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A national perspective: integrating medical humanities to address burnout and stress in Chinese medical education

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Abstract

Background The significance of issues in medical humanities, such as empathy, professionalism, patient-orientation, disclosure of harms, and communication skills, has been widely acknowledged in previous studies. While these studies have showcased the impact of individual facets of medical humanities on clinical practice, there exists a dearth of comprehensive assessments that encompass these constructs and their relationship with burnout and distress among medical students. This study aims to fill these gaps by exploring Chinese medical students' overall perceptions of medical humanities across different educational phases and shedding light on the intricate associations between perceptions of humanities, burnout, and stress.

Methods We conducted a nationwide survey using a web-based questionnaire across 38 Chinese universities. The questionnaire includes Medical Humanities constructs, the Maslach Burnout Inventory constructs and the Perceived Stress constructs. The survey was administered using the snowball sampling method, with the data collection period running from September 8, 2022, to September 22, 2023. Participants included a national sample of 904 students (out of a total of 969) enrolled in medical schools. To investigate the relationships among all the constructs, PLS-SEM analysis was conducted by using the SmartPLS 3.3.9 software in this study.

Results The student's perception of medical humanities was significantly influenced by several factors: years of medical school education ($\beta = -.077$; $P = .045$), work burnout ($\beta = -.208$; $P < .001$), and perceived stress ($\beta = -.467$; $P < .001$). Work burnout was impacted by clinical clerkship experience ($\beta = .106$; $P = .001$), whereas perceived stress was influenced by the number of years in medical school ($\beta = 0.102$; $P = .002$). Additionally, work burnout acts as an intermediate variable between clinical clerkship experience and students' perception of medical humanities.

Conclusion This study illuminated the complex relationship between medical education, burnout, stress, and students' perception of medical humanities issues. It underscores the critical importance of balancing technical proficiency with humanistic values in medical training. Implementing strategies that support students' well-being and foster empathy is essential in nurturing a compassionate and effective healthcare workforce.

Keywords Medical humanities, Work burnout, Perceived stress, Medical education

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Background

The medical humanities have long been recognized as an integral component of medical education, as humanistic medical care improves the overall quality of health care [1]. The General Medical Council in the United Kingdom, not only emphasizes the importance of understanding a patient's pathology but also their psychological, social and cultural needs [2]. The influence of the medical humanities on clinical performance is associated with increased empathy for patients [3], which can help to prevent mistrust and conflicts arising from unsatisfactory doctor-patient relationships [4]. Gradually, relevant strategies and assessments related to the medical humanities have been developed in specific fields like nursing [5], telemedicine [6] and clinical diagnosis [7].

While students acknowledge the benefits of exposure to issues in the medical humanities during their education, they consistently express concerns and skepticism [8]. Most medical schools in China do not prioritize medical humanities education, lacking dedicated professionals and institutional support. Unlike Dr. Arthur Kleinman, a senior doctor renowned for his focus on medical humanities, many of these professors lack extensive clinical experience as physicians. Consequently, during clinical clerkship, students often find themselves struggling to reconcile the disconnect between their personal values and professional expectations [9], leading to burnout and a decline in empathy [10, 11]. Specifically, a significant decline in empathy is observed during the third year of medical school, when the curriculum is shifting toward more patient-care activities [12]. Several evidence-based studies show that trainee distress is a key determinant of empathy decline, which can be considered a coping mechanism for dealing with various stress factors, such as encountering morbidity and mortality [13].

While numerous studies have focused on measuring changes in students' empathy levels during clinical clerkship, few have assessed students' overall perceptions of medical humanities within the constructs discussed above and examined the various periods in medical education, including theoretical curricula and clinical clerkships. Additionally, there is a lack of empirical research on students' perceptions of medical humanities in relation to burnout and distress during clinical practice. How do Chinese medical students' perceptions of medical humanities evolve throughout different stages of their education? What are the associations between these perceptions, burnout, and stress? This study aims to address these gaps by evaluating Chinese students' comprehensive perceptions of medical humanities issues through a multi-institutional nationwide research project and shedding light on the associations between these perceptions, burnout, and stress. Our analysis underscores

the pressing need for significant improvements in the medical humanities curriculum within Chinese medical schools, fostering a more comprehensive and effective medical education system that prioritizes empathy, ethical understanding, and patient-centered care.

