

Application of Seminar Teaching Method Combined with Case-Based Learning and Problem-Based Learning Teaching Models in Oral Clinical Nursing Teaching

Yanqing Feng*, Fengqiao Lin, Mengjun Huang

The First Affiliated Hospital of Sun Yat-sen University, Guangzhou 510180, Guangdong Province, China

*Corresponding author: Yanqing Feng, fengyq@mail.sysu.edu.cn

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Abstract: *Purpose:* To analyze the role of the seminar teaching method + case-based learning (CBL) teaching method + problem-based learning (PBL) teaching method in oral clinical nursing teaching. *Methods:* 13 undergraduate nursing students who entered the department from September 2020 to September 2021 were selected as the control group, adopting conventional nursing teaching methods; 13 undergraduate nursing students who entered the department from September 2021 to August 2022 were selected as the observation group, adopting the seminar + CBL + PBL teaching method. The teaching effects were compared between the two groups. *Results:* All assessment scores of the observation group were higher than those of the control group; all teaching satisfaction levels were higher than those of the control group ($P < 0.05$). *Conclusion:* Adopting the seminar + CBL + PBL teaching method during oral clinical nursing teaching can improve nursing students' assessment scores, strengthen their core competencies, and enhance teaching satisfaction.

Keywords: Seminar teaching method; CBL teaching method; PBL teaching method; Oral clinical nursing teaching

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1. Introduction

There are various diseases in clinical dentistry with complicated nursing points and high skills requirements for nursing staff. In oral clinical nursing teaching, conventional teaching methods focus on explaining theoretical knowledge and mainly rely on passive learning, which makes it challenging to mobilize nursing students' learning enthusiasm, resulting in an average teaching effect^[1,2]. Case-based learning (CBL) and problem-based learning (PBL) teaching methods are novel teaching models for clinical nursing teaching, which can increase the interest in teaching and give full play to the dominant position of nursing students. On this basis, combining with the seminar teaching method can improve nursing students' ability to apply theoretical knowledge, enhance their operational skills, problem analysis, and problem-solving skills, achieve the teaching goal of mutual teaching, and improve the teaching quality of oral care majors^[3]. Based on this, this study selected 26

dental nursing interns to analyze the teaching significance of the seminar + CBL + PBL teaching method.

2. Materials and methods

2.1. General information

13 nursing students who entered the department from September 2020 to September 2021 were selected as the control group, including 2 males and 11 females; their ages range from 19 to 23 years old, with an average of 21.25 ± 1.32 years. 13 nursing students who entered the department from September 2021 to August 2022 were selected as the observation group, including 3 males and 10 females; their ages range from 20 to 23 years old, with an average of 21.86 ± 1.22 years. After data comparison, it was recorded as $P > 0.05$.

2.2. Methods

The control group adopted routine nursing teaching methods. The teachers systematically explained theoretical knowledge according to the teaching syllabus, set up one skill operation course every week, and conducted a unified assessment after the teaching. The observation group adopted the seminar + CBL + PBL teaching method. The specific process is as follows.

2.2.1. Developing a teaching plan

- (1) Determining the topic selection: Based on the training syllabus prescribed by the oral care specialty, the teaching topic was initially formulated based on the actual clinical critical and complex cases. Teachers actively communicated with nursing students and selected teaching cases based on their subjective wishes and personal preferences. One to two weeks before the teaching, the nursing students were informed of the teaching topics and teaching cases for their preparation.
- (2) Literature review: The teaching topics and related cases were distributed to nursing students in written and electronic forms, and they reviewed the literature together, summarized case-related literature, disease progress, and the latest information, and formed a written document.
- (3) Group discussion: The nursing students were divided into groups, each group with 4 to 5 nurses, and asked to make a PowerPoint presentation. During the class, representatives of each group of nursing students reported the medical history of the case, and the teacher introduced the latest domestic and foreign literature based on the diagnosis and treatment process and disease development to explain the case's research progress. The nursing students were encouraged to speak freely, conduct in-depth discussions, and create a positive atmosphere for communication. During this period, the teacher was responsible for inspiring and guiding the nursing students, controlling the rhythm of the class, and providing timely tips to the nursing students. After the discussion, the teacher summarized the results and set questions, requiring nursing students to answer them during class.

