

The Application of SNAPPS Combined with OMP Teaching Method in Teaching Emergency Interns in Practice

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Abstract

Objective: To evaluate the value of combining the OMP (The One Minute Preceptor) and SNAPPS (Summarize/Narrow/Analyze/Probe/Plan/Select) methods in the teaching of emergency interns. **Methods:** A total of 66 emergency rotation interns from Zhuji People's Hospital in the academic year 2021-2022 were selected as the study population and randomly divided into 2 groups. Control group (33): bedside teaching by conventional banding. Observation group (33): OMP combined with SNAPPS method for bedside teaching. A combination of questionnaire, clinical thinking and skills assessment was used to evaluate the quality of teaching. **RESULTS:** The theoretical test scores of the interns in the observation group were significantly higher than those of the control group ($P < 0.05$); the various components of the Mini-CEX (Mini-clinical evaluation exercise) evaluation (including medical consultation, physical examination, communication skills and humanistic care, clinical thinking and quality, and overall performance) of the interns in the observation group were significantly higher than those of the control group ($P < 0.05$); the interns in the observation group scored higher than the control group in the DOPS (Direct Observation of Procedural Skills) evaluation ($P < 0.05$). The interns' evaluation of the teaching mode and content (improved learning efficiency and motivation, deepened understanding of disease, enhanced interest in further learning, improved physical examination and medical history taking, and recognition of this teaching mode) was higher in the observation group than in the control group ($P < 0.05$).

Keywords

SNAPPS, OMP, Internship, Emergency Care

1. Introduction

In 2017, the State Council (2017) proposed that we should accelerate the construction of a standardized and standardized medical talent training system, and cultivating physicians who master job competence is the core requirement for medical talent training. Undergraduate clinical education is a sustainable and sequential process that includes components of medical school education as well as hospital education. Internship teaching, as a key link between institutional education and clinical competence, plays an important role in the construction of medical students' job competency system as an undertaking link (Wang et al., 2018; Chu et al., 2021). There are certain problems in medical education. On the one hand, teachers shoulder many affairs such as clinical, scientific research, teaching, and they are tired of work. On the other hand, interns face employment and examination pressure, the role positioning is not accurate, the internship cannot be fully devoted, and the mechanical completion of the internship task. Emergency medicine has its special characteristics of being acute, critical and serious, and the patient's condition is complex and difficult to teach, which requires a fast and effective teaching method (Zhang et al., 2021).

"The One Minute Preceptor" (OMP) is a student-led teaching method, first introduced by Neher in 1992 (Neher et al., 1992). It consists of five main components: mastering the focus, seeking supporting evidence, positive reinforcement, correcting errors, and teaching, and is commonly referred to as the "five step micro-skill". Its main value is to complete a short clinical thinking process in a short period of time (one minute). Related research indicates that the OMP prompts the teaching of higher level concepts, facilitates the assessment of students' knowledge, and prompts the provision of feedback. Students indicate satisfaction with this method of clinical case-based discussion teaching (Farrell et al., 2016; Holmboe et al., 2017; Sokol et al., 2017).

The SNAPPS method (Summarize/Narrow/Analyze/Probe/Plan/Select) is a student-led teaching model that represents six steps of skills: 1) briefly summarise history and physical findings; 2) suggest 2 - 3 differential diagnoses; 3) analyse and compare; 4) obtain evidence from the instructor; 5) develop a treatment plan; 6) select relevant cases for independent study. Since Wolpaw proposed it (Wolpaw et al., 2003), it has been widely used in medical education to help improve students' ability to analyse and summarise clinical problems on their own (Seki et al., 2016; Natesan et al., 2020).

This study attempts to combine the two methods and apply them to the teaching of emergency medicine trainees, to explore their feasibility and effectiveness, and to try to find a more reasonable and effective bedside teaching method for emergency medicine teaching.

2. Research Subjects and Methods

2.1. Study Design

This study was a randomized controlled trial. The study subjects were randomized

into 2 groups (process of randomization is explained below) and after completion of data acquisition a crossover was done for ethical reasons. So, after crossover the control group were also taught with OMP and SNAPPS teaching method.

2.2. Study Setting

This study was carried out in the in-patient or ward setting of emergency room at Zhuji People's Hospital.

2.3. Study Duration

The study period was from January 2021 to January 2022.

2.4. Study Population

A total of 66 emergency medicine rotation interns from Zhuji People's Hospital were the study population. Preceptors were from emergency department of Zhuji People's Hospital, a total of 6 preceptors were included in the study.

2.5. Sample Size

66 clinical interns were included in the study. Each intern conducts 1 month of emergency teaching.

