical and altruistic foundations of healthcare.

This erosion of service ethos contradicts the social accountability mandate, which emphasizes preparing physicians as socially responsive professionals who prioritize community health needs over personal gain.

## Discussion

This study identified three primary challenges in clinical education: (1) ineffective management of clinical education, (2) limited focus on training socially responsive physicians, and (3) shifts in professional perspectives in medicine. These challenges underscore the multifaceted nature of clinical education, which is influenced not only by systemic and managerial shortcomings but also by evolving cultural and educational paradigms between instructors and learners. Collectively, these issues appear to contribute to an environment that may not fully meet the expectations of academic institutions or broader societal needs.

One of the most prominent issues was the lack of adequate infrastructure and educational facilities, reflecting systemic mismanagement. This aligns with findings from both national and international studies. The studies by Assadisharif et al. [15] and De Hert & de Paula–Garcia [16] identified this issue as a key factor contributing to dissatisfaction among both learners and educators. Other studies report that even at the preclinical stage, students lack access to essential training equipment, including various types of mannequins and simulators, thereby entering the clinical phase underprepared [17]. Furthermore, resource constraints in clinical settings may restrict hands-on practice and create ambiguity around expected clinical competencies.

In Iran, infrastructural deficiencies in medical education are intensified by economic crises and international sanctions, which restrict access to modern technologies and training resources. These pressures, combined with systemic mismanagement, limit hospitals' ability to upgrade facilities and create inequities, resulting in unstable and resource-poor clinical training environments that hinder competency-based education. The convergence of these macroeconomic and political pressures with institutional inefficiencies produces compounded challenges that shape both faculty performance and student learning outcomes.

While our findings underscore the pressing need for systemic reform, translating these reforms into practice must account for Iran's unique economic and healthcare constraints. Empirical studies within Iran demonstrate that resource-sensitive strategies—like piloting curriculum changes at select teaching hospitals—are more feasible and sustainable than sweeping nationwide reforms. For example, structured faculty development initiatives at Isfahan University significantly improved faculty knowledge and supervisory performance [18], and empowering workshop programs at Shiraz University enhanced teaching skills, feedback delivery, and student evaluation capabilities [19, 20].

Furthermore, evidence from Iran's health policy context shows that pilot implementations and engagement with local stakeholders—including budgeting and oversight bodies—are essential to align educational initiatives with institutional feasibility and policy readiness [21]. Drawing lessons from other low- and middle-income countries, strategic stakeholder collaboration—including university leadership, health ministry officials, and clinician-educators—has been shown to increase alignment between educational reforms and healthcare system priorities [22].

Together, these findings suggest that phased pilot programs, targeted investments in faculty development, and active stakeholder engagement represent viable, context-sensitive pathways for implementing competency-based clinical education in Iran within existing economic constraints.

In many Iranian medical universities, clinical education occurs in specialized teaching hospitals that also train postgraduate learners, such as residents and fellows [23]. Participants suggested that the lack of a structured, tiered plan to guide concurrent education at all three levels has hindered the achievement of the general medical curriculum's objectives. Internationally, various models have been proposed to address this issue. For example, Wanger and Lava's use of situated learning theory divides learners into "Core Competence Participants (COP)" and

"Legitimate Peripheral Participants (LPP)," allowing less experienced students to gradually integrate into a collaborative learning environment guided by experienced clinicians [24]. This resonates with active learning theory, which emphasizes learner engagement, collaboration, and real-world problem-solving as critical elements of professional development. Learners enhance their professional performance by observing the COP group's performance during interactive processes.

In the Iranian context, the implementation of modern, student-centered clinical education models is shaped by the country's unique healthcare and educational structures. The Iranian healthcare system is organized into three administrative levels—district, provincial, and national. The district level constitutes the smallest independent administrative unit in the health system and includes Health Houses (Health Posts), Health Bases, Urban and Rural Health Centers, Behvarz Training Centers, District Health Centers, District Hospitals, and District Health Network Management [20]. This integrated structure means that medical education and healthcare delivery occur simultaneously, offering students exposure to a wide range of service settings. While this diversity creates rich learning opportunities, it also makes it challenging to ensure consistent educational quality across all sites.

A distinctive feature of Iranian medical education is the simultaneous provision of general and specialized training, with specialized care predominating in teaching hospitals. Faculty members often face the challenge of teaching multiple student levels concurrently, which limits their ability to adopt student-centered approaches, implement active learning strategies, and provide structured supervision [21]. Students, however, expressed a preference for learning by doing—both under supervision and independently—and for receiving constructive feedback. These preferences strongly reflect Kolb's experiential learning cycle, which involves concrete experience, reflective observation, abstract conceptualization, and active experimentation [22]. Through systematic reflection, learners can gain a deeper understanding of their performance, extract abstract concepts, and apply their learning to new clinical contexts [23]. As Winter et al. has noted, mere physical presence in clinical settings does not ensure skill acquisition or mastery of knowledge [24].

