

A unique actual experience for recognizing the various roles of healthcare professionals while enhancing pharmacy students' motivation

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Abstract

This study aimed to have pharmacy students understand the medical care team and recognize the importance of each healthcare professional's role in medical practice through the implementation of a one-day visitation experience. Thirty fourth-year pharmacy students participated in the study. Half were given an opportunity to visit the Department of Radiology at University of Miyazaki Hospital; the other half were not, and served as the control group. The students observed the medical team diagnose and provide medical treatment to patients and received explanations from various healthcare professionals. They then had a question-and-answer session with healthcare professionals. The students were subsequently given questionnaires to evaluate the impact the visitation experience had on them. Students evinced huge enthusiasm in communicating with physicians and allied healthcare professionals in the one-day experience. The experience increased their motivation to study pharmacy and helped them recognize the importance of the medical care team. Students showed a positive attitude toward the one-day experience. This experiential visit was therefore very meaningful for senior-year pharmacy students. A visitation experience in a department providing diagnosis and treatment for patients affords a unique practical training and educational strategy for understanding the role of each healthcare professional.

Key words : pharmaceutical education; senior pharmacy students; recognizing each healthcare professional's role; observational learning; hospital diagnosis-and-treatment department
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Introduction

A model core curriculum for pharmaceutical education requires participatory clerkship, wherein students eventually participate in a medical care team, not just observe the work of pharmacists, which includes dispensing medicine, preparing or mixing parenteral agents, and interviewing patients.

As an introduction to pharmacy education, students in their first year of a pharmacy degree are provided with an early exposure to the pharmacy profession through

visits to hospitals, community pharmacies, and pharmaceutical companies. The program aims to increase pharmacy students' awareness of what their future would be like as pharmacists and help them recognize the important role played by pharmacists in human health^{1,2)}. However, this type of program appears difficult to conduct with students in their first year of study—that is, the early period just after entering university^{3,5)}. First-year students have an insufficient understanding of pharmaceutical expertise, medicines, and the relationship between the medications and systemic disease.

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On the other hand, fourth-year students undergo a simulated clinical pharmacy. Following that, they undergo an off-campus clinical training program. However, we doubt that students really understand the importance of the various medical care team members as they are not likely to observe or actively participate with a medical care team during the clinical rotation in their clinical training program.

To address these issues, we experimentally introduced a new type of program into undergraduate pharmacy education. We devised an experiential visit to a hospital's diagnosis-and-treatment department for fourth-year pharmacy students, hoping to develop in them a clear understanding of the importance of team medicine. We evaluated the impact this program had on the students.

Methods

1. Subjects and Methods

Thirty students were randomly selected from a fourth-year pharmacy class at Kyushu University of Health and Welfare, Miyazaki prefecture, Japan. They were then divided into two groups of 15 students each. One of the two groups was brought to visit the Department of Radiology, University of Miyazaki Hospital, Miyazaki prefecture, Japan. The other half did not visit the department and served as the control group. The hospital is a 616-bed tertiary care centre in the central Miyazaki prefecture. We selected the Department of Radiology because we expected that students could recognize the involvement of many healthcare professionals from diagnosis to medical treatment of an illness in such a department.

At the department, the students were segmented into 3 small groups of 5 students each. We opted for a small number of students to visit the diagnosis-and-treatment department at the university hospital, as we felt it would be less disruptive to both the healthcare team and patients than a larger group, and thus more appropriate.

This study was approved by the committee of ethics and research of the University of Miyazaki Hospital.

2. Program of a one-day experience

We brought 15 students to observe medical practice at the university hospital during one day, from 8 a.m. to 4

p.m. (hereinafter referred to as the 'one-day experience'). The day was divided into two sessions. The morning session consisted of four sections relating to diagnosis: consultation room (electronic medical charts), computer tomography (CT) examining room, positron-emission tomography (PET)-CT examining room, and magnetic resonance imaging (MRI) examining room. The afternoon session concentrated on medical treatment: radio isotope (RI) examination room, linear accelerator radiation room, and angiography laboratory.

The students observed various aspects of medical treatment and received explanations from various healthcare professionals, including a radiology technician, a nurse, and a physician. They were provided with the opportunity to ask the healthcare professionals any questions that arose during this time.

3. Questionnaire

A questionnaire survey was given to students immediately following the one-day experience.

