

Study on the Effect Evaluation of the Application of Various Teaching Methods in the Practice Teaching of Emergency Rescue Room for Nursing Students

Wu Qing^{1,2*}, Minerva Bravo De Ala^{1#}, Li Yang³

¹School of Nursing, Philippine Women's University, Manila, Philippine

²Nursing Department, Xuzhou Medical Higher Vocational School, Xuzhou, China

³Gynecological Ward (N6), Affiliated Hospital of Xuzhou Medical University, Xuzhou, China

Email: *986523290@qq.com

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Abstract

Objective The purpose of this study is to apply the CBL, PBL and CBL + PBL teaching models to the clinical practice teaching of nursing interns in the emergency rescue room, and evaluate the effect, so as to find a better teaching model for the practice of nursing interns in the emergency rescue room in China and provide a theoretical research basis for it. **Methods** The random number method was used to select 100 nursing interns in the emergency rescue room of the affiliated hospital of Xuzhou Medical University from August to December 2020 for regular group, PBL group, CBL group and CBL + PBL group teaching methods were used for clinical practice teaching, and qualitative research was used to compare the effects of the four groups of nursing students in the practice teaching in the emergency rescue room. **Results** CBL + PBL teaching method can be applied in the practice teaching of nursing students in the emergency rescue room, which can stimulate the learning interest of nursing students, improve their ability to learn actively, improve their team cooperation ability, and expand their knowledge. **Conclusion** CBL + PBL teaching method is helpful to improve the comprehensive ability of nursing students and improve their professional competence in the future.

Keywords

Emergency Rescue Room, Nursing Interns, Various Teaching Methods

*First author.

#Corresponding author.

1. Introduction

The emergency department is the front line of the hospital to save the lives of patients. It is the department with the most urgent, critical and critical patients, the most diseases, and the most important rescue and management tasks (Li et al., 2013; Yu et al., 2012). At the same time, the emergency nursing work is characterized by fast timeliness, strong practicality, complex work, high risk, and high service requirements. It requires that the emergency nursing staff must have comprehensive knowledge, rapid response, and decisive decision-making ability. Therefore, how to cultivate an excellent emergency nursing staff becomes an urgent matter. In addition, clinical practice is the deepening and extension of school education, the necessary stage for nursing students to move from students to nursing posts, and the transfer station for nursing students to transform theoretical knowledge into practical ability. Therefore, how to teach nursing interns in the emergency department has become an urgent matter, and it has become the top priority to cultivate an excellent emergency nursing talent.

At present, the traditional teaching mode of nursing interns in emergency department is one-to-one teaching mode. This teaching mode has many advantages. The teacher plays a leading role in setting an example without letting go, and imparts knowledge and technology to nursing students by example. However, with the progress and development of scientific and cultural level, the arrival of the era of big data and the new requirements of human health cause for medical student training, clinical teaching methods and models are also gradually changing (Zhang et al., 2017). The innovation of teaching methods can help medical students consolidate their theoretical knowledge and lay a foundation for cultivating students' scientific clinical thinking. In recent years, two new teaching models have gradually come into people's sight—problem-centered teaching method and case-based teaching method.

The problem-based learning (PBL) theory was founded by Professor Barrows of the United States in 1969 (Zhao & Guo, 2017; Tian et al., 2014). It is a teaching method that takes students as the teaching center and teachers as guides, and has been respected and used in many medical colleges and universities; case-based learning (CBL) means that teachers create learning situations for students with representative cases and guide students to discuss and analyze their cases to master relevant theoretical knowledge (Yang et al., 2016). These two teaching modes have the advantages of novel concepts, unique teaching methods and the cultivation of learners' personal comprehensive strength. They are favored by medical educators all over the world and have become the focus of exploration and innovation of medical teaching methods in China in recent years (Liang et al., 2009; Wang & Zhao, 2009).

