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Navigating Without a Compass: Chinese Medical Students' Perspectives on AI in Clinical Training

ORIGINAL RESEARCH

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ABSTRACT

Introduction: Artificial intelligence (AI) is rapidly transforming clinical practice, yet its integration into medical education remains largely unstructured. In China, where AI adoption is accelerating, little is known about how medical students perceive AI's role or what guidance they expect from educators. This study explores Chinese medical students' perspectives on AI in clinical training and their preferences for faculty engagement.

Methods: Using educational cultural hegemony as a theoretical framework, the research team conducted in-depth, semi-structured interviews with 13 medical students across all five years of training at a medical school in China. Interviews addressed three sensitizing scenarios involving AI for clinical documentation, diagnostic assistance, and learning support. Transcripts were analyzed using Braun and Clarke's reflexive thematic analysis.

Results: Four themes were identified: *Learning in the Shadows* describes how students use AI covertly due to uncertain policies; *Trust but Verify* captures students' nuanced stance on AI reliability; *The Human Element* reveals concerns that AI may erode clinical reasoning and patient-physician relationships within China's high-volume healthcare system; and *Educator as Compass* describes students' desire for faculty who proactively teach AI literacy and model appropriate use.

Conclusion: Chinese medical students navigate AI use without formal guidance in an ambiguous space between enthusiasm and caution. They seek educators who acknowledge AI's presence and preserve humanistic medicine. Findings underscore the urgent need for curricular integration of AI literacy and faculty development, particularly within hierarchical educational contexts. These findings carry implications beyond China's borders, suggesting that when institutions fail to acknowledge emerging technologies, students adapt independently but not necessarily safely or equitably.

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INTRODUCTION

Artificial intelligence (AI) is rapidly reshaping clinical medicine worldwide. From diagnostic algorithms to generative AI tools that draft clinical notes, AI technologies are becoming embedded in routine practice [1, 2]. For medical students training today, AI will be integral to how they access information, document care, and support clinical decisions [3, 4].

In China, AI adoption in healthcare has accelerated dramatically, driven by national policies promoting AI as a strategic priority [5]. Chinese hospitals have implemented AI systems for image interpretation and clinical decision support, and the country now leads in AI research output, including large language models tailored to the Chinese medical context [6, 7]. For Chinese medical students, AI will be a central feature of their future practice environment. However, medical education globally has been slow to respond. Most Chinese medical schools lack formal curricula addressing AI literacy, and students report minimal structured training on AI's capabilities or ethical implications [8, 9]. Consequently, students are already using AI tools independently for learning tasks—from summarizing materials to generating practice questions—often without institutional guidance [10, 11]. This unsupervised adoption raises concerns about over-reliance and ethical lapses [12, 13].

The educational cultural hegemony framework [14] offers a useful lens for examining students' unsupervised adoption of AI tools for learning without institutional guidance. The framework posits that educational environments often operate under implicit assumptions that privilege certain ways of knowing while marginalizing others. In the context of AI, the assumption that traditional pedagogical methods remain sufficient without acknowledging technological shifts may constitute a form of hegemonic inertia, leaving students navigating AI use without institutional guidance [15]. The framework is particularly relevant in the Chinese context, where hierarchical relationships between educators and learners are deeply embedded in Confucian educational traditions [16], potentially amplifying students' reluctance to raise AI-related concerns.

Research on AI in medical education remains predominantly Western-centric. Students globally express enthusiasm for AI while harboring concerns about job displacement and the erosion of clinical skills [17, 18]. Faculty members recognize AI's importance but feel underprepared to teach it [19]. However, few studies have focused specifically on the Chinese context, which differs substantially from Western models with its five-year undergraduate program, larger class sizes, and high-stakes examination system [20, 21]. Moreover, existing literature has predominantly used quantitative surveys [22], with few qualitative studies exploring how Chinese medical students actively position themselves in relation to AI [23]. Even fewer have examined students' expectations of educators within China's hierarchical culture.

The Chinese medical education system features a five-year undergraduate program with direct entry from high school, large class sizes, and a high-stakes National Medical Licensing Examination that significantly influences residency placement and career trajectories. These structural features create a distinctive learning environment with intense competition, hierarchical faculty-learner relationships, and limited opportunities for open dialogue about emerging technologies. Understanding how these contextual factors interact with AI adoption is essential for developing culturally responsive educational strategies.

