

RESEARCH ARTICLE

Implementation and evaluation of a short-term overseas training community-setting experience for Japanese Advanced Pharmacy Practice Experience

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Abstract

Introduction: Kitasato University signed an international exchange agreement with the University of Iowa College of Pharmacy (UICOP) with a new focus on “Pharmacists in the community setting” in 2010. Students have short-term participatory and hands-on training yearly in the United States (US). **Methods:** A questionnaire survey was given to students after participation to evaluate the impact of the experience. **Results:** Before the programme, students had to learn about pharmacy education and actual community pharmacy practice. The attainment rate for it was 75.0%. At the community pharmacy shadowing, students could see the characteristics of US pharmacists and differences from Japan, and all the students had changed their future vision and way of thinking. **Conclusion:** The usefulness of this programme was confirmed. Students could learn about pharmacy practice, particularly in the community in the US. This programme may represent a helpful strategy to train pharmacists with an international perspective.

Introduction

In recent years, training pioneering pharmacists with an international perspective has been seen as advantageous in advancing pharmacist skills and pharmacy practice. Training that exposes students to sociocultural and health system differences through an international experience allows the education of world-class pharmacists who can solve problems in clinical practice. The contributions of pharmacists who have received international education to society are extensive (Alsharif *et al.*, 2019; Mukhalalati *et al.*, 2020). International exchange activities based on the experience of students or faculty members are regarded as an important opportunity to foster enhanced cultural awareness and a global perspective.

At present, many universities in the United States (US) and Japan have international programmes. In the US, as of 2014, 64% of universities reported that they had at least one international programme, and it was reported that the participation rate among all students was 6.1%

(Steeb *et al.*, 2016). In Japan, there are a few reports on the content and evaluation of programmes, including those related to early experience in the earlier grades (Saimaru & Aoki, 2017), those related to the implementation of English (Tobari *et al.*, 2017), and those related to advanced pharmacy practice experiences (APPE) (Ohtani *et al.*, 2017). There are no reports with an emphasis on pharmacy practice in community settings.

Kitasato University School of Pharmacy (Japan) has been conducting short-term community-setting-oriented overseas training for APPE at the University of Iowa College of Pharmacy (US) over the past ten years. This training was evaluated through a questionnaire to the students.

Explaining the history of the pharmacy education system in Japan and the development of international partnerships gives context to this study.

History of pharmacy education system in Japan

In Japan, pharmacist education has historically been a

four-year programme of study, but it was extended to a six-year system in 2006 (Ministry of Health, Labour, and Welfare (MHLW), 2006). Similar to what occurred earlier in the profession in the US, this change addressed the progress in recognising the separate roles of dispensing and clinical, patient-centred care and developing pharmacists to address the evolution in social demands such as assuring the safe use of medicines and prevention of medication-related risk due to the advancement of medical technology. Kitasato University School of Pharmacy was established in 1964. In April 1973, the master's degree programme in clinical pharmacy was established. It was the first clinical pharmacy programme and the most advanced in Japan.

Like US programmes, Japanese pharmacy education recognises the importance of assuring the quality of the educational preparedness of students through didactic education before experiential learning. As a result, Objective Structured Clinical Examination (OSCE) and Computer-Based Testing (CBT) evaluate the abilities (knowledge, skills, attitudes) required for experiential education of students before beginning experiential training (Pharmaceutical Common Achievement Tests Organization, 2015). Clinical pharmacy in Japan has also expanded from the initial "advanced hospital pharmacist training" to "improvement of the quality of pharmacies and pharmacists in the community setting".