The purpose of this study is to apply PBL, CBL, and PBL + CBL teaching models to the clinical internship teaching of emergency rescue room interns, and compare the effectiveness, in order to find a better teaching model for interns in emergency rescue rooms in China and provide a theoretical research basis.

2. Methodology

Method

100 Nursing interns who interned in the emergency room of Xuzhou Medical University Affiliated Hospital from August to October 2020 were selected and randomly divided into the conventional group, PBL group, CBL group, and PBL + CBL group, with 25 people in each group. Inclusion criteria: 1) nursing interns with a college degree or above; 2) the research subject has been in clinical practice for more than half a year; 3) have a good state of consciousness and voluntarily participate in this study. Exclusion criteria: 1) nursing interns with a college degree or below; 2) the research subject has been interning in clinical practice for less than half a year; 3) has a good state of consciousness and is unwilling to participate in this study. Two students were selected from four groups using random number method, with a total of 16 students conducting qualitative interviews. The sample size follows the principle of data saturation in qualitative research, that is, the information of the interviewees is repeated, and no new theme is presented in data analysis (Grossoehme, 2014).

The 16 nursing interns were randomly coded N1 - N16, and their basic information is shown in **Table 1**. A semi-structured interview contents include: understanding of teaching methods, advantages and disadvantages of teaching methods, and suggestions on teaching methods. The interview was conducted in a quiet and undisturbed environment for 25 - 30 minutes using the semi-structured interview method in qualitative research. The interview process was recorded by

Table 1. The 16 nursing interns' the basic information.

Number	Gender	Age	Education
N1	F	21	Undergraduate
N2	F	22	Undergraduate
N3	F	22	Undergraduate
N4	F	21	Undergraduate
N5	M	22	Undergraduate
N6	F	21	Junior
N7	F	21	Undergraduate
N8	M	21	Junior
N9	F	22	Undergraduate
N10	F	20	Junior
N11	M	20	Undergraduate
N12	M	21	Junior
N13	F	20	Undergraduate
N14	F	20	Junior
N15	F	20	Undergraduate
N16	F	22	Junior

combining observation, recording and transcript. After the interview, the applicant sorted out the data and analyzed it with Colaizzi to form a structured description and imaginative interpretation (Li, 2007).

Through the form of questionnaire, we investigated the four groups of intern nursing students: traditional, PBL, CBL, PBL + CBL, mainly to understand the cognition degree and results of nursing students on teaching problem design, teaching content, teaching form and teaching effect. Through the comparison of traditional, PBL, CBL, PBL + CBL, four groups of nursing students' theoretical examination, operation and specialized skills examination, and nursing students' teaching ability examination, the better clinical practice teaching mode in emergency rescue room is sought by using statistical analysis.

Statistical analysis was conducted using SPSS16.0 statistical software, with data expressed as mean \pm standard deviation ($\bar{x} \pm s$). One way ANOVA was used to compare multiple experimental groups with a control group using the Dunnett test. The comparison between experimental groups was conducted using the Newman keuls test $\alpha = 0.05$ is the test level, and $P < 0.05$ indicates a statistically significant difference.

3. Data Analysis and Interpretation

3.1. Qualitative Research

3.1.1. Through Qualitative Research, We Have Found That PBL or CBL Teaching Methods Are Worth Popularizing and Applying in the Teaching of Emergency Nursing Students

CBL teaching method is a new teaching method different from the traditional teaching method, which embodies the new teaching concept and can make everyone have a full understanding and understanding of their knowledge points. The students have not had enough contact with them before. N3: Personally, I think this teaching method is still very good, although I haven't contacted it before. N11: Although I haven't heard of this kind of teaching method before and haven't been exposed to it much, I think it is very novel and innovative, and I like it very much. N16: I feel that the effect is very good. First of all, this teaching method is very novel, and can deepen our understanding of knowledge points, deepen our impression of knowledge points. When we see similar patients in clinical practice, we can immediately recall the previous case.

