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# Integrating case-based learning with curriculum-based ideological and political education: enhancing undergraduate otolaryngology education

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The aim of this study was to explore the impact and practical value of combining case-based teaching with curriculum-based ideological and political education (CIPE) in undergraduate Otolaryngology theoretical courses by evaluations of the theoretical test, teaching satisfaction, and the integration of ideological and political education. In this randomized controlled trial, 366 fourth-year medical undergraduates were assigned to either an observation group, which received a semester of case-based CIPE in Otolaryngology, or a control group, which received traditional teaching methods focused on foundational theoretical knowledge. The final theoretical exam score and the process evaluation score, as well as the questionnaire on CIPE were collected. Data were analyzed using SPSS 24.0 statistical software. An independent sample T-test, the corrected  $\chi^2$  test, and the non-parametric rank-sum test were used for statistical comparisons between the groups. The performance of students in the observation group was significantly higher than that of the control group. The overall satisfaction rate with the theory class was also significantly higher, and most students in the observation group had a strong recognition of the importance, specific connotation, training objectives, and methods of integrating ideological and political content. This study indicates that integrating case-based teaching with ideological and political education, to a large extent, improves students' mastery of professional theory, stimulates proactive thinking, establishes correct professional values, and boosts their sense of professional pride and confidence. It is worth continuously practicing and exploring in our teaching activities.

## KEYWORDS

ideological and political education, Otolaryngology, case-based teaching, higher education, educational innovation

## 1 Introduction

Curriculum Ideological and Political Education (CIPE) integrates ideological and political education with professional courses in higher education. By incorporating ideological education into the teaching of professional theoretical knowledge, students not only acquire specialized knowledge but also develop a correct worldview, life

perspective, and values, thereby enhancing their comprehensive competencies (Xu and Guo, 2021; Wei, 2021). In China, ideological and political education is based on the methodology of dialectical materialism and historical materialism, characterized by consistency and an emphasis on the establishment of public morality. It manifests in a love for the motherland, the people, work, science, socialism, patriotism, collectivism, and internationalism (Zhang and Fagan, 2015). By incorporating ideological and political elements into the curriculum, an ideology centered on morality and guided by political awareness is formed, ensuring the unity of Chinese people's ideals and beliefs, which is the foundation of national and social development and reflects the advantages of the socialist educational system (Yin, 2019; Lin, 2024). Ideological and political education shapes students' character and value orientation, which are important factors for career success (Luo et al., 2024). In recent years, CIPE has been extensively implemented in medical courses at universities (Wang et al., 2024; Gao et al., 2021; Gao and Lin, 2021). However, the impact of ideological and political education on students' professional abilities or academic achievements remains a topic worthy of further investigation. This study aims to explore the impact and practical value of combining case-based teaching with CIPE in undergraduate otolaryngology theory courses.

## 1.1 Current situation of CIPE in Chinese medical universities

The "Guidelines for the Construction of Curriculum-based Ideological and Political Education in Higher Education Institutions" issued by the Ministry of Education of China on May 28, 2020, set specific requirements for medical professional courses: "In course teaching, it is important to strengthen education on medical ethics and conduct, focus on cultivating the spirit of 'respecting life, saving the wounded, being willing to contribute, and having boundless love' in students, and emphasize the cultivation of the compassionate heart of a doctor. While developing excellent medical skills, students should be educated and guided to always prioritize the life and health of the people, respect patients, communicate effectively, and enhance their comprehensive quality and humanistic cultivation." As a new educational model, CIPE has gained widespread attention for its role in improving students' ideological and moral qualities, promoting a sense of social responsibility, and fostering innovative spirit. Many medical universities have focused on CIPE, using Marxist methodology to integrate professional theory and core values into their teaching design (Chen, 2020; Xu, 2021; Xu, 2021).

However, there are still many problems in the implementation of CIPE in medical universities. Historically, most medical universities in China have adopted traditional teaching models, which often neglect ideological and political education and emphasize the transmission of medical knowledge and practical skills. This has led to a lack of professional ethics in some medical students once they enter society (Liao and Huang, 2024). In terms of teaching arrangements, both educators and students tend to

prioritize professional knowledge and overlook moral education (Sun et al., 2023). Medical students face heavy study loads and significant academic pressure, which weakens their focus on ideological and political education. Research by Su et al. (2024) found that in curriculum design, professional teaching and ideological-political courses are often separated. Most teachers and students prefer to focus on professional knowledge, treating political and ideological education as an optional subject. From the perspective of the course's inherent characteristics, educational content that is highly theoretical but weak in practical application fails to engage students' interest, and there are also certain issues in the construction of ideological and political courses. Although there are unified textbooks and standardized teaching curricula, the textbook content tends to be outdated, theoretical, and overly narrative, making it difficult for students to accept the traditional, purely theoretical teaching model. Furthermore, ideological and political courses do not provide immediate guidance for medical students' work, lacking short-term effectiveness, which makes it hard to see long-term benefits (Ma et al., 2023).