Theoretical background and hypothesis development

There are few single universally accepted scales specifically designed to assess an individual's proficiency in understanding pertinent issues within the medical humanities. While the Jefferson Scale of Empathy (JSE) is the most used scale to evaluate empathy among healthcare providers, other humanistic principles include professionalism, caring, patient-orientation, disclosure of harms and communications skills. Professionalism comprises a set of observable behaviors conducted by medical staff to meet the expectations of patients and the public [8, 14, 15]. In the medical context, caring is one of the key aspects in medical education, defined as the subjective experience and as the physiologic responses in patients [16–18]. Patient-orientation caring focuses on the patients, sharing the same goals with medical humanities and improves patients' satisfaction and medical outcomes [8, 19]. Disclosure of harms is a universally acknowledged bioethics principle that emphasizes the patients' autonomy and enforce patients' rights to be adequately and wholly informed [20–22]. Effective communication is increasingly considered as an essential component to the effective medicine practice, and part of the educational goals in medical humanities program is to enhance communication skills of future physicians [16, 17, 23, 24].

In our study, we focused on refining and adjusting these questions to better align with the comprehensive nature of the medical humanities. This adjustment aims to enhance the questionnaire's validity, providing an improved tool to better evaluate healthcare professionals' understanding and application of humanistic principles in their practice.

The Maslach Burnout Inventory (MBI) [25], developed by Dr. Christina Maslach and her colleagues, is one of the most widely used measures of burnout in various professional fields, including healthcare. The MBI defines burnout as a psychological syndrome characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment. Burnout among medical practitioners, including physicians and students, can lead to reduced empathy, compromised communication skills, decreased patient-centered care, and a decline in professionalism [26]. Furthermore, burnout can negatively affect the perception of medical humanities, as emotional exhaustion and depersonalization may reduce students' ability to engage with the ethical, empathetic, and

humanistic aspects of medicine. Since the clinical clerkship phase often involves long hours, demanding schedules, and exposure to emotionally intense situations, such as patient suffering and ethical dilemmas, students may experience exorbitant workloads, pressure to perform, and responsibilities that may exceed their prior academic experiences [27]. This transition period might contribute to work burnout and a potential decline in awareness and good practice of medical humanities issues among students. Based on these variables, we proposed the following hypotheses:

H1: Work burnout affects students' perception of medical humanities issues.

H1a: Clinical clerkship experience affects students' perception of work burnout.

H1b: Clinical clerkship experience affects students' perception of medical humanities issues.

Medical students' perceived stress in medical practice often encompasses the stressors they encounter during their training, such as academic pressure, workload, exams, patient care responsibilities, and the high demands of clinical practice [28]. These stressors can impact their mental health and well-being during their medical education journey. The perceived stress experienced by medical students might be influenced by their years of school education. As students progress through their studies, they encounter increasing academic demands and clinical responsibilities, potentially contributing to higher stress levels [29]. This heightened stress seems to correlate with changes in their perception of medical humanities issues. Elevated stress might hinder their ability to fully engage with the empathetic and humanistic aspects of medicine, impacting their understanding and incorporation of medical humanities principles into their clinical practice [30]. Thus, we proposed the following hypotheses:

H2: Perceived stress affects students' perception of medical humanities issues.

H2a: Years of medical education affect students' perceived stress.

H2b: Years of medical education affect students' perception of medical humanities issues.

Methods

We conducted a nationwide survey using a web-based questionnaire across 38 Chinese universities, including Sun Yat-sen University, Peking Union Medical College, Central South University, and others. The survey employed the snowball sampling method and was conducted from September 8, 2022, to September 22, 2023.

Context

Most of the medical students in China start to attend medical humanities courses in the second year or the third year of the undergraduate programs, and it is usually optional course lacking a systematic teaching syllabus. At Sun Yat-sen University, the medical humanities curriculum aims to teach students humanities and integrate these principles into medical practice. The primary goal is to foster empathy, prioritize patient-centered care, and promote the moral cultivation and professional ethics of medical students. This curriculum includes materials such as books on medical anthropology, culture, and narrative medicine. However, the medical humanities faculty within the medical school is comprised of part-time instructors from the School of Philosophy, Sociology, and Anthropology, which may contribute to a theoretical and disconnected approach to medical humanities education.