2.2.2. Strengthening teacher training and teaching management

- (1) Teacher training: The teaching team comprised dental nursing staff with a high professional level and enthusiasm for teaching as well as a strong sense of responsibility. Before teaching, skills training was organized for the teaching team to participate in, focusing on explaining the teaching process, teaching purposes, and implementation points of the three teaching methods, improving their business capabilities, and cultivating their cooperative spirit. Teachers were dispatched from time to time to participate in teaching exchange activities so that they could master the latest teaching concepts and methods. The training mechanism was implemented in the form of a "supervisor-training management

institution-training plan-teacher-assessment system” to comprehensively improve the comprehensive capabilities of teachers.

- (2) Teaching management: The professional abilities of teachers were regularly evaluated, including teaching level, teaching attitude, and classroom atmosphere; nursing students conducted self-evaluation, including active learning skills, pre-class preparation, learning interest, communication skills, and diagnostic skills; at the same time, the teaching effect was evaluated, including knowledge learning initiative, clinical thinking, basic knowledge mastery, and practical skills. Based on the above evaluation results, the current teaching methods were flexibly adjusted, continuously optimizing the teaching model.

2.3. Observation indicators

Standardized assessments were carried out in a closed-book format, including theoretical knowledge (40 points), case assessment (20 points), and professional operational skills (20 points). The case assessment included class discussion performance and classroom participation enthusiasm; professional operational skills were assessed by nursing students randomly selecting operational questions, completing the assessment items independently, and evaluating them based on the scoring standards. A teaching satisfaction questionnaire was also distributed to nursing students. The items include (1) Skill improvement category: cultivating clinical thinking, improving problem analysis and solving skills, strengthening language expression, enhancing literature compilation and analysis skills, improving operational skills, and applying theoretical knowledge; (2) Teaching effectiveness category: classroom interestingness, teaching flexibility, practicality of teaching content, diversity of teaching methods, and teaching participation. Each item was worth 10 points, it was considered satisfied if exceeding seven points.

2.4. Statistical analysis

The data were processed by SPSS28.0 software. The measurement values were compared/tested using a *t* value, and the count values were compared/tested using an χ^2 value. Statistical significance was calculated as a *P* value less than 0.05.

3. Results

3.1. Comparison of assessment scores of the two groups

The assessment scores of nursing students in the observation group were higher than those in the control group (*P* < 0.05), as shown in **Table 1**.

Table 1. Comparison of assessment scores of the two groups [mean ± standard deviation (SD)/points]

Group	Number of students	Theoretical knowledge	Case assessment	Professional operating skills	Total score
Observation group	13	34.15 ± 2.35	16.32 ± 1.84	35.34 ± 2.11	85.81 ± 3.75
Control group	13	29.16 ± 2.27	13.02 ± 1.80	30.05 ± 2.08	72.23 ± 3.66
<i>t</i>	-	5.507	4.622	6.437	9.344
<i>P</i>	-	0.000	0.000	0.000	0.000

3.2. Comparison of teaching satisfaction between the two groups

The nursing students' satisfaction with teaching in various aspects of the observation group was higher than that of the control group ($P < 0.05$), as presented in **Tables 2** and **3**.

Table 2. Comparison of satisfaction between the two groups with skill-improving teaching [n (%)]

Group	Number of students	Development of clinical thinking	Improvement of problem analysis and solving skills	Improvement of language expression	Improvement of literature sorting and analysis skills	Improvement of operation skills	Application of theoretical knowledge
Observation group	13	12 (92.31)	11 (84.62)	11 (84.62)	12 (92.31)	11 (84.62)	12 (92.31)
Control group	13	7 (53.85)	6 (46.15)	6 (46.15)	6 (46.15)	6 (46.15)	7 (53.85)
χ^2	-	4.887	4.248	4.248	6.500	4.248	4.887
P	-	0.027	0.039	0.039	0.011	0.039	0.027

Table 3. Comparison of satisfaction between the two groups with teaching effectiveness [n (%)]

Group	Number of students	Classroom interestingness	Teaching flexibility	Practicality of teaching content	Diversity of teaching methods	Teaching participation
Observation group	13	11 (84.62)	10 (76.92)	11 (84.62)	12 (92.31)	12 (92.31)
Control group	13	6 (46.15)	5 (38.46)	6 (46.15)	7 (53.85)	6 (46.15)
χ^2	-	4.248	3.939	4.248	4.887	6.500
P	-	0.039	0.047	0.039	0.027	0.011

4. Discussion

Oral clinical nursing teaching is a practice-oriented teaching model involving multi-disciplinary knowledge such as nursing and stomatology. Nursing staff must have superb nursing skills and clinical judgment to respond flexibly and correctly to nursing practice problems^[4,5].

