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Analysis of Combining OBE and CBL in Pharmacy Internship

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Abstract: Talent training has been emphasized in China's national development. Training an excellent pharmaceutical professional has far-reaching significance for promoting rational use of drugs, ensuring safe drug use, and improving the quality and safety of medical treatment. The internship program is an important part of a pharmacy major that serves to develop students' practical skills. In this paper, we propose a combination of outcome-based education (OBE) and case-based learning (CBL) in pharmacy internships to promote critical thinking and independent learning among students and ensure the sustainable development of pharmacy education.

Keywords: Outcome-based education; Case-based learning; Teaching methods; Pharmacy internship

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1. Introduction

Health is the basis for an individual to achieve all-round development, and having good health and longevity has always been a goal for many. As an important part of health services, the pharmaceutical industry plays a significant role in building a healthy nation [1]. It was proposed in the Healthy China 2030 Plan to strengthen the cultivation of talents in all fields of medical services, including pharmacies and traditional Chinese medicine health services, health emergency response, and health informatization. Therefore, it is important to nurture pharmacists who are knowledgeable and able to think independently [2-4]. Independent learning is an important quality that acts as a benchmark for modern medical talents, and it plays a pivotal role in the self-development of medical students. The ability to learn independently is closely related to the ability to perform the job responsibilities in the future.

The pharmacy internship serves as a crucial phase for students to fulfill the training objectives outlined in the education plan. It also plays a vital role in implementing the Party's educational policies, fostering a stronger bridge between theory and practice, and enhancing the overall quality of teaching. Through an internship program, pharmacy students can apply what they have learned, which helps consolidate their knowledge. With that, they will be able to perform in their future jobs, such as drug production, prescriptions, and management.

The development of pharmaceutical talents stands as a key mission for the hospital training base. It represents a crucial subject within hospital education reform, aiming to equip pharmacy students with independent learning capabilities and a strong foundation in their professional skills.

2. Combining outcome-based education (OBE) with case-based learning (CBL)

OBE is a student-centered educational concept with its primary objective being the achievement of learning outcomes. It places a strong emphasis on developing students' abilities [5,6]. This concept originated in Australia and the United States. It is a concept [7] that has been widely applied since its introduction by William G. Spady in 1981. Compared to traditional education, OBE places greater emphasis on the practical application of knowledge and aims to stimulate students' interest in learning by employing independent and inquiry-based learning methods [8,9].

CBL is developed from problem-based learning (PBL) [10,11]. It is a group discussion teaching method that revolves around clinical cases and designing relevant questions to guide students in problem-centered discussions. CBL was first introduced in 1912 by Professor Smith of the University of Edinburgh in teaching pathology. At its heart, CBL embodies a teaching method that is "case-based, problem-based, student-centered, and teacher-guided," effectively igniting students' enthusiasm for learning, nurturing their clinical reasoning, and fostering independent learning capabilities. It has gained substantial recognition in both domestic and international medical education communities [12-15].

CBL is a commonly used teaching method in the field of medical education [16]. Adhering to the OBE teaching concept, an individualized, student-centered, and case-based education system can be established. This involves crafting pertinent questions and establishing a corresponding teaching structure and performance evaluation system for the internship, all oriented toward achieving the desired final learning outcomes. Thus, it is of great practical significance to guide and inspire students to carry out problem-based discussions to develop critical thinking and independent learning skills, thereby improving the quality of pharmacy education [17-19].

3. Limitations of traditional education methods

3.1. Limitations of traditional internship programs

In traditional internship programs, students rotate among the secondary departments without clear learning goals and systematic evaluation of their mastery of professional knowledge. The limited time available for rotations in secondary departments often hinders the practical application of professional knowledge. For example, in the outpatient department, it is necessary to first be familiar with the workflow of the department, and then learn the locations of the medications, manufacturers, specifications, etc., before participating in drug prescriptions.

Having a strong understanding of professional knowledge is necessary before being able to carry out tasks such as prescription review, helping patients with medication replacement, and providing prescription comments. Students are usually in a passive position in traditional internships, hence they are less enthusiastic and lack practical knowledge.