Meanwhile, medical students are required to complete residency training, learn clinical knowledge and skills, and also spend a lot of time cultivating their research abilities and writing research papers. These factors have led them to be in a hurry to achieve success, spending most of energy on research and professional learning, which can bring tangible benefits quickly, while neglecting the study of medical humanities.

Participants

Participants consisted of a national sample of 904 (out of a total of 969) students in medical schools in China. The study included students from all four years of medical school, comprising 437 first-year to third-year undergraduates, 94 fourth-year to fifth-year undergraduates who had just started clinical clerkship, 272 master's students, 53 Ph.D. students, and 46 doctors in residency training. The questionnaire collected demographic information and clinical experience. Questionnaires were considered valid only if (1) the respondent completed the survey, and (2) the total response time exceeded 60 s.

Medical humanities

Participants' subjective perceptions of medical humanities issues were measured using the questionnaire developed by Ya-Huei Wang, which encompasses a total of 20 items across five constructs [31]. The five constructs include professionalism, caring and empathy, patient orientation, disclosure of harm and communication within the context of clinical patient care. However, we found that some of the questions in the original questionnaire were unsuitable for measuring the constructs. To address this, we also incorporated elements from the Jefferson Scale of Physician Empathy (JSPE) [32] and the

SEGUE (Set the stage, Elicit information, Give information, Understand the patient’s perspective, and End the encounter) Framework [33] to refine the questions. For the caring and empathy construct, we modified three questions from the JSPE, with a focus on perspective-taking and putting oneself in the patient’s shoes. For the patient orientation, disclosure of harm, and communication constructs, each of these constructs was refined with one question based on the SEGUE Framework.

Participants provided responses using a 7-point Likert scale (1 = totally disagree, 7 = totally agree), where higher scores indicated a stronger sense of medical humanities understanding. The medical humanities questionnaire has been translated into Chinese to assess medical humanities concepts. Our research involved testing its reliability and validity across a nationwide sample.

Burnout

The 15-item Maslach Burnout Inventory-General Survey is an instrument designed to assess burnout in various professions. It includes separate subscales to evaluate each domain of burnout: exhaustion, cynicism, and professional efficacy [25]. The construct validity of the MBI-GS has been supported [34], and is commonly used in China.

In our study, we used a modified 12-item version of the scale by removing three items (1, 5, and 6) that were not applicable to medical students. Each item was rated on a 7-point Likert scale (1 = totally disagree, 7 = totally agree). High scores on the exhaustion and cynicism subscales, coupled with low scores on the professional efficacy subscale, indicated high levels of burnout. We

categorized scores within each subscale as low, medium, or high, based on established cutoff scores.

Perceived stress

We used the 4-item Perceived Stress Scale (PSS-4) to assess participants’ subjective stress levels [35]. This assessment consists of two positive and two negative items and has been successfully used by others to ascertain information from medical practitioners [36]. The negative items are intended to assess a lack of control, while the positive items measure the ability to cope with existing stressors (e.g., ‘I am unable to control important things at work’). Each item is rated on a four-point scale from 0 (‘never’) to 4 (‘very often’), based on the preceding month.

Statistical analysis

PLS-SEM analysis was conducted using SmartPLS 3.3.9 in a two-step analysis process [37]: (1) evaluating item and construct reliability and validity via confirmatory factor analysis of whole the measurement model and (2) evaluating the structural model’s path effects, significance, and goodness of fit, and mediation effects. Figure 1 shows the conceptual model for the analysis, with solid-line arrows indicating the relationships between the specified concepts in the hypotheses. Descriptive statistics were performed using SPSS (Version 26.0).

To examine common method bias, we applied Harman’s single-factor test, which did not reveal that a single factor described more than 50% of the variance [38]. Therefore, common method bias was not present in this study.

