

## Students' Evaluation for the Efficacy of Problem-based Learning (PBL) in Clinical Training

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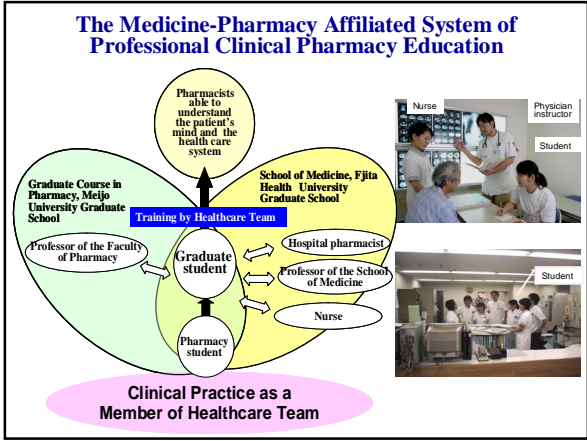
## Introduction

In 2003, Meijo University launched the Master's course, with the purpose of training clinical pharmacists who can understand pharmacotherapy in clinical sites and who contribute to safe and quality healthcare. The Master's course in clinical pharmacy skill is comprised of three kinds of curriculum as follows:

- 1) Problem-based learning (PBL) as active self-learning
- 2) Communication skill training
- 3) 15 months of clinical pharmacy practice training

The preclinical education using PBL is designed to simulate clinical situations in which students will face a variety of issues in the clinical training. However, the efficacy of PBL in clinical practice has not yet been clear.

We would like to introduce our grappling with the clinical pharmacy education and the efficacy of PBL in the clinical training.



## Curriculum of Master's Course

- **Preclinical Training (4 months)**  
**PBL (Problem-based Learning) -centered case study**  
 Pharmaceutical communication  
 Pharmacokinetics/Pharmacodynamics,  
 Pharmacotherapeutics,  
 Pathophysiological Bioanalysis,  
 Pharmacoepidemiology,  
 Drug Information practice,  
 Medical English
- **In-Hospital Training (15 months)**  
 Traditional Pharmacy Practice Training (6 weeks)  
 Nursing Experience (one week)  
**Advanced practice experiences (48 weeks):**  
 rotated to four departments of clinical medicine (Hematology & Oncology, Gastroenterology, GI surgery, Respiratory Disease, Cardiology, Endocrinology & Metabolic diseases, General internal medicine, Emergency Psychiatry, Oncology)  
 including two weeks of oversea practice experience
- **Master course thesis (including oral presentation)**

## PBL-based preclinical training

**Learning issues**

- ( 1 ) Hypertention
- ( 2 ) Hyperlipidemia
- ( 3 ) Asthma
- ( 4 ) Hepatitis (type C)
- ( 5 ) Nephropathia
- ( 6 ) Malignant lymphoma
- ( 7 ) Epilepsy

## Assessment of Preclinical Education

■ **PBL-tutorial Learning**

Goal: to train skills for integrating clinical information, defining and solving pharmaceutical problems of each patient in the clinical situation

Points to be assessed

1. Defining accurate learning issues for case scenarios
2. Oral presentations to classes and discussions regarding problem solutions by using SOAP form
3. Response to verbal questions from faculty members
4. Attitudes and behavior in collaborative class work

Assessed by self, peer and faculty

### Advanced Experience Practices

**GIO (General Instructional Objectives )**

To understand and nurture, through on-site training, which includes knowledge, skills and ethics, essential to serve as an exemplary pharmacy practice in the health care system



**SBO (Specific Behavior Objectives )**


- ( 1 ) To understand the process of medical care in the clinical settings
- ( 2 ) To understand and perform the role of pharmacists in the clinical settings
- ( 3 ) To understand the role of doctors , nurses and other medical professionals and cooperate with them for patients' care
- ( 4 ) To communicate well with patients and correctly record the findings
- ( 5 ) To understand complaints, disease status, pathophysiology, treatment and prognosis of specific patients
- ( 6 ) To monitor effect and side effect of drug treatment

### Assessing Advanced Practice Experiences

**Clinical Case presentation**

Finally students get the formative assessment from pharmacy faculty at the case presentation in the following four requirements:

- (1) **Presentation style**  
-Eye contact, presenting speed, ability to talk without looking at references, appropriateness
- (2) **Contents of presentation**  
-Able to discuss pathophysiology of the patient  
-Able to define clinical problem of the patient  
-Able to apply standard pharmacotherapy to actual pharmacotherapy of individual patients  
-Able to monitor and evaluate effects and side effects of pharmacotherapy  
-Able to design and discuss pharmacotherapeutic goals, regimen and a monitoring plan
- (3) **Documentation**  
-Use of an appropriate format including SOAP  
-Use of appropriate technical terms  
-Use of appropriate references (published papers, etc.)
- (4) **Responses to questions**  
-Responses to questions from pharmaceutical faculty