## 1.2 Necessity of CIPE in Chinese medical universities

Currently, under the ideological framework of fostering moral character and educating people in medical universities, the goal of all-around education can only be achieved by organically integrating the teaching of medical professional knowledge with CIPE. In practice, medical students need to have strong ideological and moral qualities in order to better apply what they have learned in clinical practice and contribute to society. In their studies, medical students must possess strong logical and systematic thinking skills, be able to analyze diagnostic and treatment methods objectively and dialectically, and integrate knowledge in order to achieve the teaching objectives. With the continuous expansion of university enrollment, the number of graduates increases each year, but employment positions are scarce, leading to a severe oversupply of graduates. The mismatch between the supply structure and the social demand structure for university graduates has led to difficulties such as high unemployment rates and low-level job placements for graduates. Therefore, the implementation of career guidance courses in universities is essential. These courses should be integrated with ideological and political education to fundamentally change students' employment outlook, helping them establish correct career views and professional qualities (He et al., 2024; Lu and Xu, 2022).

In addition, the modern medical model requires medical students to not only possess rich medical knowledge and skills but also demonstrate a spirit of humanistic care. Students should understand that humanistic care can, to some extent, resolve conflicts between doctors and patients, encourage patients to face their illnesses bravely, and thus reflect respect for life and compassion for patients. Therefore, whether it is medical education reform, addressing employment issues, or fostering a spirit of humanistic care, all these factors present new demands for future medical curricula. In addition to refining professional courses, the implementation of CIPE is urgent.

### 1.3 Feasibility of integrating case-based teaching with CIPE

The structure of the Chinese education system integrates ideological and political education throughout the entire educational process, influencing individuals' values, beliefs, and civic consciousness. CIPE has a multidimensional impact on students' overall development. On one hand, it indirectly promotes the enhancement of students' professional abilities by strengthening their sense of social responsibility, collective spirit, and innovation capabilities. On the other hand, ideological and political education also promotes future academic achievements by optimizing students' learning attitudes and values (Sha et al., 2024). Professor Zhang Bower's research (Zhang, 2024) found that ideological and political education effectively enhances students' sense of collective awareness and teamwork, which plays a positive role in team collaboration and academic research. Furthermore, many studies (Luo et al., 2024; Tian et al., 2024; Ye et al., 2024; Liu et al., 2023) have shown that the self-management and self-improvement concepts advocated by ideological and political education help students develop good study habits, thereby improving their academic performance. For example, the diagnostic process for many diseases requires dialectical exclusion diagnosis, the multiple effects of corticosteroids, and the duality of immunosuppressant use, all of which can be integrated into the content of dialectical materialism and dialectical materialist philosophy. It is evident that medical education contains rich ideological and political elements, which can fully meet the intrinsic demands of medical curriculum teaching.

Case-based teaching has increasingly been used as a teaching method in medical education. Recent studies (Cen et al., 2021; Maia et al., 2023) have reported that case-based learning is an effective teaching method that helps improve students' academic performance. Furthermore, case-based teaching helps cultivate students' critical thinking and innovation capabilities, which are crucial for enhancing the professional abilities of medical students. In recent years, many scholars have explored the relationship between case-based teaching and students' innovative thinking. Studies have shown that case-based teaching, through the design of course content and innovative teaching methods, can stimulate students' creative thinking, thereby promoting the improvement of their academic level. This shift in thinking not only helps students achieve better results in classroom learning but also has a profound impact on their future academic success (Rubino and Freshman, 2005; Ibrahim and Lukman, 2025). We conducted searches in multiple databases, including "Web of Science" "Taylor & Francis Online" "ERIC" "Education Abstract" "ProQuest(r) Education Journals" and "EBSCO" using "ideological and political education" and "case-based teaching" as keywords, and found that research combining "ideological and political education" with "case-based teaching" is limited in existing studies. At the same time, based on the issues currently faced in the implementation of CIPE in medical universities, as well as the necessity and feasibility of CIPE mentioned earlier, we propose an innovative approach of integrating case-based teaching with CIPE in otolaryngology courses.

