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Exploring the OBE-TBL Teaching Model for Clinical Pharmacy Practice Education

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Abstract **Review Article**

This study aims to explore the application effects of the dual-track teaching model integrating Outcome-Based Education (OBE) and Team-Based Learning (TBL) in clinical pharmacy internship education. Through a comprehensive review of literature, practical teaching experiences, and effectiveness evaluations, we developed an integrated OBE-TBL teaching framework. This process involved the design of a three-dimensional teaching objective system and the establishment of a diversified evaluation mechanism. The results indicate that this model effectively addressed problems in traditional clinical pharmacy internship teaching, including the disconnection between teaching content and clinical practice, teacher-centered teaching models, evaluation systems that emphasize results over process, and insufficient cultivation of professional competencies. In conclusion, the OBE-TBL dual-track teaching model can significantly enhance the professional competence, clinical thinking, and teamwork capabilities of clinical pharmacy interns, providing an effective approach for cultivating high-quality clinical pharmacy professionals.

Keywords: OBE concept; TBL teaching; clinical pharmacy; internship teaching; teaching reform.

INTRODUCTION

Clinical pharmacy, as an emerging interdisciplinary field integrating pharmaceutical sciences with clinical medicine, has the important mission of cultivating professionals equipped with knowledge and skills in clinical drug therapy[1]. With the transformation of healthcare models and the expansion of the scope of pharmaceutical care, the role of clinical pharmacists within healthcare teams has become increasingly prominent, placing greater demands on the quality of clinical pharmacy talent cultivation[2]. Internship teaching is a critical component of clinical pharmacy education, serving as a vital bridge between theoretical learning and clinical practice and directly influencing students' professional growth and career development[3].

However, the traditional teaching mode of clinical pharmacy practice in China has many defects, such as the updating of teaching content lags behind the development of clinical practice, the teaching methods mainly rely on teachers' teaching, and students passively accept knowledge [4]. These issues severely constrain the quality of clinical pharmacy talent development, making it difficult to meet the professional competency requirements of modern healthcare systems for clinical pharmacists.

The Outcome-Based Education (OBE) philosophy emphasizes teaching design and implementation oriented toward learning outcomes, focusing on the achievement of student competencies [5]; Team-Based Learning (TBL), through collaborative group work and case discussions, stimulates students' learning initiative and teamwork capabilities[6]. The organic integration of OBE and TBL teaching models to construct a dual-track teaching approach promises to provide new insights and methods for reforming clinical pharmacy internship education. This study aims to explore the application of the OBE-TBL dual-track teaching model in clinical pharmacy internship teaching, with the goal of providing references for improving the quality of clinical pharmacy internship education.

Theoretical Foundation

Overview of OBE Concept

Outcome-based education (OBE) is an educational model centered on learning outcomes, which was first proposed by Spady in 1981[5]. This concept emphasizes that teaching activities should be designed and organized around the final learning results that students expect to achieve, and follow the principle of "design backward and implement forward". The core elements of the OBE concept include: clearly defined learning outcomes, student-centered instructional design, flexible teaching strategy selection, continuous learning effectiveness evaluation, and teaching improvement based on evaluation results [7].

The implementation of the OBE philosophy typically adheres to five fundamental principles: First, clarifying learning outcomes what students are able to do upon completion of their studies; Second, expanding learning opportunities by providing students with diversified learning pathways and resource support; Third, raising learning expectations by setting challenging learning objectives to promote the realization of student potential; Fourth, backward curriculum design planning teaching content and methods in reverse from the desired learning outcomes; Fifth, continuous improvement constantly optimizing the teaching process based on learning effectiveness evaluation.

Overview of TBL Teaching Concept

Team-Based Learning (TBL) is a collaborative learning model created by Professor Larry Michaelsen at the University of Oklahoma in the United States during the 1970s[6]. TBL emphasizes promoting deep learning through group collaboration, with core characteristics including: fixed team composition, balanced emphasis on individual and team accountability, immediate feedback, and team interaction[8]. The TBL teaching model typically comprises three core stages: the pre-class preparation stage, the readiness assurance stage, and the application stage.

During the pre-class preparation stage, students complete the reading and study of assigned materials through autonomous learning. In the readiness assurance stage, individual and team tests are used to assess the effectiveness of students' preview learning. In the application stage, students work in teams to solve complex real-world problems, deepening their understanding and application of knowledge through discussion, debate, and other interactive methods. The TBL model can effectively cultivate students' critical thinking, teamwork capabilities, and communication skills, and has been widely applied in professional education fields such as medicine and pharmacy.

