The Effect and Analysis of Multiple Assessment Methods in the Assessment of Clinical Ability of Medical Students

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Abstract

Objective: To explore the effect and value analysis of the modified mini clinical exercise evaluation scale Mini-CEX combined with the modified clinical operation skills direct observation evaluation form DOPS for clinical practice medical students in the daily assessment of clinical skills in neurology. Methods: Ninety-two students who entered the neurology internship were randomly divided into a control group and a teaching reorganization group. At the weekend, all students were evaluated and feedback on the improved Mini-CEX and the improved DOPS. At the same time, they were assessed in accordance with the traditional assessment methods. Upon graduation, an objective structured clinical exam, OSCE exam, were used to evaluate neurological skills. Results: The scores of nervous system examination skills, lumbar puncture, and diagnostic thinking analysis in the teaching reform group were significantly different from those in the control group (P<0.05). The overall score of mini-CEX combined with DOPS in the teaching reform group was higher than that in the control group. Statistically significant (P<0.05). According to the traditional examination method, the teaching reform group was slightly higher than the control group, and the difference was not statistically significant (P>0.05). The scores of neurological examination skills and the average scores of lumbar puncture examinations (86.84±7.45) in the OSCE examination teaching restructuring of the objective structured clinical examination for graduation were significantly higher than those of the control group (83.51±8.29), and the difference was statistically significant (P<0.05). Conclusion: Introducing the evaluation and feedback of the combination of Mini-CEX and DOPS in the assessment and evaluation process of daily clinical skills of medical students can achieve better teaching results and achieve the purpose of teaching each other.

Keywords

Modified mini clinical exercise evaluation scale, clinical operation skills direct observation checklist, clinical skills, evaluation, feedback.

1. INTRODUCTION

Clinical practice is an important stage of medical education [1]. The teaching content is complex, involves a wide range of areas, and has strong practicality. It is a particularly important link in cultivating medical students' clinical skills [1]. The assessment method should focus on the ability to analyze and solve problems. Our hospital combines foreign mini clinical evaluation exercise (mini-CEX) [2], direct observation of procedural skills (DOPS) [3] and a combination of

objective structured clinical exams (objective structured Clinical examination, OSCE) [4] and other clinical skills assessments are introduced into the training and assessment of neurology interns, and the improved Mini-CEX combined with DOPS clinical skills assessment is used to evaluate the clinical skills of 2014 clinical medicine students in daily and departmental assessment Analyze and compare the effects, find the weak links in students' clinical skills, and promote students to improve their clinical practice skills.

2. MATERIALS AND METHODS

2.1. Study Subjects

A total of 92 students in clinical medicine of the grade 2014 who practiced in the Department of Neurology of the Affiliated Hospital of Weifang Medical University were randomly divided into a control group and a teaching reform group from July 2018 to July 2019, with 46 people in the control group, 46 people were reorganized in education.

2.2. Establish An Improved Evaluation Scale

Consulting related literature and combining with clinical evaluation experience, and establishing an improved mini-clinical exercise evaluation scale Mini-CEX key evaluation evaluation clinical history collection and physical examination in the daily evaluation of clinical skills in neurology and department evaluation , Humanities medicine, clinical diagnosis and treatment, health education, organizational effects and overall evaluation; establish an improved clinical operation skills direct observation assessment scale DOPS focuses on assessing and evaluating clinical operations such as lumbar puncture and electrocardiogram, and establishing a daily clinical practice that combines diversified assessment modes Ability assessment system.

2.3. Teacher Training

During the rotational learning process of medical students, the responsible teacher was specifically responsible for teaching, instructing, supervising, evaluating, and assessing clinical ability training. Through teacher training, each teacher could fully understand the implementation rules of Mini-CEX and DOPS. Teachers used the improved Mini-CEX and DOPS to assess the students they teach in their daily work.

2.4. Assessment and Feedback Proces

All standardized trained residents were trained in the Department of Neurology for 2 weeks. The two groups were trained and managed in accordance with the current management and teaching methods of intern doctors. The teaching reorganization also required that they be led at the first weekend after entering the Department of Neurology. Teachers (attending physicians) used the improved Mini-CEX and DOPS to evaluate, assess and give feedback on the daily clinical skills of neurology medical students. Students could learn and improve in a targeted manner based on the feedback. After the neurology training is completed, the instructor would evaluate and give feedback on the improved Mini-CEX and the improved DOPS for all students under his responsibility, and follow the traditional examination methods (including special theoretical knowledge examination, medical record writing, bedside operation)) Perform subject assessment, all scores were converted into a percentile system, and the teacher would record the relevant content in accordance with the pre-designed form for each assessment.