Otolaryngology, one of the core disciplines of clinical medicine characterized by its strong specialization, equips students with both theoretical knowledge and practical skills. This enables them to understand the common causes, pathogenesis, clinical features, and treatment principles of various diseases. The field has rapidly advanced

with the advent of new diagnostic and treatment technologies and the application of advanced medical equipment. Integrating CIPE into Otolaryngology courses is essential for fostering students' medical ethics and humanistic care, while developing high-caliber medical professionals with both moral and professional qualities. Since 2021, our university's undergraduate Otolaryngology courses have incorporated ideological and political content and implemented related activities using case studies as instructional tools (Liu, 2024). In this study, we focused on undergraduate clinical medicine students from the class of 2020 at Chongqing Medical University, evaluating the quality of Otolaryngology instruction, student satisfaction, and the effectiveness of CIPE.

## 2 Methods

### 2.1 Research sample

We enrolled a total of 366 fourth-year undergraduates majoring in clinical medicine from Chongqing Medical University, who took the "Sensory system disorders" course between February and June 2023. Of these, 180 students from class 1 of the clinical medicine department followed the traditional teaching approach, serving as the control group. Meanwhile, 186 students from class 2 participated in a case-based teaching with integrating CIPE, serving as the observation group. The control group consisted of 92 males and 88 females, aged between 21 and 22, with an average age of 21.5 years. The observation group consisted of 96 males and 90 females, aged between 21 and 22, with an average age of 21.3 years. There were no statistically significant differences in gender or age between the two groups ( $p > 0.05$ ).

### 2.2 Research design

#### 2.2.1 Group division

For the control group students, a traditional teaching model was used to deliver fundamental theoretical lessons in otorhinolaryngology, totaling 36 class hours. In this approach, teachers conducted lectures using slides, multimedia animations, audio, and images to deliver content in a conventional explanatory manner. Additionally, students were provided with in-class or post-class quizzes for further reflection. The students in the observation group received a total of 36 class hours of basic theoretical coursework in otorhinolaryngology. According to the course content schedule, teachers incorporated CIPE into theoretical instruction by using specific Otolaryngology knowledge as the entry point and medical cases as the carrier. This approach promoted the collaborative model of professional education and ideological education.

#### 2.2.2 Ideological and political elements

The ideological and political elements include Chinese civilization, professional ethics, patriotism, dedication, a sense of responsibility, scientific literacy, teamwork, the principle of seeking truth from facts, safety awareness, humanitarian spirit, cherishing life, caring for patients, communication skills, adherence to integrity and innovation, craftsmanship spirit, anti-epidemic spirit, dialectical thinking, innovative thinking, and lifelong learning ability. These elements aim to promote the establishment and implementation of the collaborative

education between professional courses and ideological and political education.

### 2.2.3 Case-based teaching

Using the teaching of “acute and chronic sinusitis” as an example, the specific method is as follows:

Before the lecture, the teacher focused on the teaching points on “acute and chronic sinusitis” from the syllabus and prepares clinical materials by selecting typical cases from hospital patients.

During the lesson, the case was introduced. In class, the case was presented as follows: “A 28-year-old female patient with a 4-month history of recurrent nasal congestion, purulent discharge, and loss of smell, occasionally accompanied by headaches. The patient initially had symptoms similar to a common cold, such as nasal congestion and sneezing.” This scenario simulated the clinical reception process, prompting the question: what might be the diagnosis—rhinitis or sinusitis? Is it acute or chronic? The case study encouraged students to think.

The teacher should keep detailed records of students’ classroom participation, evaluating them from multiple dimensions such as professional competence, clinical thinking, interpersonal communication, and teamwork. After the class, a questionnaire should be distributed to students to assess the actual effectiveness of the course implementation and provide timely feedback for improvement.

### 2.2.4 Integrating ideological and political education into case-based teaching

To cultivate students’ spirit of exploration. Combining with reviewing the anatomical structure of the nasal cavity and sinuses with color illustrations, the teacher guided students to analyze the clinical features of the patient introduced, which cultivated students to integrate basic anatomy with clinical knowledge and to develop a kind of systematical thinking and a scientific spirit of exploration.