Significance of OBE-TBL Integration

The OBE and TBL teaching models demonstrate high conceptual compatibility, and their organic integration can produce synergistic effects[9]. First, OBE provides clear goal orientation for TBL, ensuring that team learning activities are centered around predetermined learning outcomes and avoiding aimlessness in learning. Second, TBL offers an effective implementation pathway for OBE, promoting the cultivation and achievement of students' higher-order competencies through team collaboration and case analysis.

In clinical pharmacy internship teaching, the value of the OBE-TBL dual-track teaching model is manifested in the following aspects: First, it facilitates the coordinated development of knowledge, competencies, and professional qualities, aligning with the competency requirements for clinical pharmacist positions; Second, it helps stimulate students' intrinsic learning motivation and cultivate lifelong learning capabilities; Third, it strengthens teamwork awareness and adapts to the multidisciplinary collaborative healthcare environment; Fourth, it contributes to establishing an evaluation system combining process-oriented and outcome-based assessment, comprehensively reflecting students' learning effectiveness.

Current Status and Problem Analysis of Clinical Pharmacy Internship Teaching in China

Disconnection Between Teaching Content and Clinical Practice

The updating speed of current clinical pharmacy internship teaching content lags behind the rapid development of clinical pharmacy practice**[10]**. On one hand, drug treatment protocols, medication guidelines, and other content in textbooks often fail to timely reflect the latest evidence-based medical evidence and clinical medication advances. On the other hand, internship teaching content focuses on the transmission of drug knowledge while providing insufficient training in core clinical pharmacy services such as medication therapy management, pharmaceutical care, and patient medication education. This disconnection results in graduates requiring lengthy adaptation periods before they can competently perform clinical pharmacy work.

Teacher-Centered Teaching Model

Traditional clinical pharmacy internship teaching predominantly adopts a model of "instructor lecturing and students passively listening," failing to fully reflect students' principal status. Under this model, students lack opportunities for active thinking and exploration, and the cultivation of clinical thinking ability and problem-solving skills is constrained[11]. Meanwhile, due to limited internship time and uneven distribution of case resources, students have insufficient exposure to typical cases and complex medication issues,

making it difficult to develop systematic clinical medication assessment capabilities[12].

Evaluation System Emphasizing Results Over Process

The current clinical pharmacy internship evaluation system primarily relies on summative assessment methods such as end-of-rotation examinations and internship reports, paying insufficient attention to students' learning attitudes, participation levels, and teamwork performance during the internship process. This results-oriented evaluation approach struggles to comprehensively reflect students' learning effectiveness and fails to promptly identify and address problems encountered by students during their internships[4]. Furthermore, the evaluation relies on a single source, depending mainly on supervising instructors' assessments, while lacking multidimensional feedback from student self-evaluation, peer evaluation, and clinical mentors.

Insufficient Cultivation of Professional Competencies

Clinical pharmacists require not only solid professional knowledge and skills but also good professional competencies, including pharmaceutical ethics awareness, patient safety consciousness, professional responsibility, and humanistic care spirit[13]. However, current internship teaching lacks systematic design and effective cultivation pathways for developing these "soft skills." Professional competency education often remains at the level of theoretical preaching, failing to allow students to experience and comprehend through authentic clinical scenarios. Consequently, students lack the capacity to respond when facing complex physician-patient relationships and ethical dilemmas[14].

Teaching Design for Clinical Pharmacy Internship Based on OBE-TBL

Three-Dimensional Teaching Objective System

Based on the OBE concept, a clinical pharmacy internship teaching objective system is constructed from three dimensions: professional qualities, knowledge, and competencies, ensuring that students can achieve expected learning outcomes upon completion of their internships[15].

Strengthening pharmaceutical ethics, patient safety awareness, professional responsibility, and humanistic care spirit. Through authentic clinical scenario experiences, cultivate students' professional attitudes of respecting patients, protecting patient privacy, and adhering to medication safety; establish patient-centered pharmaceutical care concepts; and enhance professional identity and sense of mission**[16]**.