The seminar teaching method is a method that can be used by small groups to conduct interactive academic discussions. Under the guidance of teachers, they can jointly research and discuss specific topics, cases, or literature materials and encourage nursing students to share their opinions, ask questions, and participate in discussions^[6,7]. Its goal is to cultivate nursing students' critical thinking, problem analysis, and communication skills, enabling them to understand the course content through efficient teacher-student interaction. CBL teaching method is a case-based learning method, which introduces cases in actual situations into the course and guides nursing students to learn course content by solving case problems^[8]. Most cases are real or simulated scenarios closely related to practical problems. Its goal is to cultivate nursing students' abilities in problem-solving, decision-making, and knowledge application. It can improve nursing students' ability to apply theoretical knowledge to practical situations by systematically learning actual cases. PBL teaching method is a problem-based learning method that guides nursing students to independently explore open problems in groups, collect information, propose hypotheses, solve problems, and then present their solutions to teachers. Its goal is to cultivate independent learning, teamwork, and critical thinking skills, allowing nursing students to learn new knowledge and concepts through independent problem-solving.

This study adopted the seminar + CBL + PBL teaching method for dental internship nursing students, which can give full play to the advantages of each teaching method and improve the overall teaching quality.

The results showed that the observation group's various assessment scores were higher than those of the control group; the observation group's teaching satisfaction was higher than those of the control group ($P < 0.05$). The reason is that the three teaching methods have advantages and disadvantages. They can learn from each other's strengths, maximize them, change the monotonous and extensive conventional teaching model, create authentic learning situations, conduct detailed and comprehensive case analyses, and then guide nursing students to actively participate in classroom teaching to improve the mastery of theoretical knowledge and operational skills. This teaching model has the characteristics of scientificity, rationality, and practicality. It can transform theoretical knowledge into practical skills, improve nursing students' in-depth thinking ability, and enable them to carry out problem-oriented practical operations and have an in-depth understanding of relevant knowledge points. In addition, teachers ask important and difficult questions to nursing students during teaching and explain and answer nursing students' questions in detail. This can stimulate nursing students' literature review and sorting skills, thereby improving the quality of teaching and gaining high satisfaction from nursing students.

5. Conclusion

The seminar teaching method is a seminar-style teaching model. It is a teaching method in which teachers and a group of students jointly discuss a preset topic. There is close exchange, interaction, and communication between teachers and students. The seminar teaching method has the advantages of increasing learning enthusiasm, enhancing exploration potential, carrying out multi-level and multi-dimensional interactions, etc., and playing a role in deepening the understanding and recognition of a certain knowledge point. Teachers and students discuss the preset topics together, with the teachers also conducting targeted teaching. Through discussion and communication between teachers and students, the rigidity and singleness of traditional conventional teaching methods are greatly avoided, and students' learning ability and passion for learning are comprehensively improved. By consulting a large amount of literature and reading professional books for discussion, students can better grasp the development direction of the subject, comprehensively and deeply think about the problems, expand their ideas, and improve their innovation ability. PBL is a kind of new problem-centered situation-creating learning method that emphasizes being student-centered and problem-oriented, teaching around problems, and training students' ability to solve problems through independent inquiry or teamwork. Teachers ask questions before or after class and allow students to research the answers to the questions after class. This not only trains students' active learning ability but also helps students understand and remember the questions. This teaching method encourages students to actively discuss and speak freely in class and boldly express their ideas and solutions to problems. It can train students' oral expression skills and self-confidence and has a certain role in promoting students' growth. It can also strengthen students' ability to solve problems independently and emphasize the cultivation of their independent abilities, which is very useful in both study and life. CBL is a case-based learning method that is teacher-centered, and the teaching focuses on case analysis. By displaying cases, all students are mobilized to participate in the discussion and analysis of the cases. Subsequently, the teacher's comments and guidance are used to achieve the purpose of learning. CBL effectively trains medical students by exposing them to real clinical cases. The clinical thinking ability of medical students makes boring clinical learning more interesting and real, effectively helping students apply the knowledge they have learned to solve problems encountered in practical work and laying the foundation for future clinical and scientific research work.

In summary, implementing the seminar + CBL + PBL teaching method during oral clinical nursing teaching can achieve better teaching results and be used as a regular model for oral nursing teaching.

Disclosure statement

The authors declare no conflict of interest.

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