To establish a spirit of humanistic medicine. In the explanation of clinical manifestations of “acute and chronic sinusitis,” we demonstrated the history-taking and physical examination to reflect the care for patients, encouraged students to master the effective doctor-patient communication skills, and cultivated a concept of humanistic medical care.

To strengthen professional identity and a sense of belonging. Through the formulation of a treatment plan, we explained the renewal and change for decades of surgery techniques of chronic sinusitis and introduced the westward migration history of the Otolaryngology department of our hospital, which nurtured students’ pride in their alma mater and respect for their predecessors, and established a sense of honor and responsibility in pursuing a medical career.

## 2.3 Methods for evaluating teaching quality

### 2.3.1 Theoretical testing

A quiz about the lesson content was conducted, with a comprehensive exam at the end of the term to assess students’ mastery of the theoretical knowledge. The final course grade was 100 points, with the theoretical exam accounting for 70% and process evaluation accounting for 30%.

### 2.3.2 Teaching satisfaction evaluation

A paper questionnaire, regarding the effectiveness of theoretical teaching, was used to evaluate the satisfaction levels of both the control group and observation group. The satisfaction ratings were divided into 4 levels: “Very Satisfied,” “Satisfied,” “Neutral,” and “Dissatisfied.”

### 2.3.3 CIPE valuation

Using the online platform Questionnaire Star (wjx.cn), a survey was distributed through the QR code and a web link after the completion of Otolaryngology course this semester. This survey evaluated the observation group students’ recognition of incorporating CIPE into case-based theoretical teaching activities.

The questionnaire consisted of 17 questions, including 2 personal information questions and 15 core questions. Among the core questions, 13 were single-choice questions that used a five-point Likert scale (from 1 strongly disagree to 5 strongly agree). Higher scores indicated higher levels of recognition and satisfaction. Additionally, there were 2 multiple-choice questions (Cheng et al., 2023).

The core questions of the survey included three aspects:

- (1) “Students’ recognition and attitude towards CIPE” (questions 3–6). To understand the extent of students’ awareness of the importance, specific connotation, training objectives of CIPE.
- (2) “Students’ evaluation of integrating ideological content into case-based professional courses” (questions 7–11). To understand the extent of students’ recognition of ideological and political content and integration methods, and their suggestions for teaching approaches.
- (3) “Students’ feeling of the integration of ideological education in professional courses” (questions 12–17). To understand the extent of students’ recognition of the effectiveness of CIPE.

See Table 1 for details.

## 2.4 Data analysis

Data were analyzed using SPSS 24.0 statistical software. Measurement data were presented as ( $x \pm s$ ), and an independent sample T-test was used. Count data were presented as cases and percentages, and the corrected  $\chi^2$  test was used. For non-normally distributed data, a non-parametric rank-sum test was used. A  $p$ -value of  $<0.05$  was considered statistically significant.

## 3 Results

### 3.1 Comparison of academic performance between the two groups

This study employed a T-test to compare the final theoretical exam scores and process evaluation scores of 186 students in the control and observation groups. All scores showed no significant outliers, and each group’s data was normally distributed. The total score for students in the control group was ( $86.8 \pm 6.7$ ), with a final theoretical exam score of ( $85.5 \pm 6.7$ ) and a process evaluation score of ( $88.9 \pm 8.2$ ). The total score for students in the observation group was ( $87.3 \pm 7.2$ ), with a final theoretical exam score of ( $86.1 \pm 8.0$ )

TABLE 1 Survey on the effectiveness of integrating ideological and political content into the Otolaryngology.