2.6. Sampling and Randomization

The study population was included based on convenient sampling among interns of medicine. The sixty-six interns who consented were then randomized by simple randomization technique using a simple random number table. After randomization, the study population was divided into 2 groups. The control group (33): use conventional teaching. Observation group (33): bedside teaching by OMP combined with SNAPPS method. There was no statistical difference between the two groups in terms of gender, age and other general conditions.

2.7. Study Methods and Procedures

Observation Group

Teacher's sensitization and training: All teachers/preceptors in this group had received standardized training and assessment of OMP and SNAPPS pedagogy to ensure that teachers fully grasp these two methods. This introduction and sensitization was carried out by the principal investigator. Teachers are trained on the Mini-CEX evaluation form and the DOPS evaluation form. After the training, teachers conduct teaching exercises to ensure the quality of teaching.

Student's training: All interns use the OMP combined SNAPPS teaching method for bedside teaching during the internship. In the process of teaching, give full feedback and opportunities for after-class discussion to ensure the implementation of the two pedagogical norms. After the emergency internship, the theoretical knowledge assessment is carried out in the form of single-choice

questions. The Mini-CEX evaluation form is used for clinical thinking ability evaluation, and the DOPS evaluation form is used for operational ability evaluation.

Control group: Interns are taught in the traditional way. After the emergency internship, the theoretical knowledge assessment is carried out in the form of single-choice questions. The Mini-CEX evaluation form is used for clinical thinking ability evaluation, and the DOPS evaluation form is used for operational ability evaluation.

Cross over: After the teaching progress and data collection of both the groups was completed, a crossover was done for ethical reasons. The interns from control group were taught by OMP and SNAPPS teaching method. We did not acquire any data after the cross-over.

Evaluation of teaching effectiveness: The exams are in the form of theoretical exams, all of which are one-way multiple-choice questions, and the questions are typical. The clinical thinking ability assessment was evaluated using the Mini-CEX evaluation form. The Mini-CEX evaluation Scale is an evaluation scale for evaluating the clinical thinking ability of medical students, including medical consultation, physical examination, communication skills and humanistic care, clinical thinking and treatment and overall performance. Each dimension is qualified with 6 points, out of 10 points, and each grade is recorded. Apply the DOPS evaluation form for operational evaluation, which including 11 items such as aseptic concept, total score recorded. The DOPS Review Form is an assessment tool used to assess clinical skills.

Perception of students and preceptors: The perception of students and preceptors was assessed by taking their feedback on satisfaction questionnaire. The survey results were evaluated on a scale of 0-5, with 0-3 being satisfactory and 0-3 being unsatisfactory, at the end of the internship.

2.8. Statistical Methods

All the data from recording sheet and feedback forms were entered electronically using Microsoft excel. Data was analyzed using SPSS22.0 statistical software (Statistical Product and Service Solutions for windows, produced by IBM Corporation). The measurement data were expressed as $(x \pm S)$. As our sample size was 66 and was normally distributed, we compared means with 2-tailed Independent sample t-test, proportions with the chisquare test. $P < 0.05$ was considered significant.

3. Results

3.1. Results of Theoretical Tests

The scores of the exit examinations of the two groups of internship students: the scores of the control group of interns were (87.92 ± 5.21) and the scores of the observation group of interns were (91.49 ± 3.75) , and the differences were statistically significant ($t = 3.18$, $P \text{ value} = 0.002$).

3.2. Mini-CEX Evaluation Results

A comparison of the various components of the Mini-CEX evaluation between the two groups of internship students is shown in **Table 1**. There were statistical differences in the scores of medical consultations, physical examination, communication skills and humanistic care, clinical thinking and humanistic care, and overall performance (P value < 0.05), with the observation group outperforming the control group.

3.3. DOPS Evaluation Results

DOPS evaluation results: the DOPS evaluation score of the interns in the control group was (44.97 ± 8.53) and the DOPS evaluation score of the interns in the observation group was (50.50 ± 7.94), with statistically significant differences ($t = 2.72$, P value = 0.008).

3.4. Results of Questionnaire Survey

Sixty-six questionnaires were distributed and 66 were returned, with a 100% return rate, and the results are as follows (see **Table 2**).

Table 1. Comparison of various assessment contents of Mini-CEX between two groups of internship students (score, $x \pm S$).

Assessment content	Control group (n = 34)	Observation group (n = 32)	t-value	P-value
Medical consultation	7.47 \pm 0.99	7.97 \pm 0.93	2.10	0.040*
Physical examination	7.18 \pm 0.72	8.44 \pm 0.62	7.63	0.000*
Communication skills and humanistic care	7.44 \pm 0.86	8.13 \pm 0.71	3.52	0.001*
Clinical thinking and treatment	7.15 \pm 0.89	7.66 \pm 0.87	2.35	0.022*
Overall performance	7.06 \pm 0.78	7.91 \pm 0.73	4.55	0.000*

Table 2. Comparison of the satisfaction rate of the teaching effect of the anonymous questionnaire between the two groups (n).

