

Construction and Practice of Teaching Staff and Teaching Quality Monitoring System in University Affiliated Hospitals Under the Background of Education Informatization

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Abstract: *Objective:* To build a set of teaching staff construction and teaching quality monitoring system suitable for clinical practice teaching in affiliated hospitals of medical colleges, achieve continuous improvement of clinical education and teaching level, and ensure the quality of medical education talent cultivation. *Methods:* A modern clinical practice teaching quality monitoring system is constructed based on organizational structure construction, teaching staff system construction, quality control system construction, and information platform construction, combined with external audit and evaluation. *Results:* The hospital has established a Faculty Development and Teaching Evaluation Office specifically responsible for the cultivation of clinical teachers and the evaluation and supervision of teaching quality. A relatively complete teacher construction and teaching quality monitoring system has also been established for clinical practice teaching, thus achieving integration with the school's quality control system in terms of management mechanism. At the same time, a set of teaching quality control mode based on the "Internet +" platform has been created by means of informatization. At present, this mode has won three national computer software copyrights and two second prizes for school-level teaching achievements. *Conclusion:* Through five years of practice, an "Internet +" teaching quality evaluation and monitoring system with the characteristics of teaching hospitals affiliated to local medical colleges has been established. In order to further standardize the training system of clinical teachers in affiliated hospitals, achieve self-monitoring and self-improvement in terms of teaching quality, and ensure the continuous improvement of clinical teaching quality, we will continue to promote the development of clinical teachers with quality and excellence, enrich the main team of quality monitoring, guide the transformation of the education mode from being "centered on teachers" to being "centered on students," and realize the integration of internal and external quality monitoring systems.

Keywords: Clinical practice; Education informatization; Teacher training; Teaching quality; Monitoring system

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1. Introduction

"A hundred years plan based on education; an education plan that is teacher-based; and a good teacher makes good education." Strengthening the construction of the teaching staff is a perpetual theme in the development and construction of universities as well as the focus of personnel management in universities

[1]. Especially at present, China has proposed the strategic goal of transforming from a major country in higher education to a higher education powerhouse. Focusing on improving teachers' abilities in teaching is also an urgent requirement for China's higher education to shift from "quantitative expansion" to "connotation development and quality improvement" [2].

On September 17, 2018, the Ministry of Education issued "Opinions of the Ministry of Education on Accelerating the Construction of High-Level Undergraduate Education and Comprehensively Improving Talent Cultivation Ability" [3]. This Opinion emphasizes the need to comprehensively improve teachers' teaching and nurturing abilities, further strengthen the construction of teaching development centers for university teachers, and comprehensively carry out trainings to improve teachers' teaching abilities; in addition, there are also requirements to improve the collaborative mechanism of the teaching team, coordinate the construction of full-time and part-time teaching teams, promote two-way communication, and improve the level of practical teaching.

Medicine is a discipline with strong practicality and application. Medical education must focus on cultivating solid theoretical foundation and strengthening the cultivation of comprehensive and practical abilities in students [4,5]. Clinical teaching bases are one of the main bodies responsible for undergraduate medical education and teaching work. A scientific and fair evaluation of the teaching quality of clinical teaching bases is an important part of improving the internal quality assurance system of undergraduate medical education [6,7]. Therefore, as an affiliated hospital of a medical college, we have been committed to creating a set of double qualified teachers team construction and teaching quality control mode based on the "Internet +" platform by means of information technology, so as to realize the organic combination of modern evaluation means and traditional evaluation and thus improve the efficiency of teacher management and jointly guarantee the quality of medical talent training.

2. Implementation methods

2.1. Organizational structure construction

The hospital has set up a Faculty Development and Teaching Evaluation Office, which is independently responsible for the training and development of clinical teachers, as well as the evaluation and supervision of teaching quality. Through the principle of "hierarchical management, division of labor with individual responsibility, and collaborative monitoring," it achieves step-by-step monitoring of all aspects of teaching quality.

2.2. Teaching staff system construction

Relevant teacher management systems, including "Regulations on Teacher Management of the First Affiliated Hospital of Xi'an Medical University" and "Teacher Training Plan of the First Affiliated Hospital of Xi'an Medical University," are developed, covering the selection, recognition, training, appointment, assessment, and exit mechanisms for teacher qualifications.

2.3. Quality control system construction

Based on the school's "quality evaluation and monitoring system," combined with the actual situation of the hospital, the establishment of a teaching quality assurance and monitoring system suitable for practical teaching is explored.

2.4. Information platform construction

A set of teacher training and teaching quality control mode is created based on the "Internet +" platform by means of informatization, and the deep integration of information technology and education and teaching evaluation is realized.

