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Application of Case Teaching Method in Orthopedic Practice Teaching

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1. Introduction

For medical students, clinical practice is a key stage, marking the transition from classroom theory teaching to clinical practice. At this point, medical students, in addition to applying their knowledge to practice, must also learn how to deal with challenging situations in clinical work. How to make practice teaching more effective when medical students first contact with clinical practice is an important focus of clinical teaching instructors. As one of the most important clinical practice departments, orthopedics is known for its high degree of professionalism, extensive expertise and rapid updating of orthopaedic education. The trend of subspecialization is obvious. Currently, hospital orthopedic centers are usually divided into subspecialties such as trauma, joint, spine, and bone cancer. Although further subdivision of the orthopaedic specialty can improve the effectiveness and efficiency of clinical diagnosis and treatment, it also increases the responsibilities of interns. Traditional teaching methods are not effective and are not suitable for today's treatment environment. Clinical pathway refers to the diagnosis and treatment model formulated for the diagnosis, treatment, rehabilitation and nursing of a certain disease, to provide standardized diagnosis and treatment for clinical workers, so as to reduce empirical errors. Case teaching method is a student-oriented and real case-oriented teaching method, which can stimulate the learning initiative and enthusiasm of medical students and improve their ability to analyze and solve problems [1], Can improve the teaching effect. To guide and evaluate orthopedic clinical interns, a clinical pathway-based teaching method of medical record was used in this study. The feasibility and benefits of using this approach for teaching orthopedic clinical medicine interns were also explored.

2. Data and Methods

2.1 General Information

Thirty students from 2017 clinical medicine from the Second Affiliated Hospital of Inner Mongolia University for Nationalities were selected and randomly divided into the study group and 15 students from the control group. The research group used the case teaching method to conduct orthopedic practice teaching, and the control group used the traditional teaching method. After the teaching, the clinical quality, theoretical examination scores and teaching satisfaction of the two groups were compared. Inclusion criteria: (1) five-year undergraduate clinical medicine medical students who have practiced in our orthopedics department; (2) have completed the study of relevant theoretical knowledge; (3) agree to accept the research. Exclusion criteria: (1) those who did not cooperate with the study; (2) those who failed the orthopedics related theory courses.

2.2 Methods

After all clinical interns entered the department, they were assigned teaching teachers after entering the department to evaluate the clinical quality of the interns. Study group: Teaching by case teaching method. The teaching teacher used the case teaching method based on the clinical pathway design to conduct the clinical practice teaching to the students in the research group. Before clinical teaching, the teachers selected common orthopedic diseases for teaching, and introduced the clinical pathways related to the selected diseases to the students of the research group, including disease diagnosis criteria, relevant examinations, differential diagnosis, physical examination, imaging and laboratory examination, treatment plan, surgical indications and surgical operation, etc. The research team selects a team leader and urges them to complete the pre-class preview. Students in the study group asked about the medical history of the newly admitted patients according to the guidance of the teaching teachers, check-up, Then, the teacher guided the students to conduct the case discussion according to the clinical pathway process and the syllabus requirements, After the end of the discussion, Selected representatives from the research group, Summarize the results of the discussion, The teacher to the students' doctor-patient communication, diagnosis and treatment ideas and other aspects of the necessary supplement, And explained the characteristics of the disease cases, the key points of physical examination and the latest research progress, Guide the students to improve the preoperative preparation of the patients, And guide the students to operate during the operation, At the same time, students in the research group completed the postoperative document writing and assisted the patient to recover and discharge from hospital. Control group: adopt the traditional teaching mode. The teacher adopts the traditional teaching method to carry out clinical practice, that is, organize the control group of students to conduct clinical practice according to the syllabus and orthopedic practice manual. Students follow the teacher on ward rounds every day, and passively accept the relevant content taught by the teacher. During the teaching process, students can ask questions by themselves, and the teacher answers the students 'questions. Students follow the teacher's instructions to issue medical advice, participate in the operation, and complete the medical record and other work.

2.3 Observation Indicators and Evaluation Criteria

After 4 weeks of clinical practice, the clinical quality, theory test scores and teaching satisfaction of the two groups were compared. Clinical literacy was assessed using the modified Mini-CEX scale. According to the consultation skills, physical examination skills, professional attitude, clinical judgment, communication skills, organizational efficiency, surgical operation skills, perioperative treatment and overall performance, each item was 0-9 points, 0 was unobserved, 1 to 3 was unqualified, 4 to 6 was qualified, and 7 to 9 was excellent. The results of the theory examination are assessed in the form of an examination paper. The full score is 100 points, and the results of the two groups of students are recorded. The clinical teaching satisfaction survey takes the form of anonymous questionnaire, which is filled in by students and divided into four items: unsatisfactory, general, satisfied and very satisfaction. The total satisfaction rate = (very satisfaction + satisfied) number / total number is 100%.