In the four-year educational programme, the experiential training consisted of two required weeks in the hospital and two optional weeks in the community pharmacy. In contrast, the six-year educational programme extended training to 22 weeks, 11 weeks in the hospital and 11 weeks in community pharmacy settings. In Japan, there is no technician system as in the US, and students can only visit hospitals and community pharmacies for about one day during their first year, so they have very few opportunities to complete introductory pharmacy practice experiences (IPPE). In APPE, students participated and engaged in the work of pharmacists, such as dispensing and counselling. Student pharmacists recognise the importance of the pharmacist's responsibilities in the hospital and community pharmacy setting. They develop an understanding of the importance of professional ethics and their future responsibilities as healthcare professionals. In the US and other countries, the importance of extending didactic training to high-quality, experiential training is recognised to enhance awareness of opportunities and challenges in real-life situations and create further professional development (Boyce et al., 2020; Akel et al., 2021). The goal is the same in Japan.

Development of global international partnerships and rotations

Kitasato University School of Pharmacy, like US programmes, has a lengthy history of international involvement. In 1989, the School of Pharmacy signed its first academic exchange agreement with the University of Kentucky College of Pharmacy, which enabled master's degree course students to participate in a two-week short training programme in Kentucky and experience the US model of advanced clinical pharmacy, especially in hospitals. In 2010, an additional international exchange agreement was established with the University of Iowa to extend the exposure to clinical pharmacy practice in the community setting. These academic exchanges continue to this day (Kitasato University, 2022).

The first four students to visit The University of Iowa College of Pharmacy (UICOP) in 2011 completed a two-week training programme. The number of pharmacy students receiving overseas training in Iowa has varied from two to ten during the tenure of the programme. A total of sixty-six students completed the training in the nine years from 2011 to 2019 (Table I). Since 2016, the training has been changed to a more participatory and hands-on approach.

Table I: Number of students participating in Iowa training from 2011 to 2019

Year	Number of students
2011	4
2012	8
2013	10
2014	13
2015	8
2016	2
2017	9
2018	8
2019	4

This programme's impact was evaluated through a questionnaire among twenty-three students who completed this community-oriented programme in four years (2016-2019).

Methods

Questionnaire survey for students who participated in the Iowa training

An anonymous survey was developed and administered to all twenty-three Japanese students who participated in the programme from 2016 to 2019. It was conducted within one month of completion of each year. This study was approved by the Kitasato

Institute Hospital Research Ethics Committee, although it did not involve patients (protocol code 19054).

Survey items included:

- Q1. What was the goal of your participation in the Iowa training (Three choices and others [Free text response]; Multiple select questions)
- Q2. How well did you achieve your goals when you completed the Iowa training? (% responses)
- Q3. Did you change your future vision and way of thinking as a pharmacist after completing the Iowa training (Free text response after Yes/No question)
- Q4. How much did you understand English? (% responses)
- Q5. How was the content of the programme and time of lectures (Content [satisfaction, dissatisfaction]; Time [just right, long, short])
- Q6. How was the content and time of the training? (Content [satisfaction, dissatisfaction]; Time [just right, long, short]; separate questions for hospital and community pharmacy settings)
- Q7. How was the content and time of pre-lecture in Japan? Content [satisfaction, dissatisfaction]; Time [just right, long, short])
- Q8. Question to solicit additional opinions (Free text response)

Overview of the Iowa training

It is essential to know the content of the training provided to students in Iowa to understand the results of this survey. An overview of the content of the training is presented below.

Practical training at the UICOP for Kitasato University students is held every May for students who have just started their final year of the Japanese pharmacy programme and have completed hospital pharmacy and community pharmacy training the previous year. The time was selected to ensure students' ability to comprehend classroom materials and the clinical practice of pharmacy. The context were shown in Table II.

As for content related to community settings, Kitasato University students completed lectures/discussions on several disease states frequently seen in community pharmacy practice sites (e.g., osteoporosis, infectious diseases, diabetes, hypertension, dyslipidemia, anticoagulation, and paediatrics). They received lectures on the collaborative research completed between the university and pharmacies through UICOP. They also applied pharmaceutical care concepts and methods at community pharmacies. The clinical

site exposure included various practice sites such as the University of Iowa Hospitals and Clinics (UIHC), community pharmacies near Iowa City, including independent pharmacies, chain pharmacies, and compounding pharmacies (e.g., Home Care Pharmacy). Students also experienced activities typical of US practice but less common in Japan, such as immunisation, blood pressure measurement, Prothrombin Time International Normalised Ratio (PT-INR) measurement, and informatics. They also engaged in discussions with student pharmacists and pharmacists in Iowa, comparing pharmacy education systems and pharmacy practice in Japan and the US.