2.5. Promoting construction through evaluation and combining evaluation with construction to improve the quality of education and teaching

By integrating with external evaluation systems, such as clinical medicine professional certification, we aim to promote the optimization of the hospital's internal teaching quality control system, promote comprehensive construction driven by reform, and continuously improve the quality of education and teaching.

3. Results

3.1. Establishing a teaching quality monitoring department to standardize the monitoring operation of various links

The hospital has established a basic mechanism of independent and mutually reinforcing “management,” “operation,” and “evaluation” of teaching work. The hospital has established a Faculty Development and Teaching Evaluation Office that is specifically responsible for the cultivation and development of clinical teachers, as well as the evaluation and supervision of teaching quality. The Education Administration Office, the Teaching and Research Office, and the Faculty Development and Teaching Evaluation Office would jointly guarantee the teaching quality.

3.2. Establishing a teacher training and quality assurance system for affiliated hospitals

The Faculty Development and Teaching Evaluation Office has formulated relevant teacher management systems, including “Regulations on Teacher Management of the First Affiliated Hospital of Xi'an Medical University,” “Teacher Training Plan of the First Affiliated Hospital of Xi'an Medical University,” and “Rewards and Punishment Measures for Education and Teaching of the First Affiliated Hospital of Xi'an Medical University,” covering mechanisms such as teacher selection, recognition, training, appointment, assessment, and withdrawal. These measures fill the gaps in the teaching staff system and form institutional guarantees, providing support for the development of teachers, thereby promoting the orderly management of teachers and continuously improving their abilities.

3.3. Establishing a teaching quality evaluation and monitoring system for university affiliated hospitals

The hospital has established a relatively complete teaching quality evaluation and monitoring system for clinical practice teaching, thus solving the “acclimatization” problem of the school-level system. This system includes eight parts: teaching supervision regulations, sit in on a class system, classroom teaching quality standards and evaluation methods, practical teaching quality standards and evaluation methods, teacher trial lecture system, teacher management regulations, teaching incentive mechanism, and medical education satisfaction survey management regulations. On this basis, we can conduct timely evaluation of classroom quality, 360° evaluation of medical education satisfaction, and examination of clinical practice teaching departments throughout the hospital, thus strengthening quality assurance and monitoring from all aspects and perspectives.

3.4. Create a teaching quality control mode based on “Internet +”

The hospital has created a set of teacher training and teaching quality management model based on the “Internet +” platform, including the online learning platform for clinical teachers, the timely evaluation system for classroom quality, the 360° evaluation system, the online learning platform for clinical practice teaching activities, *etc.*, which has improved the teaching management efficiency and teaching quality of clinical practice teaching, as well as promoted the process of teaching quality control from technical transformation to conceptual transformation. At present, this model has obtained 3 national computer

software copyrights and 2 second prizes for school-level teaching achievements.

3.4.1. Establishing an online learning platform for clinical teachers and creating a new model of mixed online and offline training

Considering the unique nature of the work of “double qualified” teachers in affiliated hospitals, the original intention is to enrich the training mode for clinical teachers and liberate the hands of “double qualified” teachers in affiliated hospitals. The construction of an online learning platform for clinical teachers is based on modern information and communication technology, open network platforms, and mobile clients to enable these teachers to flexibly arrange their time and location for online learning. At the same time, it is supplemented with centralized offline training and assessment to achieve standardized and diversified training methods, aiming to combine teacher training with practical medical work and further enhance the professional ability of teachers and their teaching practice level. Since 2020, we have organized and completed 13 sessions of hospital-level teacher training, involving 3,900 teachers and creating a new model of online and offline hybrid training.

3.4.2. Conducting timely evaluation of classroom quality and strengthening daily teaching monitoring

Since September 2017, student evaluation work has been conducted in the form of online survey questionnaires, requiring students to conduct online evaluation of each teacher at the end of their teaching. As of March 31, 2023, our department has received a total of 14,689 evaluations from theoretical course students and 5,098 evaluations from probationary course students. At present, the student evaluation and participation rate as well as the teacher evaluation rate have reached 100%. Real-time evaluation, collection, analysis, and feedback of medical education and teaching evaluation information have been achieved.

3.4.3. Conducting a satisfaction survey on medical education to achieve a 360° evaluation of students, teachers, departments, and patients

Since January 2018, a satisfaction survey on medical education has been conducted among the teaching departments of the hospital. On a quarterly basis, the satisfaction of patients and their families, clinical doctors, nurses, and other hospital staff with medical students is investigated, along with the satisfaction of medical students with the teaching departments and teachers. At present, 16 phases of work have been completed, and the results are reported in the form of summary reports to the respective departments on a quarterly basis, with rectification and implementation urged. Students, teachers, and managers can view the feedback report at any time by using the quality control system built by the “Internet +” platform and make corresponding rectification and improvement accordingly.