Items	The content of the questionnaire
Personal information	1.Age
	2.Gender
Students' recognition of CIPE	3. You think it is necessary to integrate ideological and political content into the professional course of Otolaryngology.
	4. You have a good understanding of the spiritual beliefs, moral qualities, and professionalism that medical students need to have.
	5. You have a good understanding of what ideological and political education needs to be implemented in the medical professional curriculum.
	6. Combined with the major, what do you think are the most important spirit, quality and literacy for you? (select 5)
	a. Professionalism b. Professional ethics c. Patriotism d. Respect for life e. Humanistic spirit f. Dedication g. Service consciousness h. Legal consciousness i. Humanistic care j. Scientific spirit k. Craftsmanship spirit l. Integrity and innovation m. Teamwork n. Cultural self-confidence o. honesty and trustworthy
Students' evaluation of integrating ideological content into case-based professional courses	7. In Otolaryngology course, you deeply feel the integration of the ideological and political content of the course.
	8. You are very interested in the ideological and political content integrated into Otolaryngology course.
	9. You believe that the current ideological and political content in Otolaryngology course is rich and comprehensive.
	10. You believe that integrating ideological and political content and case-based teaching in Otolaryngology course is done in a subtle and natural way, without feeling abrupt.
	11. Combining with your major, which three of the following methods for CIPE do you most recommend?
	a. Teacher-led instruction based on course content
	b. Clinical case analysis
	c. Clinical scenario simulation teaching
	d. Group discussion
	e. Problem-oriented debate in a free context
	g. Video resources
Students' feeling of the integration of ideological content into professional courses	12. CIPE has enhanced my motivation and enthusiasm for learning Otolaryngology.
	13. CIPE in Otolaryngology course has improved my professional competence and ethics.
	14. CIPE in Otolaryngology course has strengthened my commitment to medical practice.
	15. CIPE in Otolaryngology course has helped me establish correct life perspectives and values.
	16. CIPE in Otolaryngology course has helped me recognize my shortcomings and unleash my potential.
	17. This teaching method and its effectiveness surpass traditional one and are suitable for widespread implementation.

and a process evaluation score of (91.5 ± 5.4). In terms of overall scores, the observation group slightly outperformed the control group, but this difference was not statistically significant ( $t = 1.372, p = 0.142$ ). Additionally, the observation group's final theoretical exam scores showed no statistically significant difference compared to the control group ( $t = 2.416, p > 0.05$ ). However, the observation group's process evaluation scores were significantly higher than those of the control group, with a statistically significant difference ( $t = 5.990, p = 0.003$ ). As shown in Table 2.

### 3.2 Comparison of teaching satisfaction

The overall satisfaction rate (including both “very satisfied” and “satisfied”) for the students in the control group and the observation group regarding the theoretical lectures in Otolaryngology was 75 and 93%, respectively, with a statistically significant difference ( $\chi^2 = 4.38, p = 0.024$ ). Notably, the “very satisfied” rate for the theoretical lectures in the observation group (72.0%) was significantly higher than that in the control group (50%), with a statistically significant difference ( $\chi^2 = 3.6, p = 0.03$ ), as shown in Table 3.

### 3.3 An analysis of the teaching effectiveness of integrating CIPE with case-based teaching

A survey was conducted via Questionnaire Star at the end of the Otolaryngology theoretical course for Class 2 of the clinical medicine department (total of 186 students). All 186 questionnaires were distributed and collected, achieving a 100% response rate.

#### 3.3.1 Students' understanding of CIPE

Approximately 92% of students considered it necessary to incorporate ideological and political education into the theoretical course of Otolaryngology, with about 45% finding it extremely necessary. Around 96% of students were relatively knowledgeable about the spiritual beliefs, moral qualities, and professionalism that medical students need to have. However, only 23% were very familiar with the specific content of ideological and political education in the theoretical course, while 57% were somewhat familiar, indicating that medical students' understanding of the CIPE needs improvement. Students from the Clinical medicine department identified professional competence, ethics, respect for life, humanistic care, and

craftsmanship as the most important qualities, reflecting the emphasis for both technical skills and humanistic values in medicine.

### 3.3.2 Students' evaluation of integrating ideological content with case-based teaching in professional courses

Over 70% of the students reported that they perceived the integration of ideological and political content in the theoretical courses of Otolaryngology and expressed a relatively strong interest in it. They also showed approval of the teaching method. Approximately 28% of students regard the ideological and political content as rich and were very interested in it. Clinical case analysis, group discussions, and video resources were the top three recommended methods for CIPE.

### 3.3.3 Students' perceptions of ideological and political education within professional courses

More than 80% of students reported that ideological and political education within professional courses increased their learning motivation and interest, enhanced their professional competence and ethics, and helped solidify their commitment to the medical profession while fostering a correct life perspective and values. Over 30% expressed strong agreement with this view. However, fewer than 40% felt that ideological and political education helped them identify their own weaknesses and unleash their potential, with most indicating a moderate effect. Taken together, approximately 92% of students believed that the integration of ideological and political education with case-based teaching in the theoretical course of Otolaryngology was more effective than traditional teaching methods and should be promoted and explored further in educational practice.