Table II: Overseas training contents in Iowa

Training contents
Orientation
Lecture
Medical insurance system in the United States
Pharmacy education in the United States
Curriculum at the University of Iowa College of Pharmacy
Pharmacy practice experience and clinical rotations
Resident system at the University of Iowa Hospitals and Clinics
Community-Based Pharmacy Residency
Collaboration research between the university and pharmacies
Pharmaceutical care at community pharmacies
Pharmacotherapy (Case study)
Osteoporosis
Infectious diseases
Diabetes
Hypertension
Dyslipidemia
Anticoagulation
Paediatrics
Exercises
<u>Immunisation (Beginning 2016)</u>
Blood pressure measurement, PT-INR
Pharmaceutical informatics
Discussions with pharmacy students
Tour and <u>shadowing</u> at hospitals (<u>Beginning 2016</u>)
Tour and <u>shadowing</u> at a community pharmacy (<u>Beginning 2016</u>)
Individual pharmacies
Chain pharmacies
Compounding pharmacy
Home care pharmacy

Two to three months before the training in Iowa, a clinical faculty member from the University of Iowa is invited to Japan for a one-week pre-lecture to enhance the understanding of the context and settings (e.g., information about Iowa, pharmacy education system in the US, according to the background of the invited faculty member) (Table III).

Table III: Contents of the preliminary lecture in Japan

Content
About Iowa
Background of the invited faculty member
Health insurance system in the United States
Pharmacy education system in the United States
The role of pharmacists in the United States
About the faculty's speciality

Results

The return rate of the student questionnaire was 100 % (n= 23). The most common reason for participating in

Iowa training was to learn the actual practice of pharmacy education in the US (n=22; 95.7%). A substantial number of student pharmacists also expressed their desire to learn the actual practice of community pharmacy in the US (n=19; 82.6%) and learn the actual hospital pharmacy practice in the US (n=18; 78.3%) (Figure 1). In addition, some students engaged in the training to learn the difference between Japan and the US or to improve their language learning and English proficiency.

Regarding the achievement of goals during the training, the average achievement percentage was 75.0% (Figure 2).

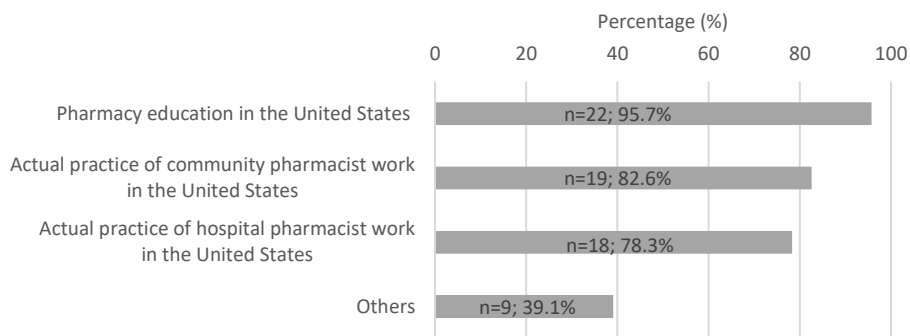


Figure 1: Goals of participating in Iowa training (Multiple answers allowed n=23)