2.4 Statistical Methods

Statistical analysis of all data was performed using SPSS 19.0 statistical software. Measurement data are expressed as mean ± standard deviation (x ± s), independent sample t-test for comparison between two groups, and paired sample t-test for comparison within group; the rate of count data is expressed as χ2checkout. A P <0.05 was considered as a statistically significant difference.

3. Results

3.1 Comparison of the Assessment Situation of the Clinical Quality of the Students in the Two Groups Before the Internship

Compared with the assessment of the study group and the control group, there was no significant difference (P>0.05) (Table 1).

Table 1: Comparison of pre-internship clinical quality between students in study group and control group (score, x ± s)

	Study group (n=15)	Control group (n=15)	*t*price	*P*price
Consultation skills	3.47±0.915	3.40±0.910	0.200	0.843
Physical examination skills	3.40±0.910	3.40±0.828	0	1.000
Professional attitude	3.53±0.640	3.47±0.743	0.263	0.794
Clinical judgment ability	3.60±0.828	3.20±0.775	1.366	0.183
communication skill	3.47±0.990	3.27±0.884	0.584	0.564
Organizational efficiency	3.53±0.743	3.33±0.724	0.747	0.461
Surgical skills	3.40±0.737	3.20±0.862	0.683	0.500
Perioperative treatment	3.40±1.056	3.40±0.632	0	1.000
Overall performance	4.07±0.799	3.40±0.737	2.376	0.25

3.2 Comparison of the Assessment of the Clinical Quality of the Students in the Research Group Before and After the Internship

In the assessment of clinical quality before and after the internship, the difference was statistically significant (P<0.05) (Table 2).

Table 2: Comparison of clinical quality of students in the study group before and after internship (points, x ± s)

	Pre-internship (n=15)	Post-internship (n=15)	*t*price	*P*price
Consultation skills	3.47±0.915	7.80±0.862	-13.348	<0.001
Physical examination skills	3.40±0.910	7.53±0.640	-14.387	<0.001
Professional attitude	3.53±0.640	7.40±0.828	-14.310	<0.001
Clinical judgment ability	3.60±0.828	7.13±0.743	-12.299	<0.001
communication skill	3.47±0.990	7.40±0.737	-12.341	<0.001
Organizational efficiency	3.53±0.743	7.07±0.704	-13.370	<0.001
Surgical skills	3.40±0.737	7.40±0.910	-13.229	<0.001
Perioperative treatment	3.40±1.056	7.27±0.884	-10.878	<0.001
Overall performance	4.07±0.799	7.40±0.737	-11.880	<0.001

3.3 Comparison of the Assessment Situation of the Clinical Quality of the Students in the Control Group Before and After the Internship

In the control group, the assessment of clinical quality among students before and after the internship was compared, and the difference was statistically significant (P<0.05) (Table 3).

Table 3: Comparison of clinical quality of students in the control group before and after internship (score, x ± s)

	Pre-internship (n=15)	Post-internship (n=15)	*t*price	*P*price
Consultation skills	3.40±0.910	5.93±0.799	-8.102	<0.001
Physical examination skills	3.40±0.828	6.33±0.816	-9.769	<0.001
Professional attitude	3.47±0.743	6.47±0.743	-11.054	<0.001
Clinical judgment ability	3.20±0.775	6.27±0.799	-10.674	<0.001
communication skill	3.27±0.884	6.40±0.737	-10.547	<0.001
Organizational efficiency	3.33±0.724	6.33±0.900	-10.062	<0.001
Surgical skills	3.20±0.862	6.33±0.976	-9.320	<0.001
Perioperative treatment	3.40±0.632	6.47±0.915	-10.674	<0.001
Overall performance	3.40±0.737	6.60±0.632	-12.764	<0.001

3.4 Comparison of the Assessment of Clinical Quality of the Two Groups After Internship

However, the difference of the students was not significant (P<0.05) (Table 4).

Table 4: Comparison of post-internship clinical quality of students in the study group and the control group (score, x ± s)

	Study group (n=15)	Control group (n=15)	*t*price	*P*price
Consultation skills	7.80±0.862	5.93±0.799	6.152	<0.001
Physical examination skills	7.53±0.640	6.33±0.816	4.480	<0.001
Professional attitude	7.40±0.828	6.47±0.743	3.249	0.003
Clinical judgment ability	7.13±0.743	6.27±0.799	3.076	0.005
communication skill	7.40±0.737	6.40±0.737	3.717	0.001
Organizational efficiency	7.07±0.704	6.33±0.900	2.486	0.019
Surgical skills	7.40±0.910	6.33±0.976	3.096	0.004
Perioperative treatment	7.27±0.884	6.47±0.915	2.435	0.022
Overall performance	7.40±0.737	6.60±0.632	3.191	0.003

3.5 Comparison of Theoretical Examination Results between the Two Groups After Internship

There was no significant difference between the students in the study group and the control group (P<0.05) (Table 5).

