

Case Study

Application of Problem-Based Learning in Anesthesiology Education for International Students: A Case Study

Yaoxin Yang^{1,2}, and Weiwei Wu^{1*}¹Department of Anaesthesiology, West China Hospital of Sichuan University, China²Research Center of Anaesthesiology, West China Hospital, Sichuan University, China***Corresponding author**

Weiwei Wu, Department of Anaesthesiology, West China Hospital of Sichuan University, Chengdu, 610041, China

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Abstract

This study explores the application of Problem-Based Learning (PBL) in an anesthesiology course, analyzing its effectiveness in enhancement of self-directed learning, clinical reasoning, and teamwork skills in international medical students. The results indicate that PBL facilitates a better understanding of complex anesthesiology concepts and improves students' clinical decision-making abilities. However, challenges such as language barriers and cultural differences emerged during the implementation of PBL.

INTRODUCTION

With the acceleration of the globalization of medical education, the innovation of teaching methods has become increasingly important. Meanwhile, medical education for international students has become a crucial aspect of higher medical education and continuing medical education in China [1]. Traditional teaching models are teacher-centered, with students passively receiving knowledge [2]. However, with the rapid advancement of medical knowledge, fostering students' self-directed learning and clinical reasoning skills has become a critical goal in current medical education. PBL implementation for international students presents unique challenges, including language barriers, cultural differences, and varying learning habits. As an innovative teaching method, PBL emphasizes active learning by solving real-world problems. This case exhibits the effectiveness of PBL in cultivating core competencies in international students through its implementation in an anesthesiology course.

CASE DESCRIPTION

In an anesthesiology course designed for international students pursuing a Bachelor of Medicine and Bachelor of Surgery (MBBS) degree at West China Hospital, the curriculum primarily focused on the three stages of general anesthesia, along with the prevention and management of related complications. To enhance students' active learning and critical thinking, the teaching team decided to incorporate Problem-Based Learning (PBL) into this model.

Put forward the problem

In the first class of the course, the instructor introduced a complex clinical case to the students: a 65-year-old male patient scheduled for elective gastrectomy, with a medical history of hypertension and diabetes. Although the preoperative assessment indicated that his cardiopulmonary function was generally normal, the presence of these comorbidities, combined with his advanced age, made the anesthetic management during surgery particularly critical. The students were divided into several groups, each tasked with developing a comprehensive anesthesia plan, anticipating potential complications related to his comorbid conditions, and proposing appropriate management strategies.

Guiding Discussion and Independent Research

The teacher first encouraged MBBS students to engage in discussions through guiding questions such as, "What could be the possible causes of hypotension during surgery?" and "How should drugs be selected at different stages of general anesthesia?" Following this, each group, under the teacher's guidance, conducted literature reviews. After researching, students reconvened to share their findings and develop a comprehensive anesthesia plan through group discussion. During this phase, the teacher provided necessary guidance and feedback to help clarify the students' ideas.

Presentation and Reflection

The entire PBL process lasted two weeks, with students

required to report their progress weekly and present a case analysis in the final week. In the final class, each group presented their plan, and other groups and the teacher provided evaluations. Subsequently, students reflected on the feedback and discussed the strengths and weaknesses of their plans.

RESULTS AND ANALYSIS

The implementation of PBL significantly enhanced international students' self-directed learning abilities, as they proactively consulted literature, gathered information, and offered diverse perspectives during group discussions. Student feedback indicated that PBL helped them better understand the complex clinical applications of anesthesiology and deepened their grasp of key concepts.

However, several challenges were encountered during the implementation of PBL for MBSS students. Firstly, the extended time required for PBL posed a significant challenge for course scheduling. Secondly, due to varying levels of foundational knowledge among students, some were more passive during discussions, requiring additional attention and guidance from the teacher. Thirdly, some students faced language limitations in researching materials and expressing their viewpoints, which affected their participation in group discussions.

DISCUSSION

The application of PBL in anesthesiology education has proven effective, though its implementation needs continuous optimization [3]. However, implementing PBL in a cross-cultural context requires attention to language support and cultural adaptation. It is recommended that more language support resources be provided to international students before implementing PBL and that cultural differences be considered in course design to adjust teaching strategies accordingly. Meanwhile, instructors should enhance time management, allocate teaching time reasonably, and pay attention to individual student differences, providing more personalized guidance [4,5]. Furthermore, the successful implementation of PBL requires

greater resource support from institutions, such as sufficient library resources and online learning platforms.

CONCLUSION

This case demonstrates that the PBL teaching method can effectively promote self-directed learning and clinical reasoning skills in an anesthesiology course. Despite certain challenges during implementation, PBL can become an effective teaching approaches in international medical education through thoughtful instructional design and teacher guidance.

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REFERENCES

1. Biney PA and Cheng MY. International Students' Decision to Study in China: A Study of Some Selected International Students from Universities in China. *JSS*. 2021; 09: 305-325.
2. Rock P. The future of anesthesiology is perioperative medicine. *Anesthesiol Clin North Am*. 2000; 18: 495-513.
3. Chilkoti G, Mohta M, Wadhwa R, Saxena A. Problem-Based Learning Research in Anesthesia Teaching: Current Status and Future Perspective. *Anesthesiol Res Pract*. 2014; 263948.
4. Li X, Li T. A Preliminary Exploration of Teaching Methods in Clinical Anesthesia for International Students. 2012; 492-493.
5. Tian Y, Zhao X, Ma C, Jiang Q, Wang C, Long B. Discussion on the Application of PBL Teaching Method Combined with Micro-lecture in the Anesthesia Teaching of International Students. 2016; 16-18.