## 4 Discussion

Medical universities serve as crucial platforms for cultivating healthcare professionals. Beyond imparting medical knowledge, there is a greater need to foster moral integrity and character development, with the goal of establishing an educational curriculum system that integrates ideological and political education, professional education,

and personal development education. The implementation of CIPE influences students through specific ideologies, political viewpoints, and moral norms, ultimately achieving the important objectives of moral cultivation, political education, and comprehensive quality education (Zou et al., 2019; Wang et al., 2024; Lu, 2018).

Medical theory courses are characterized by a high degree of specialization, extensive content, and considerable difficulty. Teachers are encouraged not only to convey medical knowledge but also to help students build a correct worldview, life perspective, and values. Thus, integrating ideological and political education into these courses presents a new challenge for medical educators.

Through continuous exploration and reflection, we adopted the case-based teaching method, which is generally of greater interest to students (Wang et al., 2024) in the theoretical teaching practice of Otolaryngology. Classic cases from this discipline were selected, and the ideological and political elements within their clinical features, applied anatomy, and treatment principles were thoroughly explored to identify the content and optimal integration points for incorporating ideological and political education into the course. During the process of case analysis, discussion, and interaction, while abstract professional knowledge is being taught to students, ideological and political content was also subtly conveyed. This included how to protect patient privacy during diagnosis and treatment, how to communicate effectively with patients, and the cultivation of a rigorous, truth-seeking, and progressive scientific spirit, along with good medical ethics and a sense of humanistic care.

The teaching model that integrates case-based teaching with ideological and political education has been gradually applied to various courses in undergraduate medical education. Recent studies in internal medicine (Chen et al., 2024), medical information retrieval courses (Du et al., 2023), pediatric nursing teaching (Yang et al., 2023), and pharmacology courses (Jiang et al., 2025) have all found that the integration of CIPE with case analysis methods not only improved student engagement and enthusiasm but also enhanced students' problem-solving, innovative thinking abilities, and the effectiveness of ideological and political education. This significantly improved student performance. The specific details of these studies are shown in the Table 4. These studies indicate that the case-based, ideologically integrated teaching model provides students with a comprehensive, in-depth, and practical learning experience, laying a solid foundation for their future medical practice and professional development. From the results of the overall performance of students, satisfaction with the teaching, and responses to the survey in this study, the integration of case-based teaching with ideological and political education in Otolaryngology theoretical courses has proven highly feasible. Presenting classic cases can quickly capture students' attention, encourage active thinking and interactions with the teacher. Throughout this process, ideological and political contents are conveyed at each step, which readily accepted by students. This integration helps achieve the goals of

TABLE 2 Student scores in the two groups (score,  $\bar{x} \pm s$ ).

Group	Final theoretical exam score	Process evaluation score	Total score
Control ( $n = 180$ )	85.5 $\pm$ 6.7	88.9 $\pm$ 8.2	86.8 $\pm$ 6.7
Observation ( $n = 186$ )	86.1 $\pm$ 8.0	91.5 $\pm$ 5.4	87.3 $\pm$ 7.2
T-Value	2.416	5.990	1.372
p-Value	>0.05	0.03	>0.05

TABLE 3 Satisfaction with theoretical lectures among students in the two groups ( $n, \%$ ).

Group	Very satisfied	Satisfied	Neutral	Dissatisfied	Overall satisfaction
Control Group ( $n = 180$ )	90 (50%)	45 (25%)	14 (7.8%)	31 (17.2%)	135 (75%)
Observation Group ( $n = 186$ )	135 (72.6%)	38 (20.4%)	13 (7%)	0 (0)	173 (93%)
$\chi^2$	3.6				4.38
p-Value	0.03				0.024

ideological and political education more effectively, increases students' interest and enthusiasm for clinical discipline, and aids in establishing correct professional values, enhancing professional pride and confidence.

This study also confirmed that the combination of case-based teaching and ideological and political education can significantly enhance students' learning interest and classroom satisfaction. Furthermore, the questionnaire analysis in this study revealed that professional competence, professional ethics, respect for life, humanistic care, and craftsmanship were regarded by clinical medicine students as the most essential spiritual qualities. This reflects the importance medical students place on both technical expertise and humanistic medicine. Clinical case analysis, group discussions, and video materials were identified as the three most recommended methods for integrating ideological and political education into teaching.