This study addresses these educational gaps by exploring: (1) How do Chinese medical students position themselves regarding AI use in clinical training and learning? (2) How do Chinese medical students want educators to address and engage with AI-related topics in the curriculum?

METHODS

RESEARCH PARADIGM

This qualitative study employed a critical constructivist approach, emphasizing that knowledge is socially constructed and shaped by power, context, and ideology [26]. This paradigm aligns with our research questions, which explore how Chinese medical students interpret and navigate AI's entry into their learning environment—a phenomenon influenced by institutional hierarchies and implicit curricula. The approach is consistent with our theoretical framework of educational cultural hegemony, which examines how dominant educational norms can marginalize emerging perspectives [14].

EDUCATIONAL SETTING AND PARTICIPANT SAMPLING

This qualitative study was conducted at a medical school in China. The research team initiated recruitment through student communication channels. A total of 47 students expressed initial interest, of whom 42 completed the demographic screening questionnaire. From this pool, five "seed" participants were purposefully selected to represent diversity in year of training, gender, and prior AI experience. Subsequent participants were recruited through snowball sampling, with seed participants recommending peers who held varied perspectives on technology use in medical education. This approach was

chosen to access participants with diverse experiences while leveraging the natural social networks through which students often discuss educational practices. Of the 12 students recommended by seed participants, 8 agreed to participate. No participants withdrew after providing consent. The research team determined sample size based on the principle of information power [24], which guided our assessment that the final sample of 13 participants provided sufficient richness and relevance to address the research questions. Specifically, we judged that the sample held strong information power due to the narrow study aim, the dense specificity of the sensitizing scenarios, the high quality of dialogue (with interviews yielding 30–45 minutes of dense, reflective talk per participant), and the analytical approach that prioritized depth over breadth. We did not invoke the concept of saturation, as reflexive thematic analysis is not consistent with a saturation logic. While the initial research plan envisioned a larger sample, the purposeful snowball sampling strategy—designed to access participants through their existing social networks—yielded a smaller, more focused sample with exceptionally rich, in-depth data, which the team deemed adequate to address the research questions within the constraints of a single-site, in-depth qualitative study.

DATA COLLECTION

The research team developed three scenarios based on current AI applications in Chinese clinical practice and their own teaching experiences (see Table 1). These scenarios were designed to ground the discussion in concrete situations involving AI for clinical documentation, diagnostic support, and learning assistance. The scenarios were iteratively refined through discussion among the research team, which includes clinical faculty familiar with the Chinese healthcare context, to ensure they were realistic, culturally appropriate, and not leading. A semi-structured interview guide was developed with open-ended follow-up probes to explore students' reasoning, institutional policies, and educational expectations. The interview guide was piloted with two medical students (not part of the final sample) to refine wording and flow.

A trained research assistant not affiliated with the medical school faculty conducted all interviews in Mandarin Chinese via a secure video conferencing platform. All participants responded to all three scenarios, with the order of scenarios fixed to ensure consistency. With participant consent, interviews were recorded and transcribed verbatim in Chinese. For analysis, the research team worked with the original Chinese transcripts as the primary analytic text. A certified translator produced English translations to facilitate team discussion among members with varying Chinese language proficiency, but all coding and theme development were conducted with continuous and systematic reference to the original Chinese transcripts. Key quotations and conceptually loaded terms, particularly those relating to hierarchy, silence, and authority, were reviewed in the original Chinese to verify that interpretations captured participants' intended meanings. This iterative process of translation-checking was embedded throughout the analysis and informed theme development. Interviews lasted 30–45 minutes.

DATA ANALYSIS

We applied Braun and Clarke's six-phase approach to reflexive thematic analysis [25]. Coding and theme development were conducted primarily on the original Chinese transcripts. English translations were used as a supplementary resource to facilitate team discussion, but the research team systematically and continuously compared English translations against the original Chinese to ensure cultural and linguistic nuance was preserved. Key quotations and conceptually loaded terms were reviewed in the original Chinese to verify that the translation captured participants' intended meanings, particularly regarding culturally embedded concepts such as hierarchy, silence, and authority. This iterative process of translation-checking informed theme development and ensured that interpretations remained grounded in the linguistic and cultural context of the data.