3.2. Simplistic evaluation methods

In the past, internship teaching primarily assessed interns based on their general graduation results without considering their proficiency in basic knowledge and professional skills relevant to each specific department within the Pharmacy program. This approach made it challenging to motivate students to engage actively in

learning, as many of them focused primarily on completing their internship reports. Students placed too much focus on the examinations, hence they gained less professional knowledge, which was contrary to the goal of an internship. The single assessment method also did not reflect the true capabilities of the students.

4. Advantages of OBE combined with CBL

The integration of OBE and CBL can enhance students' self-directed learning skills and reinforce the link between theory and practice in pharmacist training. This approach represents an innovative teaching method and a significant tool for implementing educational policies and enhancing teaching quality in alignment with the Party's objectives [20,21]. OBE teaching concept is not limited to only mastering the working process, but it also places the students at the center, stimulates their learning interest, and encourages them to make learning plans. It also ensures that the learning objectives are achieved and the students can be evaluated accordingly. The primary focus is on achieving effective learning outcomes, proficiency in professional knowledge, and practical application abilities.

The link between theory and practice is insufficient in current internship practices. Therefore, the assessment and evaluation mode should be reformed, incorporating OBE and CBL teaching concepts. This involves formulating relevant questions guided by clinical cases and motivating and guiding students to learn while addressing specific problems. Through methods such as clinical teaching rounds, medical calendar writing, and case discussions, the students' clinical reasoning and independent learning abilities can be developed. This approach maximizes students' enthusiasm and knowledge integration, particularly in areas like prescription review, pharmacy consultation, etc. This lays a robust foundation for the students' future careers, enhancing their competence.

In the new context of medical system reform, meeting the demands of pharmaceutical services and adapting to the requirements of contemporary development is essential. This not only aligns with the current reforms and transformations in pharmaceutical education but also facilitates the transition in the role of pharmacists. It holds significant importance for the career planning of interns, accumulation of professional knowledge, competency in their roles, rational medication review, and ensuring patient medication safety.

5. Process of combining OBE and CBL

5.1. Research subjects and content

5.1.1. Grouping the students and formulating suitable teaching plans

The internship manuals were recollected from the pharmacy interns, and a brief summarization and explanation of the content of the internship program was given to the interns. After the interns reported to the department, they were given questionnaires and underwent professional examinations, and a statistical analysis was carried out after that. The students were grouped according to the examination results, internship outline requirements, career planning, and interests, and a teaching plan was formulated for each group. They were divided into a pharmacy group and a clinical pharmacy group. The pharmacy department was divided into outpatient pharmacy, inpatient pharmacy, and central pharmacy. Learning tasks were developed based on the syllabus and the interns' interests. The internship period was two to four weeks in the clinical pharmacy department and prescription review center. At the end of the internship period, students were competent in prescription review, prescription comment, and pharmacy consultation. Besides, they also get to learn the workflow and content of non-key learning departments.

5.1.2. Internship evaluation

An exam was held every two months to evaluate the students' learning progress. In this way, students can stimulate their enthusiasm for learning and review the knowledge points.

PowerPoint (PPT) lectures were given, the students' and prescription reviews and medication calendar entries were reported and analyzed, and discussions were carried out on pathology. Team members enthusiastically shared their opinions, and this led to valuable input from the instructors who offered comments and additional insights on key knowledge points.

Interns were encouraged to participate in community health education, make medical science videos, and enrich teaching content through various activities, so that they have a deeper understanding of the pharmaceutical industry and further sharpen their skills.

5.2. Learning objectives

This integrated teaching mode serves to provide student-centered education and stimulate students' learning interests. Through this teaching mode, individualized learning plans can be formulated, the learning objectives and proper evaluation of the students' learning progress can be achieved, and students will be able to master relevant knowledge and skills. Besides, they would also develop thinking skills, drug prescription skills, medical calendar writing skills, and many more.

Besides, the objective of our approach was to reform the assessment and evaluation mode by combining the CBL teaching method, designing relevant questions with clinical cases as the guide, and inspiring students to learn based on clinical departments. Teaching rounds, including clinical pharmacy rounds, medicine calendar writing, PPT reporting, assessment, and evaluation were also utilized as the starting point to cultivate students' clinical thinking and independent learning ability, ultimately establishing the characteristic teaching mode of pharmacy practice in our hospital.

Additionally, our efforts aimed to create a new teaching model for pharmacy practice within our hospital, which will better prepare college students for their future careers. This initiative aligns with the current trends in medical reform and offers valuable support for redefining how hospital pharmacy professionals are trained in China, while also providing insights into developing effective evaluation mechanisms for these professionals.

