Application Effect Analysis of PBL Teaching Method in Standardized Training of Resident Doctors Based on Internet + training Examination Combined with ORIME Evaluation System

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Abstract: Objective To explore the application effect of PBL teaching method based on Internet + training examination combined with ORIME evaluation system in the standardized training of residents. Methods Thirty students who participated in the standardization of residency in our hospital and completed their studies in 2020 were selected as the study subjects, and 219 students enrolled in our hospital from 2008 to 2017 who planned to complete their studies before June 2019 were selected as the control group. The control group adopted the traditional resident training management method, and the research group adopted the Internet + training examination combined with ORIME evaluation system to assist PBL teaching method. The teachers and students were evaluated in a two-way way. Each student needed to obtain the satisfaction of 4 nurses and patients, and the one-time passing rate of the two groups of students was compared and observed. Results The two-way evaluation scores of the teachers and students in the study group were significantly higher than those in the control group, and the difference was statistically significant ($P<0.05$). The satisfaction scores of nurses and patients in the study group were significantly higher than those in the control group, and the difference was statistically significant ($P<0.05$). The one-time passing rate of the study group was slightly higher than that of the control group, and the difference was not statistically significant ($P>0.05$). Conclusion PBL teaching method based on Internet + training examination combined with ORIME evaluation system can effectively promote the improvement of standardized training and teaching quality of residents, and promote the improvement of nurses' and patients' satisfaction. In the results, although there was no significant statistical difference in the final assessment scores of the two groups of students, this may be related to a variety of factors such as too short implementation time and too small sample size, but the students' learning interest and comprehensive clinical thinking were improved, which has good reference significance for the teaching of our hospital and other universities at the same level.

Keywords: Standardized training of resident doctors; Internet + training exam; ORIME evaluation system; Training quality; PBL teaching method

The standardized training of resident doctors (hereinafter referred to as "residential training") is a necessary link for clinical medical students to become qualified clinicians, and the evaluation system and training methods are the top priorities of residential training. At present, the evaluation system of each residential training base in China is "self-contained" and the training method is "a hundred flowers blooming", so there is a lack of effective, comprehensive and unified training, assessment and evaluation methods. "Internet + training examination" is the "upstart" of today's residential training, and the "Observer-reporter-analyst-manager-educator" evaluation system (ORIME evaluation system) is a 360° intuitive assessment and evaluation system that visually describes the change and progressive process of the abilities of residential training students as observers, reporters, analyzers, managers and educators. Under the teaching mode of "Internet + training and examination", the introduction of ORIME evaluation system and the assistance of Problem-Based Learning (PBL) will help stimulate the enthusiasm of residential training students and further improve the training

quality of residential training. The report is as follows:

1. Objects and methods

1.1 Research object

Thirty students who participated in residential training in our hospital and completed their studies in 2020 were selected as the study subjects, and 219 students enrolled in our hospital from 2008 to 2017 who planned to complete their studies before June 2019 were selected as the control group. In the control group, 100 males and 119 females, aged 23-30 years old, mean (25.84±3.19) years old; In the study group, there were 14 males and 16 females, aged 22-31 years, with an average age of (26.10±3.64) years. There was no significant difference in gender and age between the two groups (P>0.05).

1.2 Methods

The control group used the traditional way of resident training and completed the basic learning through paper teaching materials. The research group combined Internet technology and ORIME evaluation system and adopted PBL teaching method. Specifically, they use the "Medical electronic schoolbag" app to integrate text, images, audio, video and 3D content of textbooks, test questions and databases, and use the mobile Internet for classroom teaching to achieve simultaneous teaching of theory and practice.

This teaching model emphasizes student-centered, teacher exam-oriented, and evaluation-supplemented, aiming to apply PBL teaching method more deeply. All teaching content is medical curriculum as the core, and all materials such as preview, expansion, practice and discussion are transferred to the mobile platform to realize the seamless connection of time and space between teachers and students.

1.3 Observation Indicators

(1) Teachers and students are evaluated in a two-way manner, including clinical theoretical knowledge, medical document writing, clinical thinking ability and other ten dimensions; The students' evaluation of the teacher includes ten dimensions, such as teaching ward round ability and clinical thinking method. The full score of each dimension of the evaluation table is ten, a total of one hundred points. The higher the score, the better the evaluation of the index. (2) To investigate and score the satisfaction of nurses and patients with the student, each student shall receive the satisfaction scores of 4 nurses and patients, the total score is 100 points, the higher the score, the more satisfied. (3) Compare and observe the one-time passing rate of the two groups of students.

