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The Influence of Western Medical Perspective on the Effectiveness of Chinese Medical Education: A Prospective Teaching Study

Hongtao Xiong[1*], Yulong Sun[2]

[1 & 2] Faculty of Hand, Foot & Microvascular Surgery, Shenzhen People's Hospital, Jinan University, China

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[*]**Corresponding author:** Hongtao Xiong, Faculty of Hand, Foot & Microvascular Surgery, Shenzhen People's Hospital, Jinan University, China

Corresponding author's e-mail: *xionghongtaosz@126.com.*

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ABSTRACT

In contrast to traditional Chinese culture and medicine, Western medical education in China is a relatively recent development. This study aims to explore the role and significance of international exchanges in Western medical education while providing resources to enhance China's current medical education system. To conduct a comparative analysis, we examined the final exam results of two groups of fourth-year medical students. The objective was to inspire and enhance students' interest and understanding of surgery through academic exchanges and insights into the development of Western medicine in clinical education. The study evaluated the academic performance of 89 medical students across two groups. While both groups had similar regular grades and admission test scores, their performance diverged after exposure to different learning experiences. The research group, comprising 45 students, attended a seminar on clinical teaching in Western medicine and studied its historical context, achieving an average score of 76. In contrast, the control group of 44 students, who spent their free time independently exploring, scored an average of 70. The significant difference in exam results highlights the impact of exposure to Western medical education. Interviews with students revealed a strong interest in understanding Western medicine's principles and its varying applications in China and Western nations. The findings suggest that students with direct exposure to Western medical education and its history perform better academically. To advance the development of Western medicine, Chinese medical schools should foster students' understanding and provide more opportunities for international exchange.

Keywords: China; Educational Reform; Educational Disparities; Medical Education; Western Medicine

Background

The educational systems of various countries reflect their unique cultures. While higher medical education in China has Western origins, its teaching quality has been relatively limited (Ai & Limei, 2016). Currently, China's higher medical education is evolving, with a focus on sustaining high-quality programs to train advanced medical professionals. Strengthening the training of medical students remains a priority for the continued growth of the nation's healthcare system. Recent reforms have established a multi-level, multi-standard medical education system, yielding notable results. Examining the concepts and innovations of medical education in China and Western nations is crucial for enhancing the training of Chinese-style medical students.

China's higher medical education has been undergoing reforms in recent years, focusing on exploring objectives and methods to improve teaching. Developing high-level medical talents requires integrating advanced medical concepts with scientific training models. However, significant regional disparities in standards and quality persist, with overall education levels still falling short. To address the growing demand for skilled medical professionals, Chinese medical schools have adopted various reforms: transitioning from traditional classroom instruction to diverse teaching approaches, shifting from "curriculum-centered" to "organ system-centered" methods, and integrating medical education with humanistic studies. Drawing on Western models, particularly the U.S., where standardized and elite training systems have evolved, could help define reform goals tailored to China's context, fostering high-quality medical education nationwide.

The students' questions include: three exams within six years, the specific time of the exam; Is it possible to take a gap year after completing undergraduate studies? What are the prerequisites for studying medicine in Germany? Is it necessary to pursue a doctoral degree directly after graduating from undergraduate school, or is a master's degree required? Is it possible to pursue a PhD in Germany immediately after graduating from a Chinese university? Is it necessary to write articles frequently for scientific research in Germany? Is it busy and hard to practice medicine in Germany?

Literature Review

This literature review highlights key research and advancements in higher medical education in China and the West, emphasizing differences, particularly the strengths and unique aspects of Western medical education, and their implications for improving China's medical education system. It also explores methodologies, technological developments, and educational applications across various areas.

Zhihua, Yuqi, & Fangyuan, (2012) investigated the influence of Western medical curricula on China's early 20th-century medical education. Their findings indicate that American curriculum models significantly impacted China's initial medical system. Post-1949, China adapted European and American models, transitioning through discipline-based, organ-system-based, and problem-based curricula, fostering substantial progress. Reflections on Chinese and American medical education by (Aimin, Chanjuan, & Yanwu, 2020), and (Yi & Chaohui, 2019) underline the value of collaborative discussions among medical educators in driving reform and enhancing China's medical education. An & Li, (2018) analysed Western higher medical education reforms, emphasizing their role in addressing challenges in Chinese medical colleges. They argue that targeted reforms based on Western experiences can improve teaching outcomes and support the cultivation of clinical medicine talent.

Mengya & Yafei, (2016) studied basic course structures in Western medical education. They suggest that adopting these advanced frameworks could accelerate the growth of Chinese medical education. Yan &

Yun, (2024) examined the evolution of specialized medical education in medieval European universities (11th-14th centuries). This period marked the institutionalization of medical knowledge dissemination, with the establishment of a text-based teaching model, which influenced subsequent developments in medical education. The exploration of early medical specialization trends in North America, revealing that elite professionals of the 17th and 18th centuries shaped this movement. Their expertise, often rooted in European training, significantly influenced North American medical practices.