6. The advantages of combining OBE and CBL in pharmacy internships

6.1. Changing the mindset of teachers and students and stimulating students' enthusiasm for learning

Passion plays a significant role in motivating students to actively engage in the learning process. When students are genuinely interested and take on the role of active learners, they can make substantial improvements in their professional knowledge and skills. In the past, student internships lacked specific goals and the pressure for self-improvement. By implementing the OBE educational concept and the CBL teaching method, we disrupted the traditional internship model, introducing homework and evaluation mechanisms. Encouraging students to be enthusiastic learners and actively participate was one of the challenges we faced in this study.

Enhancing autonomous learning abilities should involve a comprehensive and systematic approach that engages various stakeholders, including hospitals, educational institutions, and teachers. To achieve effective autonomous learning, specific measures, such as enhancing teaching methods and revising assessment strategies, can be implemented. This will genuinely facilitate teaching and learning and help students achieve the desired outcomes of autonomous learning. In the context of ongoing medical reforms and the evolving landscape of pharmaceutical care, this approach aligns with the direction of healthcare reform and industry

development. Ultimately, it fosters the growth of industry-ready, innovative pharmaceutical care professionals.

6.2. Internship has many influencing factors

With the popularization of higher education, the number of college graduates is increasing, and the employment pressure of college students is increasing. The number of job opportunities is relatively limited compared to the sea of graduates, resulting in increasingly fierce competition for college students. Therefore, many students choose to further their studies, apply for training courses, or use other ways to increase their employment opportunities, instead of practicing their skills.

6.3. Limited workforce

Throughout the ages, teachers are the guides and cultivators of students' progress. All teachers in our hospital have received professional training and have solid theoretical and clinical knowledge, so they understand the students' needs and are able to guide them. However, it takes time to develop these skills, and not everyone is qualified for this responsibility, so the number of teachers is limited. Moreover, teachers also have a tremendous workload.

7. The significance of combining OBE and CBL in teaching practice

Educators play a pivotal role in knowledge dissemination, while students act as active recipients of this knowledge. Through practical experiences and exploration in this area, it is essential to enhance the teaching standards within hospitals and cultivate skilled pharmaceutical professionals in the modern era. This teaching process involves a collaborative effort between instructors and students, who engage in continuous analysis, reflection, and improvement of their roles. This iterative process helps boost the expertise and capabilities of both teachers and students.

As the healthcare industry evolves, the role of hospital pharmacy is shifting from traditional drug dispensing to more patient-focused clinical pharmacy services, including personalized medication management, pharmaceutical care, and drug education. This transformation is both an opportunity and a challenge, and it has made the training of pharmaceutical professionals one of the important tasks of hospitals. Having knowledgeable pharmacists ensures the safety of drug use. However, to develop capable pharmacists, pharmacy students first need to have independent learning skills, and combining OBE and CBL can achieve exactly that.

Passion is the primary motivator. With a genuine interest in learning, students become self-directed learners who create study plans and acquire essential knowledge, enhancing their professional competence, foundational skills, and expertise. This approach aligns with the changing landscape of healthcare, making students better equipped to embrace the evolving healthcare trends and developments.

8. Conclusion

With the development of our socio-economy, the demand for pharmaceutical talents has also been increasing. In response to this demand and to enhance the education of service-oriented pharmaceutical experts, we have embarked on an initiative to innovate and improve the training of pharmaceutical talents. This initiative focuses on nurturing innovation and practical skills and is expected to have a positive influence on future pharmaceutical talent development.

This study addresses the current challenges related to interns' limited self-learning ability, initiative, and adaptability in the internship environment. We have introduced a combination of OBE and CBL teaching

methods, which involve significant reforms in teaching modes, strategies, and evaluation techniques. This innovative approach introduces new methods, content, and teaching practices that enhance the quality of talent training. It bridges the gap between theoretical pharmacy knowledge and practical application, aligning with the evolving role of pharmacists in the context of healthcare reform. This transformation also caters to the demand for pharmaceutical service professionals. Additionally, it fosters the continuous growth of teaching staff, empowering the training base with a robust theoretical model for pharmaceutical talent development.

Disclosure statement

The authors declare no conflict of interest.

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