Using the Clinical Teaching of Traditional Chinese Medicine Surgery as an Example-Exploration of the Implementation of BOPPPS Teaching Reform

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Abstract

BOPPPS teaching model is a student-centered teaching model that can effectively improve the effect of classroom learning. This study innovatively applied the BOPPPS teaching model in the clinical teaching of the core course "Traditional Chinese Medicine Surgery" in the specialty of Traditional Chinese Medicine Surgery. By implementing a systematic approach consisting of Introduction, Learning Objectives, Pre-assessment, Active Learning, Post-assessment, and Summary, the teaching achieved desirable outcomes. The evaluation of teaching effectiveness indicated significant improvements in students' perceptions of teachers, academic self-perception, environmental perception, social self-perception, and the overall DREEM scale score. Moreover, there were notable enhancements in subjective initiative, teaching inspiration, and comprehensive analytical abilities.

Keywords

BOPPPS Teaching Model, Surgery in Traditional Chinese Medicine, Teaching Effectiveness, Teaching Satisfaction

1. Introduction

Surgery in Traditional Chinese Medicine, as an important branch of Chinese medicine, holds a significant position in cultivating clinical talents in TCM. However, with the development of time and changes in educational approaches, traditional teaching methods have become insufficient to meet the learning

needs of modern students. The BOPPPS teaching model, characterized by a student-centered approach that emphasizes student engagement, exploration, and communication, has garnered widespread attention. Applying the BOPPPS teaching model to clinical teaching in Traditional Chinese Medicine Surgery holds crucial practical and educational significance in optimizing teaching effectiveness, enhancing students' learning interest, and promoting their enthusiasm for learning.

BOPPPS model is a kind of feedback curriculum design model that emphasizes student-centered and pays attention to teaching interaction. This model is based on constructivism theory, dialogue teaching theory and ternary interactive determinism. This model can effectively ensure the subject status of students in the teaching process, guide students to think actively, and carry out comprehensive analysis and application from multiple angles, knowledge assimilation and transfer, and gradually form clinical thinking in this process, which is consistent with our clinical training objectives.

In surgical clinical teaching, fostering students' independent clinical thinking ability is of utmost importance in the educational endeavor. However, the traditional surgical clinical teaching model currently faces issues such as passive student acceptance and vague teaching objectives, resulting in less-than-satisfactory clinical competency (Gao & Li, 2017). To improve the quality of clinical teaching in Traditional Chinese Medicine Surgery and enable students to better grasp both the theoretical and practical skills of surgery, scholars have frequently employed the BPL teaching model, Seminar teaching model, and case-based teaching methods in clinical teaching, yielding notable achievements. Nonetheless, these methods also suffer from limitations such as time and space constraints and hindered communication between teachers and students. Therefore, exploring new teaching models to promote the cultivation of students' independent clinical thinking has become a crucial task (Huang et al., 2018).

The present study aims to apply the BOPPPS teaching model to surgical clinical teaching in Traditional Chinese Medicine, exploring its application effects in enhancing students' clinical thinking ability and optimizing teaching effectiveness. Through in-depth exploration and comparison, the study hopes to provide valuable references and insights for the reform of surgical clinical teaching in Traditional Chinese Medicine, contributing to the enhancement of the quality of clinical talent cultivation in TCM.

2. BOPPPS Teaching Model

The BOPPPS model is an effective instructional design model proposed by the Instructional Skills Workshop (ISW), with its core concept based on active learning (Ying, 2017). The model emphasizes student-centered teaching methods and interactive guidance, considering people's attention span of approximately 15 minutes, to achieve additive education.

Teaching objectives are the core of course design, determining the standards of

students' learning output, and influencing the design of teaching models and assessment methods. In concrete teaching design, main teaching components and methods are chosen based on the instructional course objectives, to help students achieve the desired learning outcomes. Appropriate assessment methods and evaluation measures are utilized to assess the achievement of course objectives.