The analysis of European Society for Simulation in Medicine (SESAM) certification standards, emphasizing the role of simulation education in advancing medical training and improving healthcare outcomes. Jinxia, Hong & Haisheng, (2023) examined the role of critical thinking in medical education, concluding that fostering such skills enhances problem-solving, decision-making, and public health contributions. Siyi & Qing, (2023) evaluated U.S. career planning education for medical students, recommending tailored adaptations for China, focusing on student backgrounds, curriculum design, and institutional resources.

Studies by (Yanni & Binxian, 2023) on U.S. teaching hospitals underscore the importance of structured educational spaces that facilitate learning and innovation in medical education. Research by (Hong, Shaoxia, & Lu, 2021), and (Qutieshat, Abusamak, & Maragha, 2020) highlights hybrid teaching models integrating curricula, faculty, and management systems to inspire learning and produce skilled professionals. Jianlin, Jiyun, & Youhui, (2021) advocate for incorporating transformational learning theory into Chinese medical education to promote critical thinking and professional competency. Gang, Limeng, & Xuemei, (2021) examined U.S. hospitals' evaluations of Chinese doctors, revealing gaps in creativity and training while emphasizing opportunities for collaboration.

Comparative studies by (Xiaodi & Yuanyuan, 2017) and others highlight significant differences in medical school systems, financing, and management, with U.S. institutions excelling in elite and flexible education. Reforms in China could optimize medical student training. Research by (Bijing, 2019), and (Long & Xiumu, 2018) contrasts quality education approaches in China and the U.S., noting disparities in humanistic training and professional awareness among students. Finally, compared China and Germany, observing Germany's stringent entry requirements for medical schools, fostering intrinsic motivation, in contrast to passive learning approaches often seen in China.

Methods

By comparing the exam scores of two groups of medical students with different tendencies and consulting both groups about their views on current Western medicine education in China, we collected data on the characteristics of Chinese medical education. The materials of fourth-year medical students were included in the summary and analysis. The teaching objects are medical students in the research group, namely 45 students who have registered for the Western Medicine Clinical Teaching Seminar.

Students register for the course through discussions with German surgeons, reading History Under the Surgical Knife, and group discussions shared online with teachers. Teachers guide and adjust plans based on student feedback. Content covers Western medical education, historical humanities, and clinical case studies. Students adapt teaching plans based on surgical data, while teachers summarize and address questions. Control groups use self-directed learning. Three vascular surgery experts from Bavaria engage with students on topics like German clinical education, specialist training, and evaluation of surgical expertise. This interactive exchange includes expert presentations, student Q&A, and collaborative discussions.

Organize students to explore History Under the Surgical Knife by Dutch surgeon Arnold van der Laar, a compelling book featuring 27 historical surgical cases. Spanning from ancient medical practices to modern innovations, it illustrates breakthroughs and limitations in surgery. With vivid, accessible storytelling praised by major outlets, it inspires interest in surgical learning and its transformative impact.

The teaching effect evaluation is conducted by theoretical examination for comparative evaluation.

89 students majoring in clinical medicine from the South University of Science and Technology of China were selected, with a research group consisting of 45 students who had registered for the Western Medicine Clinical Teaching Seminar; the control group consists of 44 students who did not sign up for the study. There were no statistical differences between the two groups in terms of age, gender, and college entrance examination scores. The research data are derived from the students' examination results, which are written closed-book examinations. All scores are scored by the same group of teachers. The test scores of the two groups of students are comparable. A comparative analysis was conducted on the academic performance of 89 students from two classes and two groups in the medical school. Statistical data were analysed using SPSS 30.0.

Results & Discussion

45 students enrolled in the Western Medicine Clinical Teaching Seminar, with exam scores ranging from 68 to 83 points and an average score of 76.8. There are 44 students who have not registered for the exam, with scores ranging from 63 to 78 and an average score of 70.7. There were no statistical differences between the two groups in terms of age, gender, and college entrance examination scores. There was a significant difference in the academic performance of the two groups after this exchange and learning, as shown by the final exam results. The results of student interviews show that medical students hope to learn more about the principles and characteristics of Western medicine, as well as the differences in understanding and application between Western medicine in China and Western countries.