Mastering professional knowledge of therapeutic regimens for common diseases, drug interactions, and adverse drug reaction monitoring. Familiarizing with pharmacotherapeutic principles and individualized medication strategies for various diseases, understanding the latest advances and evidence-based foundations in drug therapy, and establishing a systematic knowledge system of pharmacotherapy[17]**.**

Enhancing capabilities in clinical medication assessment, pharmaceutical care plan development, physician-patient communication, and multidisciplinary collaboration. Ability to independently complete clinical pharmacy services such as medication assessment, medication reconciliation, and patient education; capability to effectively communicate with physicians, nurses, patients, and family members; and capacity to participate in multidisciplinary diagnosis and treatment team work[18]**.**

Case-Driven TBL Teaching

Typical clinical cases are designed to cover common disease types including cardiovascular diseases, endocrine disorders, infectious diseases, and oncology. Each case contains complete information including patient demographics, medical history, laboratory examinations, and medication history. Students work in groups to conduct medication assessments, regimen design, and pharmaceutical care, developing problem analysis capabilities and teamwork skills through group discussions, case analysis, and plan presentations[19]. Case design follows progressive principles from easy to difficult and from simple to complex, gradually enhancing students' clinical thinking abilities.

Collaborative Clinical Mentorship

Clinical pharmacists and physicians are invited to participate in teaching, conducting bedside teaching, pharmaceutical care rounds, and case discussions. Clinical mentors help students apply theoretical knowledge to clinical practice through on-site demonstrations, immediate guidance, and feedback comments[20]. Bedside teaching allows students to closely observe clinical pharmacists' workflow and communication techniques; pharmaceutical care rounds train students' abilities to identify and solve actual medication problems; and case discussions expand students' clinical thinking through the collision of multidisciplinary perspectives.

Information-Based Learning Platform Support

Auxiliary learning tools such as virtual case repositories and pharmacy decision support systems are utilized to enhance the effectiveness of clinical thinking training. The virtual case repository provides abundant case resources, supporting students' autonomous learning and repeated practice; the pharmacy decision support system helps students master practical skills including drug interaction queries, dosage adjustment, and adverse drug reaction assessment[21, 22]. The information-based platform also supports functions such

as online discussions, resource sharing, and learning progress tracking, providing technical support for blended teaching.

Diversified Evaluation System

Process Evaluation

Process evaluation runs throughout the entire internship, encompassing multiple dimensions including case discussion participation, teamwork performance, pharmaceutical care logs, and bedside teaching performance. Through frequent, multidimensional process-oriented evaluation, students' strengths and weaknesses are identified in a timely manner, providing targeted feedback and guidance to promote continuous improvement[23].

Outcome Evaluation

Outcome evaluation focuses on the final learning achievements students have attained, covering end-of-rotation examinations, case presentations, and pharmaceutical care plan design. End-of-rotation examinations combine theoretical tests with practical operations; case presentations assess students' clinical thinking and communication abilities; and pharmaceutical care plan design evaluates students' capabilities to comprehensively apply knowledge to solve practical problems[7].

Multiple Evaluation Sources

A multidimensional feedback mechanism involving clinical mentors, clinical pharmacy mentors, intern self-evaluation, and peer evaluation is introduced. Clinical mentors evaluate from the perspective of clinical practice competency, clinical pharmacy mentors assess from the angle of professional knowledge and skills, student self-evaluation promotes self-reflection, and peer evaluation cultivates teamwork awareness. The participation of multiple evaluation sources ensures the comprehensiveness and objectivity of evaluation results[24].

Teaching Practice and Effectiveness Evaluation

This study conducted teaching reform practice at a clinical pharmacy internship base in a tertiary Grade A hospital in China, selecting 23 students interning during the 2024-2025 academic year to implement the OBE-TBL dual-track teaching model. Assessments through questionnaire surveys and behavioral observations demonstrated significant improvements in students' clinical decision-making, teamwork, and communication abilities. Students generally reported that the OBE-TBL model stimulated learning initiative, with case discussions and teamwork helping deepen understanding and application of knowledge; immediate feedback and guidance from clinical mentors greatly assisted in enhancing clinical thinking abilities. Supervising instructors feedback indicated that students' learning enthusiasm significantly increased under the OBE-TBL model, with improved quality and depth of case discussions, smoother teamwork, and overall teaching effects superior to traditional models.

CONCLUSION

The OBE-TBL dual-track teaching model provides new ideas and methods for reforming clinical pharmacy internship teaching. This model, oriented toward learning outcomes and using teamwork as the vehicle, effectively addresses numerous problems existing in traditional internship teaching through the construction of a three-dimensional teaching objective system, design of diversified teaching pathways, and establishment of an evaluation mechanism combining process-oriented and outcome-based assessment. Teaching practice demonstrates that the OBE-TBL model can significantly enhance clinical pharmacy interns' professional competencies, clinical thinking abilities, and teamwork capabilities, with high student satisfaction and good teaching effectiveness.

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