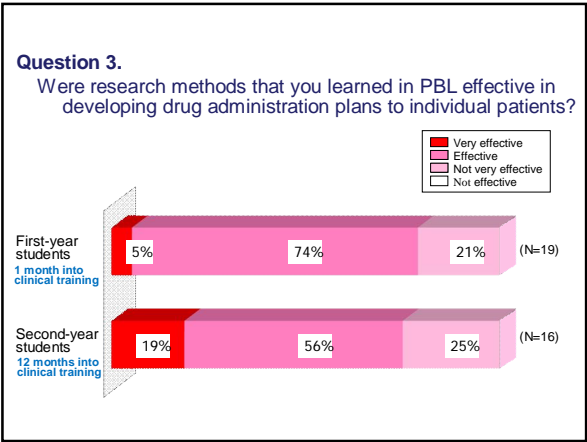
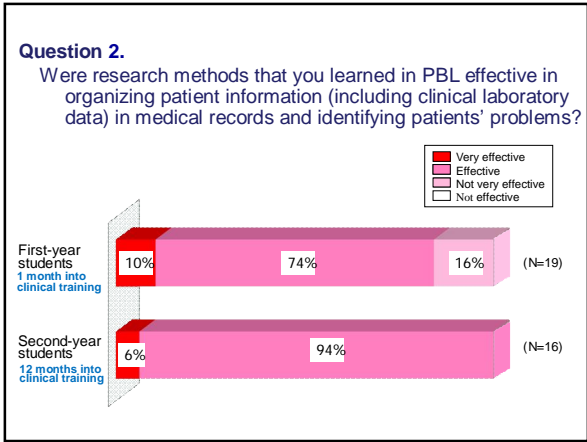
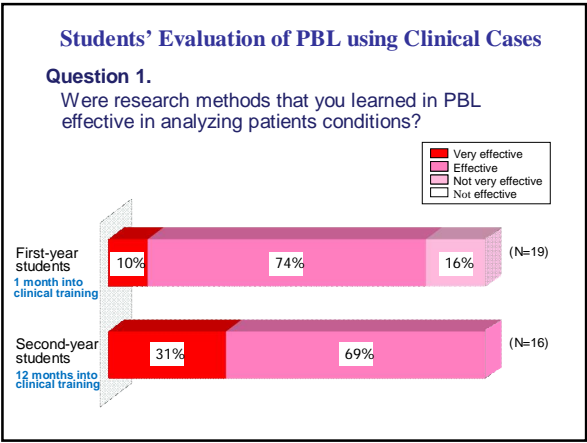
Case presentation

### Final Assessment of Clinical Practice Training

Each student selects one of the many cases they have experienced in clinical training, and writes a master's thesis (clinical case report) on that case. The master's thesis is considered the final assessment of the student's skills and attitude as a clinical pharmacist.

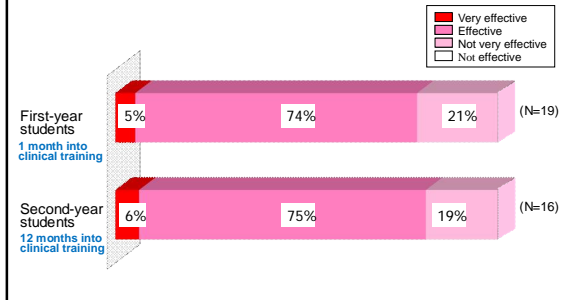
**Methods for Master's Thesis Assessment**

- (1) **Writing**  
- Defining the clinical problems of the patient and the role of pharmacist in the patient care  
- Using proper paragraph structure and allocation, use of active sentences, scientific descriptions, use of appropriate charts and references.
- (2) **Oral presentation**  
- Presentation: 15 minutes; questions and answers: 10 minutes  
- Presentation contents, responses to questions, appropriateness of the responses.



**Question 4.**

Were research methods that you learned in PBL effective in monitoring the effects and side effects of drugs and evaluating the pharmacotherapy?



**Summary (1)**

We conducted a survey of graduate students in clinical training to examine the efficacy of PBL, and we received the following responses:

1. PBL was effective in preparing myself to analyze the conditions of patients, to collect and organize patient data, and to identify problems.
2. I learned skills to monitor the effects and side effects of drugs, and evaluate the efficacy of drug treatment.
3. I acquired knowledge to develop drug administration plans for individual patients.
4. I learned to reflect whether a patient's condition is contributed to the side effect of medication or the symptom of a disease.
5. I learned the importance of searching for documents and references.

**Summary (2)**

The majority of first- and second-year students recognized that PBL provided them with an opportunity to learn from a variety of clinical cases, responding, "I was able to take appropriate actions in the hospital" and "I could think and act more positively in clinical training".

On the other hand, a few first-year students were negative towards the efficacy of PBL, stating that "PBL was not effective in preparing myself to analyze the conditions of patients or to identify problems".

This indicates that the difference in opinions regarding the efficacy of PBL is attributable to the difference in clinical experience. PBL is effective in training students, particularly those already with a certain level of clinical experience to collect, organize, and understand patient information in clinical situations.

**Conclusion**

**PBL is very effective on the education of pharmacist's performance.**

1. PBL is a good simulation study for learning clinical skill.
2. PBL-experienced students were able to go smoothly into clinical training.
3. Students performed their skills well at bedside, and decided clearly what they should do for patients' medication, and communicated well with teammates.
4. Students also got an improved ability to present and write clinical case reports.
5. For the reasons above, these students were assessed well by clinical preceptors who worked with them.