Three team members independently coded each transcript. In keeping with the reflexive thematic analysis approach, coding was not used to achieve inter-rater

SCENARIO	DESCRIPTION
1	During your clinical rotation at a tertiary hospital, you observe a resident using a large language model (e.g., ERNIE Bot or ChatGPT) to draft patient notes. The resident tells you this saves significant time given the high patient volume and suggests you try it. What do you think should happen next? What are your thoughts on using such a tool?
2	In a small group tutorial, a student shares that they used an AI diagnostic tool to generate differential diagnoses for a practice case. The AI suggested a diagnosis that was not mentioned in the session materials. A debate arises about whether AI tools should be used for clinical learning. What do you think should happen next?
3	You overhear two classmates discussing their study strategies for the National Medical Licensing Examination. One mentions using an AI tool to summarize lecture content and generate practice questions, stating it is much more efficient. The other expresses concern that this might undermine genuine learning. What do you think should happen next?

Table 1 Sensitizing Scenarios Used in Semi-Structured Interviews.

reliability or consensus. Rather, this collaborative approach served as a strategy to broaden interpretive engagement, challenge individual assumptions, surface divergent readings of the data, and support reflexive theme development. Divergent interpretations were discussed in team meetings, with the goal of examining how each team member's positionality shaped their coding decisions, rather than resolving differences into a single "correct" interpretation. This process enriched the analytic dialogue and strengthened the reflexivity of theme development.

CRITICAL REFLEXIVITY

Reflexivity was employed to address potential bias. The research team comprises medical educators, clinical faculty, and qualitative researchers with diverse experience with AI. Team members engaged in explicit reflexive dialogue through virtual meetings and written memos to surface assumptions about technology and learning, reflect on how their own backgrounds might influence interpretation, and consider how their positionality as researchers within the Chinese academic system informed analytic decisions. Divergent interpretations were discussed in team meetings to examine how varied relationships to institutional power and technological expertise shaped their perspectives. For instance, a faculty member's initial interpretation of a student's response as "fear of authority" was challenged and refined by a junior researcher who framed the same response as "strategic navigation," leading to a more nuanced theme development. As part of this reflexive process, the team actively searched for and engaged with accounts that complicated or resisted the hegemony reading, which are reported in the findings below.

ETHICAL APPROVAL

This study was approved by the Institutional Review Board of Wuhan University (approval number: 2026015). All participants provided verbal informed consent prior to each interview. Verbal consent was used because all interviews were conducted remotely via video conferencing, and the study posed no more than minimal risk to participants. The use of verbal consent was reviewed and approved by the IRB. Participants were informed of the study purpose, voluntary nature of participation, confidentiality measures, and their right to withdraw at any time. All data were de-identified and stored securely.

FINDINGS

Participants (N = 13) had a mean age of 22.5 years (SD = 1.9) and represented all five years of medical school. Geographic origins included 9 students from urban areas (69.2%) and 4 from rural areas (30.8%). Prior experience with AI tools varied: 8 students (61.5%) reported having used AI for learning purposes, while 5 (38.5%) had not. Not all AI users are quoted in the themes below; quotations were selected to illustrate analytic points rather than to represent the full distribution of AI use. Among AI users, the most commonly reported tools were large language models for summarization and question generation.

The research team identified four themes characterizing Chinese medical students' engagement with AI and their preferences for educators' engagement: Learning in the Shadows, Trust but Verify, The Human Element, and Educator as Compass.

THEME 1: LEARNING IN THE SHADOWS — COVERT AI USE AND INSTITUTIONAL SILENCE

Participants consistently reported using AI tools for learning but doing so privately, without disclosing their use to faculty or peers. This covert adoption stemmed from uncertain institutional policies, fear of negative consequences, and the absence of explicit guidance.

Students described using AI primarily for efficiency-oriented tasks but framed this use as something done "quietly." One fourth-year student explained:

> "I use it almost every day for studying, but I would never tell my teachers. They haven't said anything about AI—no rules, no guidance. So I assume it's a gray area, and I don't want P06, Year 4 to be the one who gets in trouble." (Year 4)

The absence of institutional communication created uncertainty. A second-year student elaborated:

> "Our teachers never mention AI. Not once. It's like they don't know it exists... So we figure it out ourselves, but we also know we can't talk about it openly. If I asked, 'Can I use this?' I'm afraid they would say no." (P05, Year 2)

This silence was particularly consequential given the high-stakes nature of medical education in China. A fifth-year student noted:

> "The licensing exam is everything. If I use AI to study more efficiently, that helps me. But if someone accuses me of cheating... that could ruin everything. So I keep it to myself." (P11, Year 5)