BOPPPS model is a student-centered teaching model based on the theory of constructivism and communication method. It consists of six parts: 1) Introduction (bridging-in), which introduces the teaching content of this class through problems and cases to attract students' interest in learning; 2) Learning objectives: clarify the teaching objectives of this class; 3) Pre-assessment: through the pre-test to understand the students' preparatory knowledge and ability to lay a foundation for the follow-up teaching; 4) Participatory learning: it is the main link of classroom teaching, so that students can take the initiative to learn and master relevant knowledge; 5) Post-assessment: to know whether the teaching objectives have been achieved by various means; 6) summary: Summarize the content of the class to help students reflect on their own mastery (Liu et al., 2019). It makes students learn, do and give feedback while realizing the organic combination of theory and practice. There are two core points: one is to emphasize students' all-round participation in learning rather than just listening; second, students' feedback information should be obtained in time to adjust the follow-up teaching activities (Shen et al., 2016).

3. Research Design and Methods

3.1. Study Design

This study adopted a pre-posttest experimental design, comparing the BOPPPS teaching model with the traditional teaching model to evaluate the application effectiveness of the BOPPPS teaching model in surgical clinical teaching in Traditional Chinese Medicine (TCM). The observation group was taught using the BOPPPS teaching model, while the control group continued with the traditional teaching model. By comparing the performance and learning outcomes of the two groups of students during the teaching process, the teaching effectiveness of the BOPPPS teaching model was determined.

3.2. Participants

A total of 12 teachers and 120 students majoring in Traditional Chinese Medicine (including courses on Traditional Chinese Medicine Surgery) participated in this study. Among them, 60 students were assigned to the observation group, and the other 60 students were assigned to the control group. All participating students were majoring in Traditional Chinese Medicine and had similar academic backgrounds and levels of knowledge.

3.3. Teaching Content and Implementation

The teaching content used in this study was the clinical teaching content of

"Traditional Chinese Medicine Surgery". The observation group was taught using the BOPPPS teaching model, which includes Introduction (Bridge), Learning Objectives (Objective), Pretest (Pretest), Active Learning (Participation), Posttest (Posttest), and Summary (Summary). The control group continued with traditional teaching methods, namely, bedside teaching and case explanations.

3.4. Data Collection and Analysis

During the teaching process, student participation and performance in the classroom were recorded through teaching observations. After the teaching sessions, a questionnaire survey was conducted to collect students' and teachers' evaluation opinions on the teaching model. The collected data included assessment data on students' satisfaction with teaching, learning interest, perceptions of teachers, academic self-perception, environmental perception, and social self-perception. The teacher questionnaire survey mainly included evaluation opinions on the BOPPPS teaching model's effectiveness in improving subjective initiative, teaching inspiration, and comprehensive analytical abilities.

3.5. Statistics

The collected data were subjected to statistical analysis. The questionnaire data were entered, organized, and exported using Epidata 3.1. Data analysis was performed using SPSS 24.0. Non-parametric data were analyzed using the Mann-Whitney U test (Wilcoxon rank-sum test), while categorical data were analyzed using Fisher's exact probability test. A significance level of $P < 0.05$ was used to indicate statistical significance.

4. Results

Compared with the control group, the observation group showed significant increases in students' perceptions of teachers, academic self-perception, environmental perception, social self-perception, and the overall DREEM scale score ($P<0.05$). The results are shown in Table 1.

4.1. DREEM Scale Analysis

Sample size consisted of 60 students, divided into an observation group and a control group, with each group comprising 60 students. The DREEM (Dundee

Table 1. Two-group DREEM scale analysis (n = 60).

Group	n	Perception of Learning	Perception of Teachers	Academic Self-Perception	Perception of Environment	Social Self-Perception	Total DREEM Score
Observation Group	60	38.4 ± 2.1	29.0 ± 2.1	26.7 ± 2.3	30.2 ± 2.2	13.7 ± 2.3	138.0 ± 3.8
Control Group	60	37.8 ± 2.3	21.6 ± 2.0▲	20.3 ± 1.9▲	26.1 ± 2.0▲	8.4 ± 2.2▲	114.2 ± 3.2▲

Note. Values are presented as Mean ± Standard Deviation (SD). ▲Indicates statistically significant differences between the observation group and the control group (*$P < 0.05$).

Ready Education Environment Measure) scale encompasses five dimensions: "Perception of Learning", "Perception of Teachers", "Academic Self-Perception", "Perception of Environment", and "Social Self-Perception". Scores for each dimension are represented using the mean and standard deviation (Mean ± Standard Deviation).