In keeping with adult learning theory, learners at the university level seek to play active roles in their own education, make meaningful connections between prior knowledge and new information, and prioritize content that is relevant to their future careers. These principles align with the observed tendencies of novice students to model their practice on the performance of senior faculty, gradually applying these experiences to novel contexts [25]. Professional identity formation is shaped by ongoing engagement in clinical learning and collaboration with other healthcare team members [26]. Effective supervision by clinical teachers is therefore not only a managerial duty but also a pedagogical necessity. Aghakhani et al. have emphasized that clinical supervision significantly enhances nursing students' practical skills, learning experiences, and patient communication abilities [27].

Fragmentation in clinical education—a recurring challenge noted by both faculty and students—disrupts meaningful learning. According to Piaget's theory of cognitive development, learners build and refine mental schemas by integrating new knowledge with prior understanding, gradually forming more complex cognitive structures (28). For medical students, frequent bedside attendance enables the integration of basic sciences with clinical reasoning, supporting accurate diagnosis and patient management [29]. However, the dominance of specialized hospital-based training, combined with structural limitations of the centralized system, often limits students' exposure to primary care and community-based competencies. This imbalance is a distinct outcome of Iran's current medical education framework and underscores the need for reforms that strengthen supervision, ensure a balanced exposure to generalist and specialist roles, and align educational activities more closely with the realities of the country's integrated healthcare system.

Moreover, shortcomings in clinical instruction often reflect deficiencies in educational and interpersonal competencies among faculty members [25]. Gonzaga & Drateru (2023) found that weak communication and interpersonal skills among clinical instructors in developing countries pose major obstacles to effective knowledge and skill transfer. They further identified inadequate teaching ability, low instructor motivation, poor governmental policies, insufficient financial support, an unfavorable learning environment, and inappropriate student-to-faculty ratios as key barriers to educational quality. They emphasized several strategies for improving clinical education: providing formal training in teaching methodologies, increasing governmental investment to upgrade clinical environments, equipping facilities adequately, and implementing structured feedback systems. Additionally, the development and application of clinical education guidelines are essential to ensure proper supervision and effective integration of theory and practice [26].

Instructors also often fail to adhere to standardized educational objectives and protocols, instead relying heavily on personal experience. Salari et al. [27] found that a lack of trust in national clinical guidelines, limited consensus among specialists, inadequate familiarity with protocols, and a greater reliance on personal clinical

experience contribute to this deviation. Compounding these issues are physician shortages, excessive workloads in educational hospitals, and overcrowded departments. The profitability-driven mission of teaching hospitals often conflicts with educational goals, with faculty compensation tied to clinical service provision rather than teaching quality [28].

Hargreaves et al. [29] further emphasized the absence of committed clinical instructors and inadequate training opportunities for learners as key impediments. Additionally, limited patient involvement in educational processes—driven by mistrust or discomfort with student participation—poses another barrier. Tadesse et al. [30] observed that many patients were reluctant to receive care in the presence of students, undermining the experiential component of clinical learning.

The selection of a vocation or academic discipline is influenced by a multitude of social and individual factors. Individuals opt for a specific vocation or academic discipline to acquire external rewards, including job security, social status, and income [31]. A multitude of studies have demonstrated that when an individual's personal values align with the values espoused by their organization, it can result in the promotion of that individual within the organization [32, 33]. It is evident that certain values, including empathy, altruism, responsibility, and care, are intrinsic to the medical field [34]. It is imperative to ascertain whether individual values are taken into consideration during the selection process for admission to medical school or the composition of the teaching faculty. Value-based selection can be utilized in conjunction with scientific tests or research activities to identify the most suitable candidate for a position within this field. The situational judgment test is a value test that is utilized in the United Kingdom for the recruitment of medical graduates and the assessment of professional characteristics [35]. In this assessment, subjects' values are evaluated by presenting them with videos depicting hypothetical clinical scenarios and observing their subsequent responses.

A paradigm shift in the perception of medicine was identified as another barrier. Some participants perceived that humanistic and altruistic values are less emphasized, with medicine increasingly viewed as a prestigious and financially rewarding occupation. This perception may contribute to instrumental attitudes among some learners, who may prioritize status and income over service and empathy. Hazrati et al. [34] argued that the human spirit is inseparable from clinical education and must be nurtured through role modeling by faculty, who are responsible for instilling values such as altruism, respect for patient dignity, and professional ethics [36]. The hidden curriculum plays a crucial role in transmitting these norms and can help learners reconceptualize medicine not as a luxury profession but as a calling that demands resilience and compassion [37].