1.4 Statistical Analysis

All data were statistically analyzed using R 3.4.3 (https://www.r-project.org) and R Studio 1.1.385 (https://www.rstudio.com). The measurement data were expressed as mean ± standard deviation (x±s). After the Shapiro-Wilk test met the normal distribution, the t test of two independent samples was used for statistical test. If the normal distribution was not met, Wilcoxon rank match test was used. Count data were compared as percentage (%), chi-square ($\chi2$) test was used, and Fisher exact rate was used for single < 4 cases. The test results were statistically significant with P < 0.05.

2. Results

2.1 Teachers and students should be evaluated in a two-way manner

The two-way evaluation scores of teachers and students in the study group were significantly higher than those in the control group, with statistical significance (P<0.05), as shown in Table 1.

Table 1 Two-way evaluation scores of teachers and students (score, x±s)

group	Number of cases	Guide the teacher to evaluate the student	Students' comments on teachers
Research group	30	92.36±5.39	95.37±6.44
Control group	219	86.91±6.12	88.21±5.97
T-value	-	4.921	5.970
p-value	-	0.000	0.000

2.2 Investigate the satisfaction scores of nurses and patients to students

The satisfaction scores of nurses and patients on students in the study group were significantly higher than those in the control group, with statistical significance (P<0.05).

2.3 The one-time passing rate of the completion examination between the two groups of students was compared

The one-time passing rate of the study group was slightly higher than that of the control group, and the difference was not statistically significant (P>0.05).

3. Discussion

The standardized training of resident doctors is the systematic and standardized clinical practice training that medical graduates receive in designated training bases. Its core purpose is to enhance the clinical capabilities of the new generation of doctors to ensure that they are able to provide a high level of medical care. In 2009, the CPC Central Committee and The State Council issued the Opinions on Deepening the Reform of the Medical and Health System, which brought unprecedented transformation to China's medical system [1-2]. This reform means that China is developing in a more professional, standardized and systematic direction, emphasizing the cultivation of talents and the improvement of medical quality. The standardized training of residents is the core component of this transformation, which is not only training, but also the optimization and improvement of the entire medical system. Due to the late start of residential training in our country, and the uneven development between disciplines, hospitals and hospitals, and regions and regions, there are great differences in the clinical ability and scientific research level of participants in the training. Therefore, strict, comprehensive and formal residential training will directly affect the development of doctors, hospitals and future medical technology.

Although the establishment of residential training system is forward-looking, many problems have been exposed in the concrete implementation. These problems mainly involve the participation attitude of students, the quality of teachers, the aging of teaching methods and so on. For example, due to promotion pressure, many doctors participate in residency training only formally, neglecting real learning and practice. At the same time, due to various work pressures, some teachers cannot devote themselves to teaching, resulting in the residential training students can not get effective guidance.

Because the current quantitative tools are mostly standardized tests as the core, which makes the residential training base can only be rigid and fixed from the knowledge, skills and work ability and other aspects of the assessment of students, ignoring the needs and differences of students at different stages, and also let the teacher become the education plan maker and weaken the role of professional ability assessment. ORIME evaluation system divides students' learning process into four progressive stages: Reporter, Interpreter, Manager and Educator, and then evaluates students' ability in terms of knowledge, skills and handling practical problems in stages. In addition, considering that newly graduated medical students are not familiar with physical examination and medical history collection, they cannot find anomalies from them, and they are not qualified for reporting, they are replaced with observers, so that the instructors can systematically evaluate the basic knowledge, clinical skills and working attitude of the trainees at this stage at a glance. It also allows students to clearly identify their stage and learning goals through the system. The effectiveness of ORIME evaluation system has been affirmed and widely promoted in American medical schools. The system makes a reasonable evaluation of the resident students from the perspective of development, which not only allows the junior and senior students to clarify their respective learning goals and requirements, but also allows the teaching objectives of the instructor to clearly show the gradual trajectory of knowledge, skills and ability to deal with clinical problems from the junior to the senior. Compared with 360-degree evaluation feedback, ORIME system has clearer goals and richer connotations.

With the development of technology, education methods are constantly innovative. The traditional offline teaching method can no longer meet the needs of modern medical education. PBL (Problem Oriented Learning) teaching method combined with "Internet +" can better cultivate students' active learning and exploration ability. Through the first exploration and attempt of PBL teaching method assisted by Internet + training examination and ORIME evaluation system, this study uses the new means of combining classroom teaching and mobile Internet to enable teachers to conduct a new and comprehensive investigation of students' learning situation, and discusses the differences between new learning methods and traditional PBL teaching. While exploring new teaching methods, it improves the practical effect of the training in the residential training base.

Although there was no significant statistical difference in the final assessment results of the two groups of students, this may be related to various factors such as the short implementation time and the small sample size, but the students' learning interest and comprehensive clinical thinking were improved, which has good reference significance for the teaching of our hospital and other universities at the same level.

References:

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