Table 5: Comparison of post-internship theory examination scores of students in study group and control group (score, x ± s)

	Study group (n=15)	Control group (n=15)	*t*price	*P*price
Theoretical examination results	82.73±5.230	74.87±7.444	3.349	0.002

3.6 Comparison of Teaching Satisfaction between the Two Groups After Practice

The difference between the study group and the control group was insignificant (P<0.05) (Table 6).

Table 6: Comparison of teaching satisfaction between study and control groups [n (%)]

	Study group (n=15)	Control group (n=15)	χ^2price	*P*price
Total satisfaction rate, n%			3.968	0.046
Very satisfied	6(40.00)	3(20.00)		
satisfied	7(46.67)	5(33.34)		
same as	1(6.67)	5(33.34)		
discontent	1(6.67)	2(13.34)		

4. Discussion

Clinical practice is one of the most critical links in medical students' teaching. For medical students, this is their first real exposure to clinical practice, and it is essential to become a qualified clinician [2,3]. Traditional teaching is a kind of lecture oriented traditional teaching method, widely used to include medical education, interdisciplinary teaching, traditional teaching with complete knowledge, teaching materials and theory, teachers impart knowledge according to the teaching syllabus, in mastering the teaching process enables the students to system learning knowledge, plays an important role in the basic theory education [4,5]. However, with the progress and development of medical science and technology, the requirements for clinical medical students are becoming higher and higher, and the traditional teaching can no longer meet the current requirements of training medical students. Traditional teaching can not effectively mobilize students 'learning initiative, enthusiasm and creativity, and is not conducive to the cultivation of students' innovative spirit and self-study ability [6] Therefore, it is an important problem for clinical teachers to explore more ideal and more prominent teaching methods. Case teaching method is a case-oriented teaching method that focuses on the combination of theory and practice. Teachers analyze specific cases, so that students can understand and master the general analysis principles, and then improve their ability to analyze and solve problems [7]. Relevant clinical teaching of the research proof [8,9,10], The improved Mini-CEX scale is very comprehensive in assessing the clinical quality of medical students, especially in the standardized resident training, which can well evaluate the students' performance in clinical work.

This study found that the academic performance and clinical skills assessment results of the students in the research group were better than those of the control group, and the students in the research group also had a high recognition of the case teaching method, indicating that the implementation of the case teaching method can effectively improve the learning and teaching effect. The reason for this is that the case teaching method focuses on the combination of theory and clinical practice, and is committed to cultivating students' clinical thinking, stimulating their learning initiative, constantly innovating and pioneering their thinking in independent thinking. At the same time, it can cultivate teamwork spirit and enhance the sense of competition, which is conducive to the formation of good teacher-student interaction [11]. Integrating practical cases into the teaching process is an important method to improve the quality of clinical practice. It helps to achieve the following teaching objectives: to enhance students 'clinical thinking: through the analysis of real cases, students can learn how to think comprehensively, evaluate the patient's situation, and formulate corresponding management and treatment plans. Improve learning motivation: Specific case discussions are easier to arouse students' interest and make them take the initiative to participate in learning, which is conducive to in-depth understanding of knowledge and long-term memory. Develop problem solving skills: students can practice problem solving skills in the face of complex and changeable clinical situations, which is very important for them to handle clinical problems independently in the future. Improving communication skills: In a simulated "doctor-patient communication", students can practice how to communicate effectively with patients and family members, which is a key part of building a doctor-patient relationship and achieving successful treatment. Strengthen teamwork: In the "consultation", students must work with other students or medical staff, which helps to foster teamwork and interdisciplinary cooperation. Professional identity: By being placed in a simulated situation of clinical practice, students can better understand the responsibilities and challenges of doctors, and promote their identity and commitment to the medical profession. By creating such a learning environment, students can not only improve their clinical skills and professionalism, but also develop enthusiasm and dedication to the medical profession. In the long term, this teaching model is important for developing doctors who can face future clinical challenges independently.

5. Conclusion

In the diagnostic teaching of orthopedic diseases, the application of case teaching method can indeed significantly improve the teaching effect. This approach can not only help to improve students 'academic performance and clinical skills, but also can enhance students' interest in and participation in the teaching content. There are some shortcomings in this study, and the small sample size included may cause study results errors; the modified Mini-CEX scale used will be subjectively influenced by the teacher, and different teacher scores may deviate from the study results. In general, the teaching effect of the case teaching method can achieve a satisfactory degree, which should be advocated in the future teaching work, so as to improve the teaching quality, so that medical students can learn more knowledge in the internship stage, and lay a solid foundation for the future clinical work.

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