Students also described how the hierarchical culture reinforced their reluctance to raise concerns. A third-year student reflected:

> "In our system, you don't challenge the teacher… AI is new, it's unfamiliar, and teachers are already overworked. So we just… adapt quietly." (P10, Year 3)

This theme illustrates a core mechanism of educational cultural hegemony: the maintenance of institutional authority through silence rather than explicit prohibition. Students' covert AI use is not merely a practical adaptation but a strategic response to an environment in which the legitimacy of their learning practices is implicitly denied. The hierarchical culture of Chinese medical education amplifies this dynamic, as students anticipate that raising AI-related concerns would be perceived as challenging faculty authority—a violation of deeply embedded cultural norms [16]. Notably, students do not reject traditional pedagogy outright; rather, they navigate between two worlds: the formal, sanctioned curriculum and their informal, adaptive AI practices. This bifurcation reflects what Alkhatib et al. [15] describe as the marginalization of emerging perspectives within hegemonic educational structures. The high-stakes licensing examination further intensifies this dynamic, transforming AI use from a pedagogical choice into a risk-management calculation—students use AI to gain competitive advantage but fear that disclosure could jeopardize their academic standing. This finding extends the hegemony framework by showing how silence operates not as absence but as an active, structuring force that shapes learner behavior through uncertainty and fear. Notably, while the hegemony framework predicts that students might internalize and reproduce dominant pedagogical norms, we also encountered accounts that complicated this reading. One participant (P07, Year 4) expressed explicit frustration with institutional silence: "I don't think silence is neutral. By not saying anything, the school is making a choice—they're choosing to pretend AI doesn't exist. That's not fairness; that's neglect." Another student (P11, Year 5) noted: "Some of my classmates think the school is just being cautious, but I think they're avoiding responsibility. If something goes wrong because a student used AI inappropriately, the school will say they had no policy—but that's exactly the problem." These accounts, while not dominant, demonstrated that some students actively resisted the hegemonic framing by naming institutional silence as a deliberate act of omission. We have reported these voices alongside the more common narrative of silent adaptation to reflect the ambivalence and critical awareness present in the data.

THEME 2: TRUST BUT VERIFY — STUDENTS' NUANCED STANCE ON AI RELIABILITY

Participants expressed a balanced stance: AI could be a valuable tool, but its outputs required verification. This orientation reflected students' emerging professional identity.

A fourth-year student explained:

> "AI can give you a list of differentials in seconds. That's impressive. But it doesn't know the patient… their values, the subtle things from a physical exam. So I would use AI as a starting point, never as the final answer." (P07, Year 4)

This stance was reinforced by experiences with AI errors. A second-year student shared:

> "I asked an AI to summarize a guideline on hypertension. It gave me a beautiful summary, but when I checked, two recommendations were completely wrong… That scared me. Now I verify everything." (P04, Year 2)

Students also worried that reliance on AI without verification could undermine foundational skills. A first-year student stated:

> "If I let AI do the thinking for me now, what happens when I'm a resident and I don't have AI available? I need to build my own brain first." (P02, Year 1)

Notably, students distinguished between applications, being more comfortable with summarization than diagnosis. A third-year student captured this distinction:

> "Using AI to help me organize my notes? That feels fine. Using AI to tell me what diagnosis to make? That feels wrong. There's a line… But no one is teaching us where the line is." (P13, Year 3)

This theme reveals students' development of informal epistemic protocols in the absence of formal training—what might be called "vernacular AI literacy." Students are not naive adopters; they actively construct criteria for appropriate AI use based on personal experience and intuitive judgments about risk. The "trust but verify" orientation reflects a sophisticated understanding that AI outputs are probabilistic rather than authoritative, and that clinical judgment cannot be delegated to algorithms. However, this stance also exposes a critical gap: students are developing these verification practices without pedagogical guidance, learning through trial and error rather than through structured instruction. The distinction students draw between summarization (acceptable) and diagnosis (unacceptable) suggests an emerging professional boundary —students are implicitly