3.1.2. PBL or CBL Teaching Methods Stimulate Learning Interest and Improve the Ability of Autonomous Learning

CBL teaching method strengthens the practice between theoretical knowledge and cases, so that students are no longer just passively accepting the knowledge instilled by teachers in the process of learning. And before the teaching activity begins, the applicant will distribute the case to the students (Song & Zou, 2012; Liang & Li, 2011). For the problems in the case, the students will consult the relevant information according to their own knowledge, so that they can stimulate the students to actively study and discuss. N2: I think we used to learn from

books by rote, and it is not easy to use it in clinical practice. But through this learning method, I naturally wrote down a lot of knowledge points, and learned how to apply these knowledge points to clinical practice, and gained a lot. N3: We deepened our learning impression through group discussion, and felt that everyone wanted to understand a certain problem, through discussion, literature review, etc. And we feel that when we see real patients after clinical treatment, we will think of the cases we have learned before. N5: I feel that this teaching method makes us more willing to learn, more eager to understand the knowledge we didn't understand before, and feel that everyone wants to express their views during the discussion. The atmosphere is very active. N12: I think it's more interesting than just listening to the teacher and the students.

3.1.3. PBL or CBL Teaching Methods Improve the Communication Ability and Teamwork Spirit among Nursing Students

This teaching method first proposes a case, and students use their knowledge to access relevant information and analyze problems. Because everyone has different ideas and opinions, it requires communication and strong evidence to let others accept their views (Yang et al., 2016). This teaching method is based on groups, which is independent and cooperative. It changes individual learning into cooperative learning, which is conducive to cultivating the team spirit of students. N1: I feel that after this class, we are more willing to discuss problems together, and we are willing to tell my classmates what we don't understand or what new ideas we have. N4: Through the form of group discussion, let's all get involved. Everyone can say their own ideas and really feel that they can learn something from others. N6: We can often communicate some problems we think of anytime and anywhere through WeChat group. It feels great. N15: As the saying goes, "everyone gathers firewood, the fire is high". The strength of the team is far higher than that of the individual. The form of group discussion is very effective. I feel that we are more willing to share our thoughts with others.

3.1.4. PBL or CBL Teaching Methods Expand the Knowledge of Nursing Students and Improve the Ability to Consult Literature

Before the teaching activities, the nursing students should consult the relevant literature for various questions raised by clinical cases. In this process, we can not only solve problems, but also grasp relevant knowledge more comprehensively, thoroughly and profoundly, expand the scope of knowledge, and improve the ability of literature search and analysis. N3: I learned a lot in the process of consulting books and documents. Every knowledge point should be checked by myself as long as it is not understood, and I feel it is not easy to forget afterwards. Most importantly, I feel that my understanding of these diseases is deeper than before. N5: I was not particularly skilled in literature retrieval before, but through this study, I feel that my ability to retrieve literature has improved, and I am more skilled than before, especially in advanced search. N9: I feel that the knowledge gained through reading books and documents is like what I think, not what I learned. N10: We have spent a lot of time looking up these cases. We

have done a lot of work to understand them.

In summary, through qualitative research, we have found that PBL and CBL methods encourage students to actively participate in the learning process and acquire knowledge by solving practical problems or cases. This proactive learning approach can enhance students' learning motivation and autonomous learning ability. Both PBL and CBL methods are usually conducted in small groups, where students collaborate to solve problems or analyze cases. This type of teamwork can promote students' communication and cooperation abilities, and cultivate a spirit of teamwork. More importantly, PBL and CBL methods focus on applying theoretical knowledge to practical problems or cases. By solving practical problems or analyzing real cases, students can better understand and apply the knowledge they have learned, and improve their practical abilities. The most important thing is that PBL and CBL methods emphasize the cultivation of comprehensive abilities, including problem-solving ability, critical thinking ability, and teamwork ability. These abilities are crucial for the career development of medical students.

Therefore, PBL or CBL can improve the teaching effectiveness of nursing interns more than traditional teaching.