From Table 1, it is evident that the observation group outperformed the control group in all five dimensions, with mean scores of 38.4, 29.0, 26.7, 30.2, and 13.7, respectively. The observation group achieved a total DREEM score of 138.0. In contrast, the control group scored lower than the observation group in all dimensions except "Perception of Learning", with mean scores of 37.8, 21.6, 20.3, 26.1, and 8.4, respectively. The control group's total DREEM score was 114.2. Statistical significance, denoted by "▲" and accompanied by annotations, indicates that the control group's scores in "Perception of Teachers", "Academic Self-Perception", "Perception of Environment", and "Social Self-Perception" were significantly lower than those of the observation group, with a significance level of ($P < 0.05$).

Based on this data, it can be concluded that the observation group exhibited superior performance across all dimensions of the DREEM scale, particularly in their perceptions of teachers, the academic environment, and social aspects. This suggests a positive impact of the BOPPPS teaching reform when applied to clinical teaching in traditional Chinese medicine surgery, enhancing students' perceptions and learning experiences.

4.2. Comparison of Teaching Effectiveness-Related Indicators

Compared with the control group, the observation group showed significant improvements in subjective initiative, teaching inspiration, comprehensive analytical abilities, and overall teaching satisfaction ($P < 0.05$). The results are shown in Table 2.

5. Summary

This study demonstrates that the observation group, which employed the BOPPPS teaching model in the clinical teaching of the core course "Traditional Chinese Medicine Surgery", achieved desirable teaching effectiveness. Significant improvements were observed in students' perceptions and experiences of the teaching environment, and the teaching effectiveness of the observation group

Table 2. Teacher Questionnaire—Summary of teacher questionnaire survey results (n = 12).

Group	n	Improve subjective initiative	Improve the inspiration of teaching	Improve comprehensive analysis ability
Observation Group	12	11 (91.67%)	10 (83.33%)	12 (100.00%)
Control Group	12	5 (41.66%)	2 (16.67%)	3 (25.00%)

was recognized and satisfied by students and teachers alike. The BOPPPS teaching model holds certain advantages in the clinical teaching of Traditional Chinese Medicine Surgery. Therefore, its characteristics and experiences can be utilized for exploring other teaching models and methods suitable for TCM disciplines. In educational reforms, attention should be given to students' subject status, fully mobilizing their learning enthusiasm and creativity, and stimulating their interest in learning. Meanwhile, teachers should enhance teaching preparation, improve teaching quality, provide more learning resources and support, and help students achieve better learning outcomes. Educational reform is a long-term and complex process, requiring joint efforts from teachers and students and support and promotion from schools and educational authorities. Through continuous exploration and innovation, clinical teaching in Traditional Chinese Medicine Surgery can be further optimized, and teaching quality and students' learning experiences can be improved.

In general, the BOPPPS teaching model demonstrates certain application potential and advantages in surgical clinical teaching in Traditional Chinese Medicine and is worth further promotion and application. In educational reforms, student-centeredness, optimization of teaching quality, and learning experiences should be emphasized. Continuous exploration and innovation are key to improving the teaching level and quality of Traditional Chinese Medicine disciplines.

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Conflicts of Interest

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

References

Gao, Y., & Li, L. (2017). Exploration of the BOPPPS Model in Clinical Practice Teaching. *Medical Education Research and Practice, 25,* 963-966.

Huang, X., Cao, Z., Zhang, F., & Li, S. (2018). Application of PBL Teaching Method Based on WeChat Platform in Medical Laboratory Internship Teaching. *Medical Examination and Clinical Practice, 15,* 3798-3800.

Liu, Q., Wang, X., Zhou, H., Yuan, J., Wang, L., & Xue, X. (2019). Application of the BOPPPS Teaching Model in Clinical Teaching of Traditional Chinese Medicine Internal Medicine. *World Latest Medical Information Digest, 19,* 363-364.

Shen, X., Wang, L., & Feng, X. (2016). Application of the BOPPPS Teaching Method in Theoretical Teaching of Western Medical Diagnosis. *Chinese Higher Medical Education, No. 7,* 99-100.

Ying, L. (2017). Application of the BOPPPS Teaching Model in Medical Ethics Teaching. *Chinese Journal of Medical Ethics, 30,* 352-354+358.