3.4.4. Creating an online learning platform for clinical practice teaching activities

The hospital has created an online learning platform for clinical practice teaching activities, which includes four major sections: teaching rounds, case discussions, department lectures, and formative evaluations. Its most prominent feature is that students can engage in handheld learning anytime and anywhere, while enabling online communication and interaction between students and teachers. At present, it has been promoted and used in various clinical teaching departments, and both teachers and students have responded well. During the certification period of clinical medicine, experts from the Ministry of Education who came to our hospital for on-site inspection also affirmed this platform.

4. Discussion

The quality of higher medical education determines the quality of medical personnel, the safety of medical

and health undertakings, and is more closely related to human life and health^[8]. Clinical practice teaching is an important component of higher medical education and an extremely important part of the entire process of medical education^[9]. The quality of clinical practice teaching largely depends on the teaching ability, professional knowledge level, and teaching awareness of clinical teachers^[10]. Through five years of exploration and practice, we have established a secondary quality evaluation and monitoring system suitable for the First Affiliated Hospital of Xi'an Medical University. We have made practical teaching work more detailed and practical in terms of supervision and management, quality standards, evaluation feedback, and other aspects. At the same time, a set of teaching quality control mode based on the "Internet +" platform has been created by means of informatization, realizing the organic combination of modern evaluation and traditional evaluation means. In order to further achieve self-monitoring and self-improvement of teaching quality and ensure the continuous improvement of clinical teaching quality, we will continue to explore from various aspects.

4.1. Promote homogenous and excellent clinical teaching base development of teachers

The enrolment scale of medical students is constantly expanding, and the number of clinical teaching bases is gradually increasing. However, there are significant differences in clinical teaching management models and teaching levels among different bases. Most clinical teaching bases have incomplete teaching management systems, inadequate teaching management institutions, insufficient teaching personnel, and inadequate implementation of teaching rules and regulations, which have led to many problems in the coordination, organization, and management of their teaching work. Their coordination of clinical teaching plans, training plans, teaching reforms, and many other works is poor, affecting the smooth progress of teaching work. Therefore, it is imperative to establish a standardized three-level clinical teaching base management system to ensure the homogenization of clinical teaching^[11-13]. At present, the teaching quality control mode of dual teacher construction and quality assurance system based on "Internet +" has been established at the hospital level. Next, we plan to promote this model to various clinical teaching bases in the field of general practice. With the construction of teaching staff as the starting point and the multiple evaluation mechanism as the guarantee, a set of three-level clinical teaching base teaching quality guarantee system under the "Internet +" mode can be established, a high-quality clinical teaching team can be built, the teaching level of the clinical base can be developed with the same quality and excellence, and the quality of medical talent training can be ensured.

4.2. Enrich the main team of quality monitoring

A complete teaching quality monitoring should include external evaluation subjects and internal evaluation subjects^[14]. At present, the members of the hospital's teaching supervision team mainly consist of hospital leaders, administrative management personnel, teaching and research office directors, and a few teaching backbone members, and there is no mechanism for all staff to undertake the function of teaching quality monitoring. In the next step, we will attract more experienced teaching experts, teaching backbone members, and students to join the hospital's teaching supervision team, maximize the enrichment of the monitoring subjects, invite stakeholders such as government regulatory departments and employers to participate in the teaching evaluation, fully valuing their opinions on improving the education plan, and informing them the results of the education evaluation, and form a virtuous cycle of feedback – monitoring – adjustment – re-feedback.

4.3. Guide the transformation of the education mode from being "centered on teachers" to being "centered on students"

The teaching philosophy of modern medical education is student-centered, emphasizing the cultivation of

students' problem-solving and self-learning abilities. Teachers need to shift from being mere "interpreters" to "designers" of learning methods and environments, as well as engage in more problem-centered heuristic teaching^[15]. While encouraging teachers to change their teaching models, our evaluation standards also need to be changed accordingly; otherwise, evaluation will become a hindrance to educational development rather than an impetus. If there are problems with the evaluation standards or methods, it is likely to consume a lot of energy with little being achieved and may even lead the teaching reform in the wrong direction^[16]. For this purpose, we will attempt to incorporate more result-oriented indicators into the evaluation system, such as whether the teaching objectives of this class have been achieved or not, as well as guide students to evaluate their learning gains in the classroom.

4.4. Realize the integration of internal and external quality monitoring systems

Medical education belongs to elite education, so various countries have established effective external evaluation mechanisms in their teaching quality management, and various medical colleges have also established internal monitoring systems accordingly^[17,18]. Hospitals should focus on achieving the integration of internal and external quality monitoring systems and make full use of external evaluation and certification to better promote the continuous improvement of medical education quality in order to avoid single inspection and getting teachers involved in tedious quality assurance documentation work.

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Disclosure statement

The authors declare no conflict of interest.

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