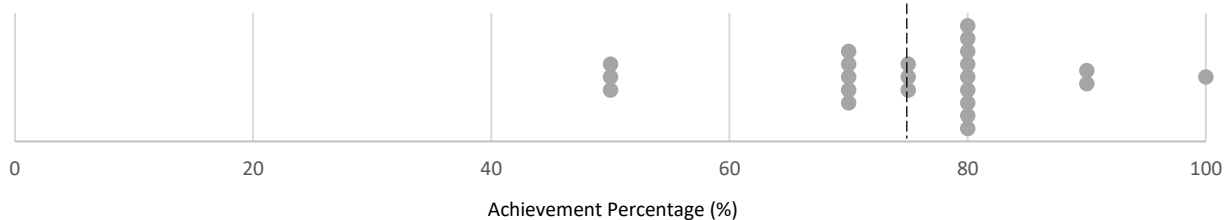


Figure 2: Achievement level of the prior goals of training (n=23)

Students indicated that the training had an impact on their future vision and way of thinking as a pharmacist (n=23; 100%). The resulting changes included additional knowledge, experience, active interprofessional relationships, and exposure to the rapport and trust of patients with US-based student pharmacists and pharmacists. One Japanese student pharmacist reflected: "I would like to be like what I experienced in training in the future." Another Japanese student pharmacist discussed the implications to care provided in culturally diverse settings: "I also want to be able to deal with foreign patients who want to work internationally." Others expressed their interest in working in the US pharmacy

workforce. The understanding of English in the lectures was 59.3% (Figure 3).

Other findings for lectures included satisfaction with the programme content (n=22; 95.7%) and time (n=21; 91.3%). For hospitals, the largest proportion of students indicated that the shadowing content was satisfactory (n=17; 73.9%) (Figure 4). Quotes from students showed that they were able to experience student pharmacist participation in interdisciplinary rounds. Students also saw bedside care and interviewing initiated by the student pharmacists. In community pharmacy settings, most Japanese student pharmacists indicated that the content was satisfactory (n=22; 95.7%) and that the time was just right (n=20;

87.0%) (See Figure 4). At the shadowing community pharmacy, the students could see the many characteristics of community pharmacy in the US, such as the insurance system, technician system, dispensing in bottles, refilling prescriptions, electronic

prescriptions, shoes for diabetics, and drive-through, all of which are different from Japan. Also, one student wanted to learn more about the kind of conversation pharmacists have with patients.

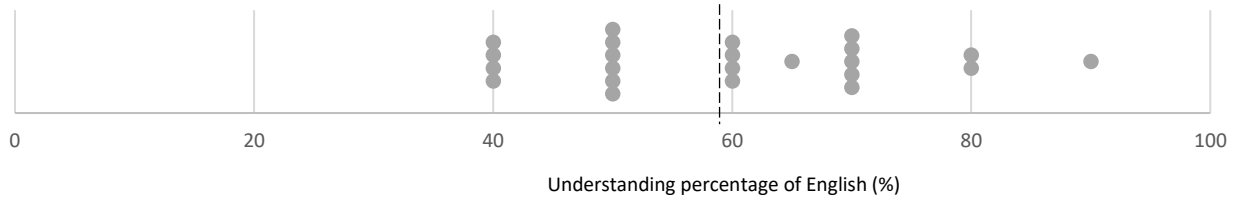


Figure 3: Level of understanding of English (n=23)