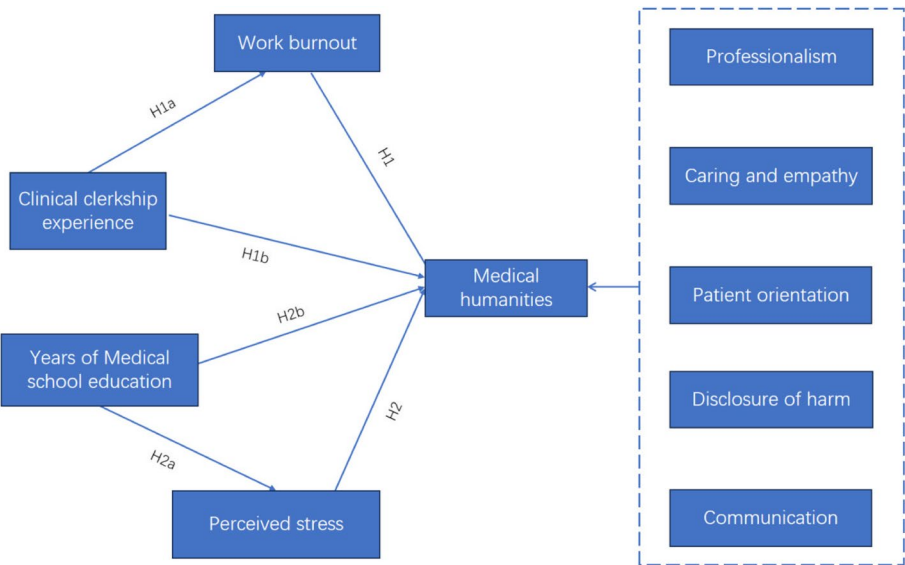


Fig. 1 The conceptual model in the hypothesis

Results

Measurement model

Descriptive statistics for the variables, items, composite reliability and convergent validity are shown in Table 1. The composite reliability exceeding 0.7 [39], and convergent validity was assessed using the average variance extracted (AVE). All constructs' AVE values were greater than 0.5 [40], showing good convergent validity in this study.

In Table 2, the square roots of the AVE values exceeded the correlations between a particular construct (in the same column) and other constructs (in different rows), demonstrating good discriminant validity for all constructs. Moreover, composite reliability and discriminant validity affirmed that each item of the medical humanities scale was suitable for assessing medical students' understanding of such issues.

Structural model analysis

Figure 2 provides a visual representation, while Table 3 presents the numerical results of the path coefficient.

Table 1 Statistics of composite reliability and convergent validity

Variable/Item	Composite reliability, CR	Convergence validity, AVE	Cronbach alpha, CA
Professionalism	0.942	0.803	0.918
Caring and empathy	0.918	0.789	0.867
Patient orientation	0.951	0.829	0.931
Disclosure of harm	0.948	0.821	0.927
Communication	0.941	0.801	0.917
Medical humanities (Mean)	0.975	0.677	0.973
Work burnout	0.865	0.521	0.811
Perceived stress	0.842	0.576	0.764

Table 2 Discriminant validity

	PR	CE	PO	DF	CO	MH	CCE	MSE	WB	PS
Professionalism	0.896 ^a	-	-	-	-	-	-	-	-	-
Caring and empathy	0.733	0.888	-	-	-	-	-	-	-	-
Patient orientation	0.832	0.826	0.910	-	-	-	-	-	-	-
Disclosure of harm	0.875	0.759	0.857	0.906	-	-	-	-	-	-
Communication	0.725	0.759	0.822	0.820	0.895	-	-	-	-	-
Medical humanities	0.897	0.879	0.952	0.931	0.905	0.823	-	-	-	-
Clinical clerkship experience	-0.066	-0.078	-0.075	-0.088	-0.113	-0.092	1.000	-	-	-
Years of medical school education	-0.103	-0.118	-0.116	-0.139	-0.139	-0.135	0.693	1.000	-	-
Work burnout	-0.522	-0.513	-0.567	-0.555	-0.559	-0.596	0.106	0.127	0.722	-
Perceived stress	-0.415	-0.413	-0.464	-0.462	-0.463	-0.487	0.107	0.102	0.586	0.759

^a The items on the diagonal represent the square root of the AVE; off-diagonal elements are the correlation estimates

The findings indicate that the student's perception of medical humanities was notably influenced by several factors: years of medical school education ($\beta = -.077$; $P = .045 < 0.05$), work burnout ($\beta = -.208$; $P < .001$), and perceived stress ($\beta = -.467$; $P < .001$). Additionally, clinical clerkship experience had a positive impact on work burnout ($\beta = .106$; $P = .001 < 0.05$), while years of medical school education influenced perceived stress ($\beta = 0.102$; $P = .002 < 0.05$).

Notably, the study did not identify a significant direct effect of clinical clerkship experience on medical humanities ($\beta = .033$; $P = .400 > 0.05$). This suggests that work burnout acts as an intermediate variable between clinical clerkship experience and students' perception of medical humanities issues.