negotiating what tasks can be delegated to AI and what must remain within human cognitive control. From a hegemony perspective, this informal boundary-making represents students' attempt to reconcile their AI use with the dominant pedagogical assumption that learning must be effortful and individually constructed. The absence of faculty guidance on these boundaries means students must navigate this terrain alone, with varying degrees of success. This finding aligns with Wulandari et al.'s [30] observation that students need guidance on AI's appropriate role but extends it by showing that in the Chinese context, the high-stakes exam environment intensifies both the appeal and the risk of AI use, creating a particularly acute need for formal instruction. Disconfirming evidence also emerged: one student (P01, Year 1) expressed much greater trust in AI than her peers: "I actually trust AI more than some of my classmates do. I've checked it against textbooks, and it's usually right. I think the fear is overblown—AI is just a tool, and we shouldn't be so scared of it." Another participant (P07, Year 4) articulated a more conditional ambivalence: "I want to trust AI, but I also know it makes mistakes. The problem is, I don't know when it's making a mistake until I check—and by then, I've already done the work anyway. So what's the point?" These voices, while less common, reveal that students' trust-verification stance was not monolithic. Some students leaned toward greater confidence in AI, while others questioned the practical utility of verification in time-constrained settings. We have integrated these complicating accounts to provide a more balanced representation of the range of student perspectives.

THEME 3: THE HUMAN ELEMENT — PRESERVING CLINICAL REASONING AND THE PATIENT-PHYSICIAN RELATIONSHIP

Participants expressed concern that AI integration, if not carefully managed, could erode the skills that define professional identity: clinical reasoning and the patient-physician relationship.

A fifth-year student reflected:

> "I've seen residents who just click buttons… If AI makes that worse—if people stop thinking because the computer gives them an answer—that's dangerous. We need doctors who can think, not just click." (P12, Year 5)

The physical examination emerged as a particular concern. A third-year student explained:

> "AI can't feel a liver edge… Those skills take practice. If we tell students that AI will handle diagnosis, why would they spend time learning physical exam?" (P09, Year 3)

Concerns were amplified by observations of China's overburdened healthcare system. A fourth-year student stated:

> "Patients already feel like numbers in our system. If we add AI—if we're looking at screens even more—what happens to the human connection? Medicine is about trust… AI can't do that." (P07, Year 4)

Despite concerns, students called for deliberate integration that preserves humanistic values. A second-year student articulated:

> "AI should serve the doctor-patient relationship, not replace it. We need to learn how to use AI as a tool… But we also need to learn when to put the tool down and just be with the patient." (P04, Year 2)

This theme illuminates students' deep-seated concerns about the profession's identity and their own emerging professional formation. Students' anxiety about deskilling reflects not merely practical worries but existential questions about what it means to be a physician in an AI-augmented future. The physical examination serves as a particularly potent symbol of embodied medical knowledge—a form of knowing that cannot be digitized or delegated. Notably, students' concerns are not abstract; they are grounded in direct observations of China's overburdened clinical environment, where patient-physician interaction is already severely constrained. This finding reveals how students' perceptions of AI are filtered through the lens of existing structural conditions—they worry that AI will accelerate rather than alleviate the dehumanization they already witness. From a hegemony perspective, students' defense of "the human element" can be understood as a form of resistance to the hegemonic logic of efficiency that prioritizes productivity over relational care. Yet this resistance is constrained: students lack the institutional authority to shape how AI is integrated, leaving them to articulate concerns that faculty and administrators may not hear. The student who called for AI to "serve" rather than "replace" the doctor-patient relationship articulates a vision of technology that challenges the dominant narrative of AI as a solution to healthcare inefficiency. This finding adds nuance to international debates by showing that in the Chinese context, concerns about AI are inseparable from concerns about healthcare system capacity and quality—a dimension that is less prominent in Western studies that often assume adequate staffing and time for patient interaction. However, not all students

shared this perspective with equal intensity. One participant (P03, Year 2) expressed a more optimistic view: "I think AI might actually help the human element. If AI handles documentation, maybe doctors will have more time to talk to patients. In our system, time is the real enemy of the patient-doctor relationship—not technology." Another student (P04, Year 2) offered a pragmatic counterpoint: "We already have no time for patients. AI might make things worse, but it might also be the only way to keep up with the patient volume. I don't think we have the luxury of choosing whether to use AI—we just have to figure out how to use it without losing ourselves." These perspectives—while not dominant—complicate the hegemony reading by suggesting that some students viewed AI as a potential solution to structural constraints rather than merely a threat to humanistic care.

THEME 4: EDUCATOR AS COMPASS — STUDENT EXPECTATIONS OF FACULTY GUIDANCE

Students overwhelmingly expressed a desire for educators to take an active role. They rejected faculty silence, viewing it as neglect. Students wanted educators who acknowledged AI's presence, taught critical appraisal, and modeled appropriate use.