Beyond faculty influence, learner characteristics, family values, societal attitudes toward the profession, and institutional competencies also play vital roles in shaping students' perceptions and professional development [38]. For clinical education to be effective, instructors must combine clinical expertise with pedagogical skill, demonstrate motivation, foster mutual respect, and build learner confidence. These elements are essential for improving educational quality and must be integrated into the core mission of medical universities [39].

The medical education system in Iran has been influenced by various social and political factors [40]. Political instability in the country has led to a brain drain [41], with many learners and faculty members planning to emigrate [42]. This lack of motivation to improve their careers has affected the education system. In the past, senior professors served as role models for their dedication to education, but current professors tend to reduce their educational activities as they advance in rank. Clinical instructors with professor rank now participate less in educational rounds, such as morning reports and journal clubs. Senior professors are treasures of practical teaching experience, and the education system should plan for junior teachers to work alongside senior professors as assistants to learn how to teach and educate students. Studies have shown that in educational centers where the teacher-apprentice method is used to train junior teachers by senior professors, this approach has been a valuable experience for junior teachers [43]. In addition to scientific expertise in the field of study, the teaching faculty must also acquire teaching skills, including appropriate teaching and assessment methods. Before entering the field of clinical education, the university must provide a comprehensive course in teaching skills, covering teaching, assessment, and effective communication with learners. After receiving a certificate in teaching skills, they are allowed to teach, initially under the supervision of senior clinical professors and then independently.

## Conclusion

This study identified three interrelated challenges in Iran's clinical medical education: ineffective management systems, limited focus on socially responsive physician training, and shifting professional values within the medical field. Ineffective policymaking and lack of accountability have led to opportunistic, unstructured clinical teaching that fails to ensure competency development. Addressing these gaps requires redesigning clinical training environments to align with curricular objectives, implementing structured faculty mentorship programs, and establishing competency-based faculty evaluations.

Moreover, the curriculum's overemphasis on theoretical content and paraclinical diagnostics, combined with the neglect of humanistic and ethical education, hampers the development of socially responsive physicians. Integrating humanistic and ethical competencies into clinical practice and providing targeted faculty development are essential steps.

Implementation of these reforms must consider Iran's healthcare infrastructure and resource limitations. Practical strategies include phased curriculum reform, pilot programs in selected teaching hospitals, and engagement of university administrators, clinical faculty, and policymakers to ensure alignment with institutional and national priorities. Additionally, reinforcing medicine's social mission through mentorship structures, recognition of exemplary educators, and policy incentives can help restore professional integrity while operating within existing constraints.

Taken together, these context-specific, actionable reforms are essential to prepare competent, ethical, and socially accountable physicians who can meet the evolving healthcare needs of Iran.

### Limitations

This qualitative study is limited by its relatively small sample size, which may not capture the full spectrum of barriers encountered in clinical medical education. To address this, participants were purposively sampled to include students at different training levels (externs and interns) and faculty from diverse clinical disciplines and teaching hospitals. While rigorous reflexivity and external review were applied to reduce researcher bias, the interpretive nature of qualitative research means that findings may still be influenced by the researchers' professional perspectives. Future studies with broader sampling and multi-institutional participation could provide a more comprehensive understanding of these challenges and their solutions.

## Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-025-08120-8.

Supplementary Material 1.

#### Acknowledgements

We would like to express our gratitude to all the patients who participated in this study; and to the Medical Education Research Center at Tabriz University of Medical Sciences, Tabriz, Iran, for their support and granting. We also thank the Clinical Research Development Unit of Zahra Mardani Azari Children Educational and Treatment Center, Tabriz University of Medical Sciences, Tabriz, Iran.

#### Authors' contributions

M.B. and H.H. contributed to the design and drafting of the research and manuscript. H.H. conducted the participant interviews and, along with K.R., provided input on the coding process. H.H. prepared the first draft of the manuscript, which was subsequently reviewed and refined by M.B. and K.R. All authors approved the final version of the manuscript.

#### Funding

Not fund.

#### Data availability

The data supporting this study's findings are available from "Medical Education Research Center, Tabriz. Iran." However, restriction applies to the availability of this data, which were used under license for the current study; therefore, they are not publicly available. It is, however, possible to obtain data from the authors upon reasonable request and with the permission of " Medical Education Research Center, Tabriz. Iran."

## Declarations

#### Ethics approval and consent to participate

This study was approved and funded by the National Agency for Strategic Research in Medical Education. Tehran. Iran (Ethical code: IR.TBZMED.REC.1398.162). Data were collected after obtaining verbal and signed informed consent from participants under the Deceleration of Helsinki. The informed consent process allowed participants to ask questions considering all options. It was possible for participants to withdraw from the study or refuse to participate at any time. A digital sound recorder was used to record each interview after obtaining the consent of all participants, and important notes were taken during the interview.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

Received: 26 April 2025 / Accepted: 3 October 2025
Published online: 03 November 2025

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## Publisher's Note