Figure 2 illustrates the changes in the mean scores of stress, burnout, and perceived medical humanities issues as students' years of medical school education increased.

Discussion

Our study yielded three key findings. First, the refinement of the medical humanities questionnaire enhanced its precision and reliability. Second, students' perception of medical humanities was notably influenced by two significant factors: the number of years spent in medical school education and perceived stress. Third, our study identified work burnout as an intermediate variable between clinical clerkship experience and students' perception of medical humanities.

Refinement of medical humanities perception assessment

The evaluation of medical humanities perception in this study was based on Ya-Huei Wang's questionnaire, which encompassed five constructs: professionalism, caring and empathy, patient orientation, disclosure of harm, and communication in the context of clinical patient care. These five constructs include a holistic range of essential

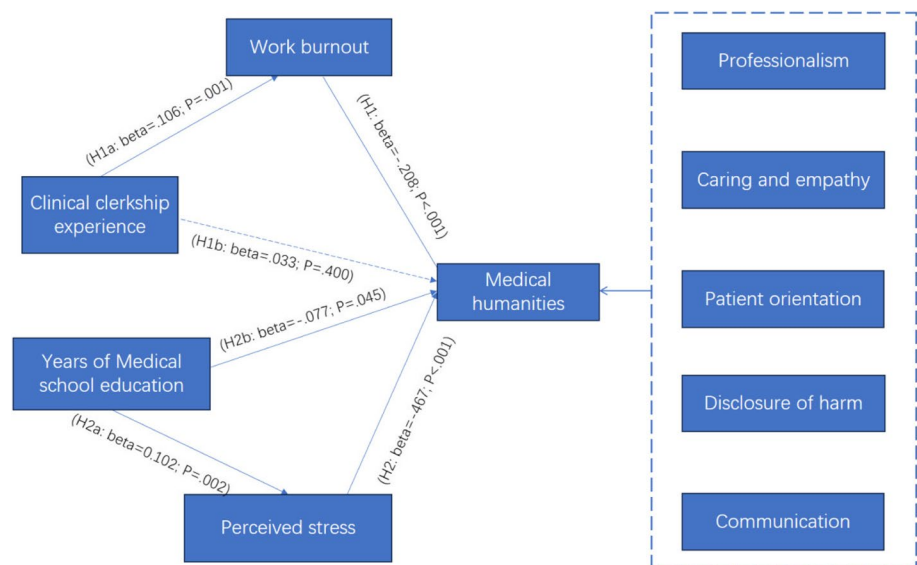


Fig. 2 Estimates from the regression analysis. *H: hypothesis

Table 3 Path coefficients

Variables and relations	β	T Value	P Value	Results
H1b: Clinical clerkship experience → Medical humanities	0.033	0.842	0.400	Not support
H1a: Clinical clerkship experience → Work burnout	0.106	3.215	0.001	Support
H2b: Years of medical school education → Medical humanities	-0.077	2.004	0.045	Support
H2a: Years of medical school education → Perceived stress	0.102	3.059	0.002	Support
H1: Work burnout → Medical humanities	-0.208	5.800	0.000	Support
H2: Perceived stress → Medical humanities	-0.467	10.108	0.000	Support

elements that define medical humanities, reflecting the professional, ethical, empathetic, patient-centered, and communicative dimensions that shape the ethos of compassionate and humanistic healthcare practice.

However, we found that certain questions in the original questionnaire were not entirely suitable for accurately measuring these constructs. For example, regarding the caring and empathy construct, an item from Wang’s questionnaire stated, ‘Medical professionals should be altruistic; that is, they should consider a patient’s happiness and place the well-being of others before their own.’ This item can be perceived as overly subjective, involving personal interpretation and values related to altruism.

Similarly, the item ‘Medical professionals should not harm their patients’ may present an overly simplistic perspective, lacking the depth required to assess a student’s empathetic understanding or their ethical considerations within the context of medical humanities. The binary nature of this statement might limit students’ ability to provide nuanced responses that accurately reflects their perceptions.

To address this limitation, we referred to established frameworks such as the JSPE [32] and the SEGUE [33] Framework. By refining the questionnaire items to align with established frameworks and construct definitions, the new questionnaire improves the precision and reliability of the assessment, ensuring a more comprehensive understanding of students’ perceptions within the medical humanities domain.