A first-year student expressed frustration:

> "The worst thing is saying nothing. We know AI is there. You know AI is there. Why are we pretending it's not? Just tell us: here's what's allowed, here's how to use it safely. That's all we need." (P01, Year 1)

Students wanted explicit teaching on AI literacy. A fourth-year student explained:

> "We learn how to appraise a journal article… Why don't we learn how to evaluate what AI tells us? It's the same skill… Someone needs to teach us this." (P08, Year 4)

They also wanted clear ethical boundaries. A third-year student noted:

> "Is it cheating to use AI to outline my essay?… No one has told us. So everyone is making up their own rules." (P10, Year 3)

Finally, students wanted educators to model appropriate AI use. A fifth-year student stated:

> "If my teacher shows me, 'Here's how I use AI to double-check my differential, and here's how I verify it,' that's powerful. That's real learning." (P11, Year 5)

Students noted that in the Chinese context, faculty endorsement significantly shapes student behavior. A second-year student observed:

> "In China, what the teacher says matters a lot. If a respected professor says, 'AI is useful but you must verify everything,' students will listen. If no one says anything, students will do whatever they want." (P05, Year 2)

A third-year student summarized the ideal educator's role:

> "We don't need teachers who tell us AI is amazing or AI is terrible. We need teachers who tell us, 'Here's how to think about AI… how to protect what matters.' That's what a real educator does." (P10, Year 3)

This theme directly challenges the hegemonic assumption that educator neutrality on contested topics is a defensible position. Students articulate a clear rejection of silence, framing it not as neutrality but as neglect of pedagogical responsibility. This finding aligns with Hess and McAvoy's [27] argument that classrooms are inherently political spaces in which withholding guidance on contentious issues is itself a consequential act. However, the Chinese context adds a distinctive dimension: the hierarchical authority of faculty means that their silence carries particular weight. In Western contexts, students might look to institutional policies, professional guidelines, or peer networks for guidance. In China, the faculty-student hierarchy funnels students' expectations toward individual educators, making faculty engagement or disengagement especially consequential. Students' desire for modeling—not just lecturing—is particularly revealing. They recognize that AI literacy is not merely a cognitive skill but a practice that must be demonstrated, embodied, and enacted. The student who called educators to "show me how" rather than simply "tell me what" articulates a sophisticated understanding of pedagogical apprenticeship. From a hegemony perspective, this theme represents students' assertion of agency within a hierarchical structure: they are not passively accepting institutional silence but actively demanding that educators fulfill their role as guides. This demand is itself an act of resistance to the hegemonic maintenance of the status quo. The theme also suggests a path forward: faculty who embrace their role as "compass" can help students navigate AI's complexities while preserving the humanistic values that students hold dear. This finding extends the literature by showing that in hierarchical educational cultures, faculty engagement with AI is not merely helpful but

essential—students' willingness to adopt appropriate AI practices depends significantly on faculty leadership. While the overwhelming majority of students expressed this view, we also identified a minority perspective that complicates the dominant narrative. One student (P06, Year 4) observed: "I think some teachers are silent because they genuinely don't know anything about AI. It's not neglect—it's ignorance. They're afraid to say the wrong thing, so they say nothing." Another participant (P10, Year 3) offered a more sympathetic reading: "My teachers are already overworked, with research and clinical duties. I can't expect them to also master AI and teach us about it. Maybe it's not their responsibility—maybe the school should bring in experts." These accounts suggest that students' framing of educator silence as "neglect" was not universal; some students attributed silence to structural constraints or institutional failures rather than individual pedagogical shortcomings. We have included these perspectives to acknowledge the ambivalence and complexity in how students interpreted faculty behavior.

DISCUSSION

This study explored how Chinese medical students position themselves regarding AI in clinical training and what they expect from educators, revealing four key insights that extend the educational cultural hegemony framework. Students use AI covertly due to institutional silence, adopt a "trust but verify" stance, worry about AI eroding clinical reasoning and humanistic care, and actively seek faculty guidance—viewing educator silence as unacceptable.