3.2. Quantitative Research

The content of this study is mainly through the comparison of the traditional, PBL, CBL, PBL + CBL four groups of nursing students' theoretical examination, operation and specialized skills examination, and nursing students' teaching ability examination (Table 2). SPSS16.0 is used for statistical analysis, and single-factor analysis of variance is used, $P < 0.05$ has statistical significance (Table 3).

Table 2. Four groups of nursing students' theoretical examination, operation and specialized skills examination, and nursing students' teaching ability examination scores.

Results Groups	Regular	PBL	CBL	PBL + CBL
Scores	75.0 ± 5.5	80.3 ± 3.5	81.6 ± 3.2	88.0 ± 3.6

Table 3. One-way factor analysis of variance for comparison between any two groups.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (Combined)	2141.870	3	713.957	34.847	0.000
Linear Term Contrast	2036.162	1	2036.162	99.382	0.000
Deviation	105.708	2	52.854	2.580	0.081
Within Groups	1966.880	96	20.488		
Total	4108.750	99			

Note: Significant [Between Groups (Combined)] at $P < 0.000$.

Through the above quantitative research, $P < 0.05$ indicates statistical significance, indicating that PBL + CBL has a better teaching effect compared to other groups and has a significant difference.

4. Conclusions

Through qualitative research on clinical teaching of emergency room intern nurses, we found that both CBL and PBL methods are more effective than the unified one-on-one teaching method. Firstly, PBL and CBL methods encourage students to actively participate in the learning process and acquire knowledge by solving practical problems or cases. This proactive learning approach can enhance students' learning motivation and autonomous learning ability. Secondly, PBL and CBL methods are usually conducted in small groups, where students collaborate to solve problems or analyze cases. This type of teamwork can promote students' communication and cooperation abilities, and cultivate a spirit of teamwork. Thirdly, PBL and CBL methods focus on applying theoretical knowledge to practical problems or cases. By solving practical problems or analyzing real cases, students can better understand and apply the knowledge they have learned, and improve their practical abilities. Fourthly, PBL and CBL methods emphasize the cultivation of comprehensive abilities, including problem-solving ability, critical thinking ability, and teamwork ability. These abilities are crucial for the career development of medical students. Finally, PBL and CBL methods can utilize various learning resources, such as literature, case libraries, simulated cases, etc. This can provide more diverse learning resources and enrich students' learning experience.

Through quantitative research, we found that the PBL combined with CBL teaching method combines the advantages of problem-based learning and case-based learning, providing a more comprehensive learning experience. Students can acquire knowledge by solving practical problems, or apply their knowledge by analyzing real cases, thereby comprehensively improving their learning abilities. In addition, the combination of PBL and CBL teaching methods can encourage students to think deeply and explore problems or cases, thereby achieving deeper learning. Students need to solve problems or analyze case studies through self-directed learning, teamwork, and practical application, which helps them deepen their understanding and mastery of knowledge. At the same time, the combination of PBL and CBL teaching methods can fully utilize various learning resources, such as literature, case libraries, simulated cases, etc. This can provide more diverse learning resources, enrich students' learning experience, and help them better understand and apply the knowledge they have learned. Especially, the PBL combined with CBL teaching method focuses on cultivating students' comprehensive abilities, including problem-solving ability, critical thinking ability, team cooperation ability, etc. By solving problems and analyzing cases, students can exercise these abilities and lay a solid foundation for their future career development.

Therefore, applying the PBL + CBL teaching method in a reasonable, compliant, and appropriate manner to the clinical practice teaching of emergency nursing interns can truly improve their clinical practice skills, enhance their comprehensive emergency response ability, adapt to the future work of emergency nurses more quickly, and provide patients with higher quality, faster, and accurate nursing services. Of course, this project is a single center study with certain limitations, and further research and argumentation from multiple centers are needed. However, in any case, this study provides a theoretical basis for the reform of clinical teaching methods in China.

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The Name of the Ethics Committee

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Conflicts of Interest

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

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