As the continuous implementation of ideological and political education in Otolaryngology theoretical teaching for undergraduate stage, some challenges have surfaced that need to be addressed (Cai and Qian, 2021). Firstly, as medical professionals, teachers may face limitations in accessing ideological and political resources and may lack teaching experience, potentially leading to unclear understanding of the content and scope of ideological and political education. This requires additional training to strengthen teachers' awareness of considering ideological and political content as a core component of education and improve their ability to tap into ideological resources within professional courses. Secondly, medical theory courses cover extensive material within limited classroom time, which may result in insufficient time allocation or content coverage for ideological and political education. Therefore, teachers should plan the overall content for each lesson in advance, clearly defining the specific content and the timing of its integration, and strive to implement this effectively and systematically during teaching activities. Lastly, due to the lack of

a more comprehensive evaluation system, there is currently no evaluation system in place to systematically assess the effectiveness of ideological and political education, including whether students have effectively mastered the core content of CIPE, whether CIPE impacts the effectiveness of theoretical teaching, and whether it provides proper guidance for shaping students' values.

In future otorhinolaryngology theoretical teaching, how to better integrate IPE remains a challenge. It raises questions such as whether a comprehensive CIPE syllabus can be developed, closely aligned with national policies and guidelines, to include clear teaching objectives, formats, and content for CIPE activities. Additionally, the establishment of a bilingual CIPE resource library on sensory system diseases could provide students with materials for repeated study. Incorporating appropriate assessment of CIPE content in students' final exams, evaluating the inclusion of CIPE in teacher performance reviews, and implementing two-way evaluations between teachers and students to enhance the effectiveness of CIPE in medical courses are areas that require further exploration and refinement.

## 5 Conclusion

This article takes the course of "Otorhinolaryngology" as a platform, introduces classic cases as the foundation, and uses ideological and political education (referred to as "curriculum ideology") as an entry point. It elaborates on the implementation methods of integrating case-based teaching with curriculum ideology in medical professional courses and explores the teaching effects of this integration. The present study contributes to the literature on the effects of integrating case-based teaching with ideological and political education in medical courses. In general, the combination of the two

TABLE 4 The cases and ideological and political elements used in the four studies.

Articles	Courses	Research sample	Teaching objectives	Case content	Ideological and political elements
Chen et al. (2024)	Internal Medicine— Taking hyperthyroidism as an example	209 clinical medicine undergraduates in internal medicine clerkship	Master the etiology classification, pathogenesis, clinical manifestations (including special clinical features), diagnosis, differential diagnosis, and treatment principles of hyperthyroidism.	The patient has been experiencing heat intolerance and excessive sweating for 2 months, along with hypocholesterolemia	The scientific spirit of exploration, the spirit of 'unity and cooperation— multidisciplinary collaboration,' and the concept of 'for medical practitioners, compassionate heart and skillful hands.'
Du et al. (2023)	Medical Information Retrieval	171 undergraduates from different medical majors	Understand the introduction to library resources, CNKI database, and Wanfang database.	COVID-19 prevention and control and the application of artificial intelligence in the Beijing Winter Olympics.	The pursuit of values and career development, medical ethics and skills, humanistic spirit, national sentiment and social responsibility, scientific spirit, and honesty and integrity.
Yang et al. (2023)	pediatric nursing teaching	226 third-year undergraduate nursing students	1. Growth and development, and pediatric health care 2. neonatal care 3. nursing for children with diseases of various systems	For example, Neonatal jaundice	1. Professional identity and sense of responsibility 2. Spiritual civilization 3. Humanistic literacy
Jiang et al. (2025)	Pharmacology	34 students from the 2017 cohort and 36 students from the 2018 cohort	Master the pathogenesis and clinical characteristics of peptic ulcer.	Taking Chapter 32, 'Drugs for the Treatment of Peptic Ulcer' from the textbook as an example.	Synergy, teamwork, professional sense of mission, cherishing life, and social responsibility for drug safety awareness.

has proven to be highly feasible in teaching, enhancing students' engagement and recognition in professional course learning. It also facilitates the better incorporation of ideological content into medical courses. This integration helps improve students' mastery of professional theory, stimulates proactive thinking, fosters the establishment of correct professional values, and boosts their professional pride and self-confidence. Therefore, it is worth continually practicing and exploring in teaching activities.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by Ethics Committee of the First Affiliated Hospital of Chongqing Medical University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

## Author contributions

YS: Writing – original draft. SZ: Writing – review & editing. GC: Data curation, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Generative AI statement

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