The hegemony framework, as conceptualized by Zaidi et al. [14], operates through the normalization of certain practices and the marginalization of others, often without explicit acknowledgment. In this study, hegemony manifests not through overt prohibition of AI but through institutional silence—a form of passive power that renders students' AI use invisible and unsupported. This silence functions as a hegemonic mechanism by preserving traditional pedagogy while implicitly delegitimizing students' adaptive strategies. The hierarchical structure of Chinese medical education amplifies this effect, as students' reluctance to raise AI-related concerns reflects broader cultural norms of deference to authority [16]. This finding extends the framework by demonstrating how silence itself operates as a hegemonic force, shaping learner behavior through omission rather than commission. At the same time, the complicating accounts we identified, students who explicitly named silence as neglect, and those who attributed silence to structural constraints, reveal that the framework does not fully capture the ambivalence and heterogeneity of student perspectives. Students are not uniformly passive recipients of hegemonic structures; rather, they actively interpret, critique, and in some cases resist those structures.

Students' "trust but verify" stance mirrors international findings [29] but gains distinctive urgency in the Chinese educational context. Chinese medical students operate within a high-stakes examination system where performance on the National Medical Licensing Examination determines career trajectories [28]. This context amplifies both the appeal of AI as a study aid and the fear of AI-related academic consequences. The finding that students distinguish between different AI applications—more comfortable with summarization than diagnosis—suggests that students develop informal mental models in the absence of formal guidance. The disconfirming voices we encountered, namely students who expressed greater trust in AI or questioned the practical value of verification, further underscore that students' orientations were not uniform and that any educational response must account for this diversity.

Concerns about AI eroding clinical reasoning and the patient-physician relationship echo debates in the broader literature [12, 30]. However, these concerns take on particular urgency in the Chinese context, where high patient volumes already strain clinical interactions. If AI further reduces the human element, what remains of the physician's role? This finding suggests that AI integration in medical education cannot be divorced from the broader structural conditions of healthcare delivery—a point less emphasized in Western-centric literature that often assumes more resource-rich environments. Yet our data also included students who viewed AI as a potential solution to these structural constraints, complicating any straightforward narrative of AI as a threat to humanistic care.

What distinguishes Chinese students' concerns from those documented in Western studies is the specific structural context in which these concerns are embedded. In Western healthcare systems, debates about AI often center on autonomy, privacy, and algorithmic bias—issues that reflect individualistic cultural frameworks. In contrast, Chinese students' concerns are filtered through the lens of an overburdened, resource-constrained system where patient volume already threatens care quality. This structural vulnerability gives Chinese students' perspectives a distinctive urgency. Additionally, the hierarchical educational culture means that students look not to professional guidelines or institutional policies for guidance, but to individual faculty members, whose silence carries particular weight. This finding suggests that AI integration strategies cannot be simply imported

from Western contexts; they must be adapted to local educational cultures and healthcare delivery systems.

Students' desire for active faculty guidance, together with their rejection of silence, is a central finding with global implications. Students articulated that neutrality on AI is a failure to fulfill the educator's role, aligning with Hess and McAvoy's [27] argument that classrooms are inherently not neutral. In the Chinese context, where faculty hold significant hierarchical authority, their engagement with AI may be particularly consequential in shaping student attitudes. The minority of students who attributed faculty silence to ignorance or overwork rather than neglect remind us that faculty behavior is itself shaped by structural constraints—a reality that any intervention must address.

IMPLICATIONS FOR PRACTICE

This study has several implications for medical education. First, medical schools should develop explicit policies regarding AI use—defining appropriate use, academic dishonesty, and critical appraisal of AI outputs. Second, faculty development programs should address AI literacy, as many educators feel underprepared to teach about AI's capabilities and limitations [19]. Third, curricula should explicitly address the relationship between AI and foundational clinical skills to prevent deskilling, positioning AI as a tool that augments rather than replaces physician cognition. Fourth, the patient-physician relationship should remain central to discussions of AI in medical education. Finally, the silence around AI must be broken—not by simply declaring its end, but through sustained curricular integration, faculty development, and institutional dialogue. In hierarchical educational systems like China's, faculty initiation of these conversations is particularly important to create psychological safety for student engagement.

LIMITATIONS

This study has several limitations. First, regarding the language of analysis, while we conducted coding on the original Chinese transcripts with systematic reference to the source language, the team included members with varying levels of Chinese proficiency, and the translation process, though iterative, may have introduced subtle interpretive distance. Second, participants may have been hesitant to fully disclose their AI use practices due to concerns about academic integrity, despite our assurances of confidentiality. This social desirability bias may have influenced the data, particularly regarding covert AI use. Third, the geographical and institutional context—a single medical school in China—may not represent the full diversity of Chinese medical education. The study did not include faculty or administrator perspectives, which limits our understanding of the institutional and pedagogical factors that contribute to the silence students described. Additionally, the use of snowball sampling may have introduced selection bias by recruiting students who share similar perspectives or social circles. Finally, while we actively sought and reported disconfirming evidence, the smaller proportion of such voices in our sample limits our ability to fully characterize their prevalence or representativeness. Future research should include faculty voices, examine multiple institutions, and explore whether these findings transfer to other hierarchical educational contexts beyond China.