Influential factors on medical humanities perception

Several factors including students’ years of medical education and perceived stress, negatively influenced students’ perception of medical humanities. Our findings revealed that the scores related to medical humanities decreased as students progressed in their medical education. In China, medical students start their clinical clerkship in the fourth year of medical education. The transition from the classroom to the clinical setting introduces students to the realities of healthcare, namely patient suffering, inadequacies of the healthcare system¹² and challenging ethical dilemmas [41].

The students in this study reported that they had been insulted by patients or their family members, with one remarking: “They treat all the young doctors except the seniors as waiters with disdain.” Overburdened healthcare facilities, long waiting times, and overcrowded hospitals might lead to frustration among patients, impacting their interactions with healthcare providers. The strained doctor-patient relationship often results in students experiencing disrespectful treatment from patients [42, 43]. These experiences may prompt students to reevaluate their perceptions and priorities, potentially leading to a decline in their medical humanities scores.

Additionally, as medical students transition to clinical settings, they are exposed to diverse illness narratives that may challenge their preconceived notions and theoretical understanding of medical humanities. Arthur Kleinman’s concept of “illness narratives” highlights the importance of understanding patients’ subjective experiences and the stories they construct around their illnesses [44]. The dissonance between the idealized principles of empathy, patient-centeredness, and holistic care taught in classrooms and the complex realities of engaging with patients’ illness narratives could contribute to the observed decline in medical humanities scores. Kleinman also underscores the significance of listening to and validating these illness narratives as a means of providing holistic care [45]. However, navigating the intricate web of personal, cultural, and social meanings embedded within patients’ narratives requires a level of emotional intelligence and practical experience that may be lacking in the early stages of medical training.

The negative correlation between perceived stress and medical humanities perception reveals an intricate relationship influenced by the unique challenges encountered by medical students. In a systematic review of psychological distress among U.S. and Canadian medical students, it was found that medical students are more likely to experience depression, anxiety, and other mental health problems compared with the general population [46].

In our study, we discovered that students’ perceived stress increased as they moved through medical school. Within the context of China’s medical education landscape, students often contend with rigorous academic demands, including the pressure to excel examinations, while simultaneously managing increasingly heavy workloads that encompass emergency responsibilities and demanding clinical rotations. According to reports from medical students, they often have to work 9-h day shifts and 15-h night shifts twice a week. One student mentioned “this workload leaves me feeling drained, yet I

must persist in keeping up with my curriculum.” These prolonged work hours and frequent night shifts can lead to sleep deprivation, chronic fatigue, and emotional exhaustion among medical students.

This perceived stress not only takes a toll on students’ well-being but also poses an obstacle to their ability to engage empathetically with patients [47]. The persistent strain might impact their capacity to integrate the ethical, empathetic, and patient-centered facets of medical humanities into their clinical experiences. Particularly in regard to communication skills, the overwhelming workload might limit their ability to meaningfully connect with patients [48], accelerating the onset of compassion fatigue [49]. This has the potential to impact their perceptions of empathy, caring, and professional ethics. Kleinman’s work highlights the moral dimensions of care and the ethical challenges that arise in the context of caring for patients, emphasizing the need to cultivate moral sensitivity and ethical reasoning among healthcare professionals [45].

The fragmented nature of medical humanistic education in Chinese universities, relying on part-time faculty, lacks a systematic structure. It is predominantly theoretical, lacking practical classes to address real-world challenges, as discussed above. This educational context likely contributes to the observed decline in medical humanities among students.

Addressing these issues may involve restructuring the curriculum, integrating support services, and fostering a more comprehensive approach to medical humanities within the education system.

Work burnout as an intermediate variable

Additionally, our study revealed that work burnout was an intermediate variable, mediating the relationship between students’ perception of medical humanities. Burnout is a prevalent challenge affecting medical students’ well-being, with concerning implications for its persistence into residency and beyond [50]. Research indicates a high prevalence of burnout among trainees, with factors within the learning and work environment being major contributors to burnout [51].

Burnout among medical students stems from various stressors intrinsic to their medical education and clinical training. The demanding clinical responsibilities, which involve long hours, frequent night shifts, and emotionally taxing patient care, significantly contribute to both physical and emotional exhaustion [52, 53]. Students have reported that as they try to manage the demands of their rigorous academic studies and work responsibilities while also tending to their personal lives, the challenge of

achieving a work-life balance becomes increasingly difficult. The weight of societal expectations and the competitive nature of the field further intensifies this pressure. Moreover, strained doctor-patient relationships, inadequate remuneration [54], and the absence of robust support systems [47] within medical institutions add layers to the stressors faced by medical students, amplifying the risk of burnout.