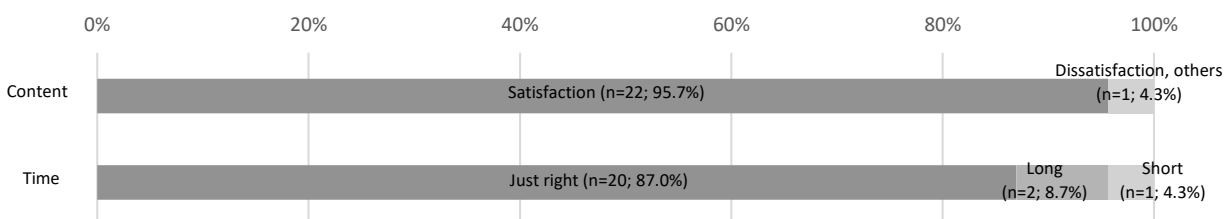
(A) Lectures



(B) Tour and shadowing in the hospital



(C) Tour and shadowing in the community pharmacy settings



(D) Pre-lecture

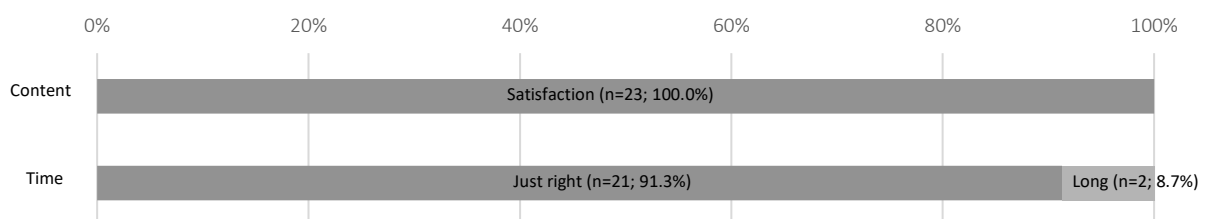


Figure 4: Satisfaction of content and time with (A) Lectures, (B) Tour and shadowing in the hospital, (C) Tour and shadowing in the community settings and (D) Pre-lecture (n=23)

Regarding the pre-lecture in Japan before the Iowa training, the content was satisfactory (n=23; 100%) with adequate time (n=21; 91.3%) (Figure 4). Some student pharmacists said that they were able to learn about the education and pharmacists in the US in advance, which helped them prepare for the training.

Additional comments showed that Iowa student pharmacists who have visited Kitasato University before were planning to welcome Kitasato University trainees in Iowa (continuation of international partnerships and friendships) and that the rotation was essential as it was rich in cultural exchange.

Discussion

The duration of the programme (established in 2010), with 66 students completing the short-term international rotation, indicates the achievement of a sustainable global partnership with mutual benefits. Similar to other US-based global/international programmes, the basis of the initial exchange was a memorandum of understanding (MOU). In the US, many universities consider legal and cultural issues and sustainability recommendations when accepting non-US pharmacy students for clerkship and training (Al-Dahir *et al.*, 2017). This programme considered all these aspects.

As of 2007, 39 out of 63 universities had international programmes, of which 29 had exchanges between faculty members and students under a formal agreement (Audus *et al.*, 2010). As the interest in global/international partnerships grows, thus the importance of understanding the benefits of short-term rotations from the perspective of the non-US-based partners.

As of 2013, it was reported that 7 out of 20 universities that answered that they are conducting international practice experience were doing so with Japan (Cisneros *et al.*, 2013). In 2014, 64% (71/111) of responding Universities reported that they had at least one international programme and that participation was 6.1% of all students (9 of which sent students to Japan) (Steeb *et al.*, 2016). This prevalence of US/Japanese-based global/international partnerships makes the interpretation of this survey impactful to short-term exchanges.

As emphasised by the American Association of Colleges of Pharmacy (AACCP) Global Pharmacy Education Special Interest Group (SIG), an important consideration in home/host or site considerations with global APPEs are the assurance of sustainability and the achievement of mutual benefits, which this programme could achieve.

Insights into the non-US-based student perceptions may further ensure the achievement of mutual benefits in similar exchanges/training (Alsharif *et al.*, 2016; Dornblaser *et al.*, 2016).

In Japan, many programmes for sending student pharmacists overseas are conducted at universities. However, there are only a few reports on the programme content and evaluation, and there are no reports on community pharmacists (Ohtani *et al.*, 2017; Saimaru & Aoki, 2017; Tobari *et al.*, 2017). As such, this research also extends the understanding of the experience of Japanese student pharmacists to community settings.

From the results of the student questionnaire, common reasons for participating in the training were to learn the actual practice of pharmacy education and the actual practice of community pharmacist work in the US. The achievement of these goals and an expansion of Japanese students' vision of their future as a pharmacist was deemed a successful programme outcome.