Table 1: Comparison of Final Exam Scores between the Two Groups

Grouping	Number of people	Average score	P
Research group	45	76.8	
Control group	44	70.7	
Total	89		<0.01

Note: $p<0.01$. $t=6.056$, $df=87$. (95% CI→4.083 to 8.071)

German vascular surgery experts introduced the training process of German undergraduate students, from undergraduate to clinical doctors, specific requirements, and assessment systems. Medical undergraduate education in Germany is divided into three stages. In the first stage, it is mainly a two-year preparatory education followed by three months of hospital nursing practice. After passing the exam for each course, you can proceed to the first stage of testing. The test is divided into two parts. The first part involves a written examination for the German national unified exam, while the second part includes an oral interview covering three subjects: anatomy, physiology, and biochemistry. This is the most difficult and largest examination in German medicine. If you pass the first stage exam, you can enter the next stage of learning.

The second phase begins with clinical theory and skill-related courses, lasting for three years. Medical students will start to learn clinical disciplines such as internal medicine, surgery, gynaecology, and paediatrics. At this stage, there will be a four-month internship, including two months of residency training in the hospital department, one month of outpatient practice, and one month of general practice. After

passing the examinations in various disciplines, medical students can proceed to the second stage of examination. The exam is a two-day written test that covers the theories of various subjects learned over the past three years.

The third stage mainly involves clinical practice, which can be divided into three stages. Internship in internal medicine and surgery lasts for four months each, while the remaining four months can be used to freely choose other disciplines besides internal medicine and surgery, such as paediatrics and neurology. A third stage exam will be conducted after the internship. The exam is an oral test, with content related to the third-stage internship department. After completing the three-stage examination, medical students will be able to obtain a German medical qualification certificate, which means that they can perform medical treatment in hospitals. But to qualify for independent practice, medical students need to continue their residency training.

In Germany, the training of resident doctors takes about six years and is divided into two parts. The first part, lasting two years, is a surgical rotation. The first year involved rotations through general surgery. The following six months were spent in emergency wards, and the last six months were spent in intensive care units. After two years, you can choose to further your studies in the sub-specialty of interest. In the four years, exams supervised by senior doctors had to be taken annually. After four years, you will be able to obtain a specialist doctor certificate. This allows him to practice medicine independently in German hospitals.

Although Western medicine in China comes from the West, its higher medical education is not fully recognized by developed Western countries. The reason is that the quality of clinical medical education in China cannot meet the standards of developed countries. In order to narrow the gap and build world-class universities, China has continuously reformed according to the clinical medical education standards of developed countries. During this process, both teachers and medical students should have a comprehensive and profound understanding of the advanced medical education system in the West. Western higher medical education, represented by the United States, has formed a very standardized training model after years and multiple reforms, truly achieving elite education. It is of great significance to draw on the current situation and achievements of Western higher medical education reform, combined with the development status of Chinese medical colleges, and propose practical methods and models for medical student training.

It is our responsibility as clinical medical educators to cultivate excellent clinical medical students. This research activity was conducted at the level of the teaching and research department. The teaching and research department of the affiliated hospital, as the frontline teaching organization and management department of clinical medicine, has a direct impact on the effectiveness of clinical theory and practical teaching. The teaching philosophy and guiding principles of the teaching and research department will directly affect the theoretical teaching and clinical teaching of various specialties. The construction and exploration of teaching and research departments in affiliated hospitals is an important link and useful tool in the current undergraduate education system of clinical medicine in China.

This study led medical students to observe and learn the characteristics and differences in understanding of Western medicine through in-depth communication and discussion with clinical medical experts on site and explored the origin and essence of Western medicine. At the same time, understanding the origin, development, current situation, and problems of Western medical education in China has enhanced the learning interest and ideological awareness of medical students, achieving unexpected results. At the same time, we found that students who are interested in Western medicine itself also have better academic performance. We will organize more similar direct exchange activities between Chinese and Western medicine in our future work and further study the significance and value of such activities.

Conclusion

China's higher medical education quality evaluation is process-focused, neglecting inputs, outcomes, and individualized learner needs. This creates superficial monitoring and limits responsiveness to policy and environmental changes. To improve, China should adopt advanced global practices, adapt them to its context, and redefine its evaluation philosophy. Encouraging student engagement with Western medical principles and experts could inspire reforms, enhancing education quality and aligning with evolving standards. This study found that the multi-angle observation of Western medicine is helpful to improve the learning effect of students. Students who are willing to learn Western medicine may have better academic performance. Through academic exchanges in clinical education of Western medicine and learning about the history of Western medicine, medical students may be able to enhance their interest in studying and improve their theoretical academic performance. It is necessary for Chinese medical colleges to guide students more in understanding the principles of Western medicine and provide more opportunities for external exchanges to improve China's level of medical development.

Declarations

Ethics Approval and Consent to Participate: This study was conducted with the institution's formal approval to gather data. Consent was obtained, and privacy was ensured.

Conflicts of Interest: Not applicable.

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