First, to assess the impact of the one-day experience, we asked the students to rank six keywords relating to the profession of pharmacy in the medical care team in order of importance, with 1 being most important. The keywords we presented were as follows: (1) medical therapies, (2) pathology, (3) clinical laboratory test results, (4) communicating with patients, (5) communicating with physicians, and (6) communicating with allied healthcare professionals.

Second, we asked the students to write about their opinions and impressions of the experience in a free-form text.

Finally, we asked the students about the impact of the visit, using 5-grade evaluation scale (scale: 5, strongly agree; 4, agree; 3, no opinion; 2, disagree; 1, strongly disagree). The questions were:

- (a) Did you think that the experience was meaningful?
- (b) Did the experience increase your motivation for pharmacy study?
- (c) Did you feel that each of the medical care team members was important in providing medical care?

The first part of above questionnaire was also given to 15 students who had not had the one-day experience, during the same time period that it was given to the group with the one-day experience.

4. Analysis of evaluation

The response sheets for the questionnaires were collected just after conducting the survey for each group. Data between the two groups, one with and one without the one-day experience, were compared using Mann-Whitney U test to assess the impact of the experiential visit. Statistical analyses were performed using Excel 2007 (Microsoft). Statistically significant

differences were defined as having a *P* value of less than 0.05.

Results

Results of the questionnaire survey on students' beliefs regarding the six keywords are shown in Table 1. The impressions about the experience are shown in

	One-Day Experience		<i>P</i> Value
	(-)	(+)	
(1) Medical therapies	4.67 ± 1.58	4.73 ± 0.88	0.817
(2) Pathology	3.20 ± 1.42	3.80 ± 1.01	0.400
(3) Clinical laboratory test results	4.40 ± 1.18	5.13 ± 0.52	0.105
(4) Communicating with patients	1.80 ± 1.01	3.93 ± 1.94	0.002
(5) Communicating with physicians	2.47 ± 1.46	1.33 ± 0.49	0.028
(6) Communicating with allied healthcare professionals	4.47 ± 1.41	2.07 ± 0.80	<0.001

Table1. The ranking by two groups of students, one without (-) and one with (+) the one-day experience, of six keywords that are believed to be important for the pharmacist's profession within a medical care team. Each value represents the mean ± standard deviation (SD) of 15 students.

<p><u>Medical care team</u></p> <p>I got the impression that a pharmacist needs good communication skills for interacting with physician colleagues.</p> <p>Patient information was properly conveyed between the healthcare professionals.</p> <p>I found that the medical care team dynamic is very important in providing better healthcare.</p> <p>It is important for a pharmacist to understand what other healthcare professionals do in their clinical practice.</p> <p>I was impressed with how many healthcare professionals are involved from the diagnosis to medical treatment of an illness.</p> <p>I did not see a pharmacist involved in a significant capacity on the medical care team.</p>
<p><u>Knowledge of medical care</u></p> <p>I acquired specialized knowledge by seeing many kinds of medical technology used in practical ways, which I could not get from textbooks and lectures at the university.</p> <p>I feel I lack specialized knowledge about MRI and PET; I have much to learn about them.</p> <p>I realized that I was poorly informed about illnesses.</p> <p>I found that CT, MRI and PET are significant technologies used in the diagnosis and medical treatment of cancer.</p>
<p><u>Consideration for the patient</u></p> <p>I felt that the healthcare professionals took serious responsibility for the patients' survival and worked very hard in treating the patients.</p> <p>I observed the behavior of healthcare professionals and found that they treat patients with a kind attitude.</p>
<p><u>Others</u></p> <p>I learned about the associations between each division of the hospital beyond the department of pharmacy.</p> <p>I could see the process followed for selecting medicines after diagnosis or medical treatment.</p> <p>I was impressed with the explanations I received from many healthcare professionals regarding the patients' cases.</p> <p>I thought it was very meaningful to have the opportunity to visit the diagnosis-and-treatment department while I am still in school.</p> <p>I was very impressed following my observation of radiotherapy treatment.</p> <p>I feel it would be better to also have contact with students who aim to become other healthcare professionals besides pharmacists.</p>

Table2. Students' impressions about the one-day experience, reported immediately after visiting the Department of Radiology.

Question	mean score	SD
(a) Did you think that the experience was meaningful?	4.93	0.26
(b) Did the experience increase your motivation for pharmacy study?	4.87	0.35
(c) Did you feel that each of the medical care team members was important in providing medical care?	4.47	0.64

Table3. The impact of the visit, using 5-grade evaluation scale, conducted immediately following the one-day experience. Each of mean score and standard deviation (SD) is calculated based on the results of a questionnaire of 15 students.