In the diagnosis and treatment of patients in outpatient clinics and wards, the teachers used the modified Mini-CEX and DOPS evaluation to directly observe the candidates. Students were required to conduct brief medical history inquiries, key physical examinations, and existing auxiliary examination resulted within 15-20 minutes accompanied by teachers The seven Mini-CEX items such as the main diagnosis of the patient's disease, the necessary auxiliary examinations, and the treatment plan were reported to the teacher orally. The lumbar puncture was evaluated with a modified DOPS. According to the actual level of the assessment item, the assessment teacher scored each item, and the time was about 5-10 minutes. The evaluation adopted 3-level 9-point system: each item adopts 9-point system. The evaluation scale: 1-3 points indicated that the students' operation did not meet the requirements, 4-6 levels indicated that the requirements are met, and 7-9 points indicated excellent performance. The evaluation results were recorded in mini CEX and DOPS neurology clinical practice ability evaluation scale.

2.5. Statistical Method

The SPSS17.0 statistical software was used to analyze and process the indicators, and the qualitative data was expressed as a composition ratio and tested. Quantitative data were marked with $x\pm s$, and the comparison between the two groups was performed by t test. P<0.05 indicated that the difference was statistically significant.

3. RESULTS

3.1 The scores of neurological examination skills, lumbar puncture, and diagnostic thinking analysis of the education reform group combined with the DOPS assessment and the control group were statistically significant (P<0.05). The overall total score of the education reform group was higher than the control group, The difference was statistically significant (P<0.05) (Table 1).

group				
Project	Control group (N=46)	Education Reorganization (N=46)	t	Р
Medical history collection	5.87±0.63	6.02±0.65	1.12	0.26
Physical examination	5.93±0.78	6.49±0.75	3.5	0.00
Lumbar puncture	5.73±0.76	6.46±1.12	3.67	0.00
Clinical diagnosis	5.56±0.63	6.36±1.04	4.46	0.00
Humanities Medicine	5.87±0.86	6.04±0.79	0.99	0.33
Health Education	5.46±0.46	5.63±0.68	1.40	0.16
Organizational Effectiveness	5.38±0.72	5.53±0.57	1.11	0.27
Overall Evaluation	5.76±0.71	6.25±1.12	2.51	0.01
Total Assessment Score	75.32±6.78	79.45±8.76	2.53	0.01

Table 1. Comparison of the evaluation results of the teaching reform group and the control group

3.2 In accordance with the traditional examination method for subjects, the education reform group was slightly higher than the control group, and the difference was not statistically significant (P>0.05). Considering that the internship time of the students in neurology is shorter, if the internship time is extended, the test scores of students will be different.

3.3 The objective structured clinical examination at graduation, the OSCE examination teaching reformation group, the neurological examination skill score and the average score of lumbar puncture examination (86.84 ± 7.45) were significantly higher than those of the control group (83.51 ± 8.29), the difference was statistically significant (P<0.05)). Considering the

assessment and evaluation methods of the teaching reorganization can provide clinical skills training thinking mode training, and long-term learning has a good effect.

3.4 DOPS clinical assessment of lumbar puncture

Recovered 92 valid evaluation forms, of which 19.6% (18/92 cases) reached to be improved, 65.2% (60/92 cases) met the requirements, and 15.22% (14/92 cases) performed well.

4. **DISCUSSION**

The Mini-CEX (Mini-Clinical Evaluation Exercise) is a mini clinical evaluation scale developed by the American Academy of Internal Medicine (ABIM). The author has improved this scale, an improved Mini-CEX evaluation The items include: medical history collection, physical examination, medical ethics, doctor-patient communication, clinical diagnosis, treatment plan, overall evaluation and other seven ability assessments. In the outpatient, emergency or hospital work, the examiner directly observes the examinee's medical treatment to the patient Behaviour, and ask the examinee about the patient's diagnosis and treatment plan after the end of the observation, scoring through structured form items, and giving timely feedback, which is helpful for simple and effective evaluation.

Improved Direct Observation of procedural skills (DOPS) includes clear indications and contraindications, informed consent, preparation of preoperative items, aseptic operation techniques, position + puncture point selection, appropriate anesthesia methods and operations , Puncture proficiency, appropriate time to seek help, communication skills, postoperative treatment, humanistic care, overall evaluation and other 11 aspects of content assessment, to assess the clinical operating skills of medical students.

This study shows that in the clinical ability assessment system that combines Mini-CEX + DOPS + OSCE, the combination of Mini-CEX + DOPS for weekday assessment and departmental assessment is simple and easy, and can be applied to multiple disciplines, focusing on comprehensive ability assessment. Real-time feedback can be carried out, emphasizing the basic principles and importance of feedback after the assessment: it can enable teachers to know the advantages and disadvantages of teaching, serve as a basis for improving teaching, develop new teaching methods and strategies, and inspire students' personal thinking Or inspire potential. Mini-CEX and DOPS combined with the usual and out-of-department assessment methods will effectively reflect the actual operational capabilities of interns and residents, and teaching management personnel can improve future standardized training management methods based on the assessment conditions and continue to develop new teaching Methods and strategies enable continuous and cyclical development of training and assessment, and promote the improvement of students' clinical operation level.

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