CONCLUSION

Chinese medical students are navigating AI use in the shadows, without formal guidance. They adopt a thoughtful "trust but verify" stance and worry that AI may erode clinical reasoning and the patient-physician relationship—concerns amplified by China's high-volume healthcare system. Most importantly, students reject educator silence on AI. They seek educators who acknowledge AI's presence, teach critical appraisal, and model appropriate use. At the same time, our data reveal that students' perspectives are not monolithic: some express greater trust in AI, others question the utility of verification in time-constrained settings, some view AI as a potential solution to structural constraints rather than merely a threat, and a minority attribute faculty silence to ignorance or overwork rather than neglect. These complicating accounts underscore the importance of nuanced, context-sensitive educational responses that attend to the diversity of student experiences and the structural constraints facing both learners and educators.

These findings carry implications beyond China's borders. In an era of global AI integration, medical educators worldwide face the challenge of preparing students for rapidly transforming practice environments. The Chinese experience suggests that when institutions fail to acknowledge and address emerging technologies, students adapt independently—but not necessarily safely or equitably. Medical schools have a responsibility not merely to teach about AI, but to model how to navigate its complexities—with critical thinking, humanistic values, and an unwavering commitment to patient care at the center. This silence warrants urgent attention from educators and institutions, not because AI is the future, but because students are already living in that future, and they deserve thoughtful guidance.

APPENDIX: SEMI-STRUCTURED INTERVIEW GUIDE

The following semi-structured interview guide was used to explore participants' perspectives on AI in clinical training. All interviews were conducted in Mandarin Chinese; the guide is presented here in English translation. After each sensitizing scenario, the interviewer used open-ended probes to explore participants' reasoning, emotional responses, perceived institutional norms, and expectations of educators.

OPENING QUESTIONS (WARM-UP)

1. Can you tell me a bit about your experience with technology in medical education so far?
2. Have you used any AI tools (such as large language models, diagnostic support tools, or study apps) in your learning? If so, in what ways?

SCENARIO 1: CLINICAL DOCUMENTATION

"During your clinical rotation at a tertiary hospital, you observe a resident using a large language model (e.g., ERNIE Bot or ChatGPT) to draft patient notes. The resident tells you this saves significant time given the high patient volume and suggests you try it."

Probes: – What are your immediate thoughts or feelings about this situation? – Would you try it? Why or why not? – What do you think the resident should do, if anything, regarding disclosure or oversight? – How do you think your clinical teachers or attending physicians would respond if they knew? – Should there be any institutional policies about this kind of use? What would they look like?

SCENARIO 2: DIAGNOSTIC ASSISTANCE

"In a small group tutorial, a student shares that they used an AI diagnostic tool to generate differential diagnoses for a practice case. The AI suggested a diagnosis that was not mentioned in the session materials. A debate arises about whether AI tools should be used for clinical learning."

Probes: – What is your position in this debate? Why? – How would you evaluate the AI's suggestion in this context? – What role, if any, should AI play in clinical reasoning education? – How should the tutor or facilitator respond to this situation? – What would help students make good decisions about using AI for diagnostic learning?

SCENARIO 3: LEARNING SUPPORT FOR EXAMINATIONS

"You overhear two classmates discussing their study strategies for the National Medical Licensing Examination. One mentions using an AI tool to summarize lecture content and generate practice questions, stating it is much more efficient than traditional methods. The other expresses concern that this might undermine genuine learning."

Probes: – Which classmate's position do you lean toward? Why? – Where would you draw the line between acceptable and unacceptable use of AI for exam preparation? – How does the high-stakes nature of the licensing exam influence your thinking about AI use? – What guidance—if any—should educators provide specifically about AI and exam preparation?

CLOSING QUESTIONS

1. Overall, what kind of guidance or support would you most want from your educators regarding AI?
2. What concerns, if any, do you have about AI's role in your future clinical practice?
3. Is there anything else you would like to add about AI in medical education that we haven't discussed?

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COMPETING INTERESTS

The authors have no competing interests to declare.

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