Table 2. The students' opinions and impressions of their one-day experience were classified into four categories: medical care team, knowledge of medical care, consideration for the patient, and others. Results of agreement or disagreement with the questions in the third part of the questionnaire, referred to above, are shown in Table 3.

Discussion

Our results suggest that a one-day experience in a diagnosis-and-treatment department of a university hospital is a very meaningful educational program for fourth-year pharmacy students. Unlike first-year students, fourth-year students had studied most pharmaceutical subjects and had acquired substantial knowledge, skills and related attitudes through the pharmacy education they had received within the university. We expected that the one-day experience, while being in the fourth year, still would enable students to improve their knowledge and attitudes toward practicing medicine.

Students with the one-day experience had a positive attitude and expressed an interest in the medical care team and the significance of medications. They also evinced huge enthusiasm in communicating with physicians and allied healthcare professionals compared with the group without the one-day experience. Kihara *et al.* emphasized that the success of any clinical clerkship system depends on an effective communication system between physicians and medical students⁹⁾. Likewise, the question item relating to an increase in students' motivation for pharmacy study was acclaimed by students in the grade evaluation. The opinions on effects such as 'increased motivation' and 'enhanced desire to learn' reveal an education-related impact.

Phrases such as these are regarded as important indicators in the education sector⁷⁾. Thus, our results suggested that we could provide the students with enough hands-on experience during a one-day experience.

Some students did not know that pharmacists play a significant role in medical care teams. The reason for this stems from the fact that the Department of Radiology where we conducted the study was not an area that pharmacists generally visit in their usual work. This may be why the impact score regarding the medical care team was lower (average score of 4.47) than those of the other questions.

It is unreasonable to expect that students understand the various roles of healthcare professionals through only lectures, textbooks, and other materials provided at the university. This is because students have difficulties with professional socialization, which begins before they enter medicine, nursing and pharmacy education, and clinical practice⁸⁾. Dalton *et al.* reported that interdisciplinary education for nursing, medical, and pharmacy students enhanced their understanding of the cooperative and collaborative nature of professional practice⁹⁾. In our study, some students wrote in the free-form text portion of the questionnaire that it would be better to also have contact with students who aimed to become healthcare professionals other than pharmacists. This opinion supports some of the results of their study.

Therefore, the one-day experience in the Department of Radiology not only stimulated a greater motivation for pharmacy study but also helped students understand the importance of the various medical care team members and to recognize the role played by each healthcare professional. The results also suggest that a one-day experience is an effective strategy for short-term improvement of the knowledge and attitudes of

pharmacy students. It is hoped that through the experiential program, students will develop confidence in their ability to have an important role in medical practice¹⁰. A one-day experience can be integrated into the curriculum of the pharmacy educational system. However, studies are needed to determine whether this improvement lasts over the long term.

Conclusion

A one-day experience in a diagnosis-and-treatment department of a university hospital is found to be a very meaningful experience for fourth-year pharmacy students. The experience affords a unique opportunity to students, providing them with greater motivation to study pharmacy. Thus, it is an important and pivotal educational method, as it enables students to recognize the role of each healthcare professional while enhancing their desire to study pharmacy.

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医療従事者の様々な役割を認識し、薬学生の学習意欲を向上させる独自の実地体験

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要旨

薬学生に医療従事者の役割や医療チームの重要性を認識させることは極めて重要である。そこで我々は、病院診療科の視察体験が薬学生にどのような効果をもたらすか検討した。本学薬学4年生15名に宮崎大学医学部附属病院放射線科への視察の機会を与え、他の15名には、対照群として視察の機会を与えなかった。視察体験をした学生は、医療従事者が行う診断や患者への治療を、説明を受けながら観察し、さらに医療従事者と質疑応答の時間を持った。視察体験が学生に及ぼす効果は、学生への質問調査によって評価した。視察体験をした学生は医師及びコメディカル職員とのコミュニケーションに大きな興味を示した。また、視察体験をした全ての学生は医療チームの重要性を認識し、医療における知識の修得が必要と考えていた。それ故に診療科の視察体験は、高学年の薬学生において医療従事者の役割の重要性を理解する有意な実地演習であり、教育方略になると考えた。

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