Item	Observation group (n = 33)	Control group (n = 33)
Increased learning efficiency and motivation	31/33*	20/33
Deepened understanding of the disease	30/33*	17/33
Enhancement of interest in further study	29/33*	16/33
Improved physical examination and history taking skills	31/33*	18/33
Improved clinical thinking skills	30/33*	14/33
Recognition of the teaching model	30/33*	15/33

Note: * indicates P value < 0.05 compared to the control group.

4. Discussion

Medicine is a practical discipline, and the practical nature of emergency medicine is particularly prominent, requiring strong comprehensive qualities and adaptability. The complicated work of emergency medicine, the acute and critical priority of emergency thinking, the fragmentation of teaching, and the complex doctor-patient communication are the characteristics of emergency teaching and the difficulties of teaching emergency medicine. The internship, a necessary stage for doctors to enter the clinic from the institution, is an integral part of the formation of clinicians' job competencies. The Dreyfus model of skill acquisition, a cognitive science-based model of job competence, divides the development of clinical thinking in medical students into five stages: novice, advanced novice, competent, proficient, and expert/master (Mangiante et al., 2021; Holnboe et al. 2018). Interns belong to the advanced novice stage and already have a certain level of clinical knowledge, which needs to be integrated into practice and internalised as part of the clinical thinking system, developing the ability to learn on their own and to think independently about problems (Wang et al., 2021). When interns enter emergency medicine, they are often overwhelmed by the noisy environment and are often passive in their learning.

The core of the OMP method is to use one minute of bedside time to complete a short clinical thinking session, which shortens the teaching time while ensuring the integrity and accuracy of the thinking. The SNAPPS teaching method is a highly effective bedside teaching model that emphasises student-led teaching, places the student in the subject position and creates a dynamic, student-led process, partly completed at the end of live thinking, and has been widely used in outpatient and bedside teaching (Kapoor et al., 2017). The implementation of the OMP in conjunction with the SNAPPS teaching method will ensure the quality of student teaching while shortening bedside teaching time, in line with the requirements of acute care teaching (Jain et al., 2019; Fagundes et al., 2020).

The OMP and SNAPPS teaching methods do not have fixed lesson plans but require teachers to interact effectively with students and train their clinical thinking based on actual cases and the appropriate use of live scenarios. This places a higher demand on the clinical skills, adaptability and teaching thinking of the teachers, and helps to improve their skills and teaching thinking. Over 80% of the teachers in this study reported that they had developed themselves significantly.

The OMP combined with the SNAPPS teaching method can improve students' active learning ability, enhance clinical thinking skills and provide better training for the construction of a medical thinking system. OMP teaching emphasises the interactive process, in which problems in students' thinking are exposed and teachers guide them, which can help construct the sequence and rules of thinking (Shagholi et al., 2019). The SNAPPS teaching method, on the other hand, emphasises more on the active learning process, which requires students to summarise and distil key information after completing the history taking, and

on this basis to propose a diagnosis and differential diagnosis, with subsequent learning around the case and in-class and post-class extensions (Jain et al., 2018). The process of clinical practice is a way of teaching students to apply what they have learned to clinical thinking. This teaching method pushes students to collect, process and reveal the essence of information in an open mode to achieve their practice goals.

The joint application of the OMP and SNAPPS teaching methods effectively utilises the limited time available at the bedside to develop high quality clinical thinking skills, helping students to build a clinical thinking system while improving the teaching skills of the teachers and realising the benefits of teaching. Compared with the traditional teaching mode, it is more applicable to the emergency department where “time is life”. The joint application of efficient teaching models can be tried out continuously to adapt to the nature and characteristics of different departments and to build a teaching model with disciplinary characteristics that are effective and efficient, so as to help students’ growth and build up their job competency.

Fundamental Project

Sustainable development of hospitals in Zhejiang Province Yangzi River Reach project (2021ZHA-YZJ214, The application of digital information platform construction in standardizing the nursing team of medical institutions); 2021 Shaoxing University School-level reform research project (The application of SNAPPS combined with OMP teaching method in teaching interns in practice); 2021 Wenzhou Medical University Pedagogical Reform Research Project in Higher Education (JG2021123, Application of “Tutorial and Mentoring System” in Medical internship and teaching); 2021 Zhejiang Chinese Medical University (Binjiang College) Educational Teaching Reform Research Project (2021002, The design and practice of ideological and political teaching for the course of dermatology and venereology in non-directly-managed affiliated hospitals in the post-epidemic era).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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