Implications

This study has some implications for medical education. Firstly, it is necessary to restructure the curriculum so that medical humanistic education pervades every stage of medical training, establishing a comprehensive framework that emphasizes empathy, reflective practice, and ethical decision-making with clinical responsibilities. This shift includes not only learning about the patient's narrative but also developing the skills to interpret and respond to the complex cultural, social, and personal dimensions of illness.

To address students' limitations in responding to diverse illness narratives, a focus on narrative medicine and cultural competence should be embedded within medical humanities education. Harvard Medical School offers an elective course that combines narrative medicine with clinical experience. This would include training students to explore patients' perspectives through structured reflection and guided dialogue, fostering sensitivity to the diverse ways illness can be understood and experienced. The instructors of medical humanities courses are typically physicians who also have expertise in other fields, such as sociology, anthropology, and public health. Other institutions, such as Columbia University and the University of Iowa, also offer similar courses or programs.

Secondly, institutions must prioritize comprehensive student support services, offering mental health resources, counseling, and effective mentorship programs. A pivotal shift in enhancing medical education involves transitioning from part-time to full-time medical humanities instructors in comprehensive colleges. These experienced educators will enrich the curriculum and serve as mentors, aiding students in navigating stress and burnout.

Thirdly, emphasizing training modules focused on effective communication, empathy, and trust-building is vital to improve the strained doctor-patient relationship evident in China. In Japan, first-year university students participate in an 'experience internship', where groups of 4–5 students collaborate to elicit emotional responses and cultivate 'empathy', a concept deeply emphasized in Western medical education. Additionally, integrating medical humanities assessments into residency training

and medical student curricula would highlight the significance of nurturing these skills. Furthermore, implementing policies promoting a healthier work-life balance for students is imperative.

Lastly, continuous evaluation and refinement of assessment tools, particularly the medical humanities questionnaire, are necessary for accurately measuring perceptions and progress in integrating humanities into medical education. These implications underscore the urgent need for systemic changes within medical education to address burnout, nurture empathy and ethics, and to cultivate a supportive environment for aspiring healthcare professionals.

Limitations

This study has several limitations. Firstly, the sample may not fully represent the entire population of medical students in China due to potential sampling bias, impacting the generalizability of the findings. Secondly, relying on self-reported data introduces the possibility of response bias, as participants may not fully disclose their experiences or perceptions. Thirdly, the cross-sectional design of the study restricts the establishment of causal relationships between variables, urging caution in interpreting causality. Moreover, as the medical humanities education varied in different schools in China, the absence of medical humanities education may contribute to a lack of appreciation for the ethical, empathetic, and patient-centered aspects of healthcare delivery, especially when the students face stress and burnout in clinical practice.

Conclusion

This study illuminated the complex relationship between medical education, burnout, stress, and students' perception of medical humanities' issues. As students progressed through medical school, their perception of medical humanities declined, influenced by exposure to clinical realities and heightened stress levels. Perceived stress exhibited a negative correlation with medical humanities perception, emphasizing the impact of academic and clinical workload pressures from students' perspectives. Burnout emerged as a mediating factor, linking clinical experiences to altered perceptions. Its impact on students' empathy and communication underscores the need to address burnout and prioritize well-being in medical education.

Balancing technical proficiency with humanistic values is crucial. Our findings emphasize the urgent need to prompt a reevaluation of medical humanities integration in the medical education curriculum to ensure a more holistic and supportive learning environment.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-025-06875-8>.

Supplementary Material 1.

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Informed consent

All participants involved in this study provided informed consent before participating in the survey.

Authors' contributions

Z.H. and C.Y. contributed to the theoretical concept of this study and its design. W.H., Y.L. and X.W. contributed to data collection. X.J. and L.S. contributed to statistical analyses of data. Z.H., X.J. and L.C. contributed to interpretation of the findings. All authors contributed to the writing of the manuscript and approved the final manuscript.

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Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board of School of Sociology and Anthropology, Sun Yat-sen University (Approval No: SYS-UIRBD20220820). All experiments were performed in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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