Regarding the training programme structure, Japanese student pharmacists indicated that they were satisfied with the contents and time of community pharmacy settings. Open-ended responses revealed that students were able to understand the educational process and the skill development needed for the administration of vaccinations. They were able to learn about dispensing, insurance concepts, and dispensing and handling prescriptions in the US-based community setting. In addition, other services not available in Japan, such as diabetic foot care (e.g., shoe fitting), enhanced their perceptions of new professional opportunities.

Japanese student pharmacists witnessed the independence of US-based student pharmacists who could interact with other health professionals with minimum supervision. The training provided insights into the global pharmacy workforce and practice differences in the roles of pharmacists in community settings in the US. These are similar to reports of students' self-transformation after seeing innovative patient care techniques at an International APPE (Dascanio *et al.*, 2021).

On the other hand, satisfaction with the hospital tour and shadowing was slightly lower, likely because shadowing was only possible in one ward, while the work of hospital pharmacists in the US is very diverse.

A consideration is the achievement of understanding in this learning opportunity. This study found that the average level of understanding of English was 58.3%. However, this programme did not emphasise English proficiency and, as such, did not ask for the Test of English for International Communication (TOEIC) in

advance. The interest of Japanese student pharmacists in both the expansion of their pharmacy knowledge and openness to enhanced cultural exposure was deemed a critical consideration instead. Similarly, US-based pharmacy students are often not asked to complete language comprehension assessments when travelling to Japan. Although the data were not assessed in this study, the average score of 13 students who reported the TOEIC score to the school of pharmacy in advance was 671.5 (out of a range of 510-885). To date, UICOP faculty have not indicated difficulties due to English proficiency. Although improvement in understanding could be increased, students' English proficiency and comprehension level were satisfactory to receive value from this experience.

In 2015, with the further development of the separation of prescription and dispensing like that of practice in the US, Japan aimed to have improved pharmacists' function that allows community pharmacies to respond to patient needs without depending on the location. The pharmacy also shifted work from "Products" to "Person". In addition, the MHLW issued "Pharmacy vision for Patients", which encouraged patients to have their own pharmacies and emphasised the aim for patient-oriented separation of clinical and dispensing practices (MHLW, 2015). In 2016, a system of family pharmacists/ pharmacies and health support pharmacies was established (MHLW, 2016). Since August 2020, the role of pharmacists in the community has become more important. An example in Japan is now the certified pharmacy, which actively shares information and collaborates with hospitals, especially in cancer pharmacotherapy (MHLW, 2021). About 10 years have passed since this training started in 2011. In the meantime, what has been practised in the US has been newly introduced in Japan, and the Japanese pharmacist business has changed from a product to a person. During the training, students experienced a different healthcare system and pharmacy practice, especially in community settings, indicating the potential of such experiences on Japanese pharmacy practice advancements. Future studies of US and Japanese-based global/international pharmacy partnerships can further assess this impact.

Limitations to the current survey were that results were obtained from a questionnaire administered to the students after the programme at one university. These also include the potential for social desirability bias and recall bias. However, despite these limitations, the results were reliable because they were conducted over several years, and it is believed that the study enhances the understanding of short-term global/international student pharmacists and college of pharmacy exchange.

Conclusion

This study confirmed the usefulness of the short-term overseas training community-setting experience for Japanese Advance Pharmacy Practice Experience. The short-term overseas training programme with Kitasato University School of Pharmacy and the UICOP is an example of a sustainable and mutually beneficial collaboration and partnership. Japanese student pharmacists were able to learn about differences in healthcare and pharmacy practice, particularly in the community pharmacy setting in the US, through participatory and hands-on training. This programme might represent a useful strategy to train pioneering or pharmacists with an international perspective.

Conflict of interest

The authors declare no conflict of interest. There are no financial conflicts of interest to disclose. This study did not receive any funding.

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