

RESEARCH ARTICLE

Training needs of community pharmacists for advanced pharmaceutical care management

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Abstract

Introduction: Advanced pharmaceutical care management skills relate to the provision of specialised pharmacotherapy for patients, like cancer patients, who require special attention and therapeutic drugs. Kitasato University Hospital has been conducting its own advanced pharmacist training programmes to improve the advanced pharmaceutical care management skills of community pharmacists. This study aimed to identify their needs for training in advanced pharmaceutical care management skills. **Methods:** A web-based survey of the members of the Kanagawa Pharmaceutical Association was conducted. **Results:** The majority of the participants wanted to undergo advanced pharmacist traineeship, and preferred hospitals offering both advanced and specialist training. The main requirements for advanced pharmacist training were a programme of duration (one to three months); E-learning or training at a university hospital; and content related to outpatient chemotherapy. **Conclusion:** A training programme that meets these requirements might increase the number of medical care providers with advanced pharmaceutical care management skills and improve cancer care quality.

Introduction

The “Pharmacy vision for patients” was published by the Ministry of Health, Labour and Welfare (MHLW) of Japan in 2016, as a roadmap to 2035, to strengthen the primary and health support abilities of community pharmacies and pharmacists (MHLW, 2015). In recent years, the focus has been on advanced pharmaceutical care management (APCM) functions—one of the goals for the year 2025. APCM, a term first defined in the Pharmacy vision for patients, is a system that can provide specialised pharmacotherapy for patients with cancer and other diseases that require special attention and therapeutic drugs. Pharmacies with APCM functions are expected to provide optimal drug therapy and assist in the early detection of side effects; pharmacists use their pharmacological knowledge and skills to provide drug therapy in collaboration with physicians and other healthcare professionals (MHLW, 2017).

In Japan, hospital pharmacy departments have primarily been responsible for APCM functions in the

past. With the enforcement of the revised Pharmaceutical and Medical Device Act, community pharmacies with APCM functions could declare themselves a “community pharmacy in collaboration with specialised medical institutions” for each disease category with a special focus on oncology, starting in August 2021.

In Kanagawa Prefecture, where Kitasato University Hospital is located, only nine of 3,952 community pharmacies (Kanto Shinetsu Bureau of Health and Welfare, 2021), are certified (Kanagawa Prefecture, 2021), as community pharmacies in collaboration with specialised medical institutions. One of the requirements for the certification is the assignment of a specialist community pharmacist for APCM. Thus, the Japanese Society of Pharmaceutical Health Care and Sciences (JSPHCS)-certified Oncology Pharmacist of Community Pharmaceutical Care and Board-certified Pharmacist of Ambulatory Cancer Chemotherapy (BPACC), certified by the JSPHCS, and the Japanese Society of Pharmaceutical Oncology (JASPO), respectively, were recognised as specialist community

pharmacists in APCM. This was the first instance of a specialist pharmacist certification for community pharmacists in Japan.

To be certified as a specialist pharmacist in a community pharmacy, a specialist pharmacist traineeship (SPhT) offered by each society must be completed at a hospital that provides specialised medical care for the target disease. SPhT began in April 2021. As of August 2021, 255 facilities have been accredited as training hospitals (JSPHCS, 2020 and 2021a; JASPO, 2021a). As a hospital providing advanced medical care and playing a central role for the entire Kanagawa Prefecture, Kitasato University Hospital has been accepting SPhT candidates from both JSPHCS and JASPO.

The pharmacy department at Kitasato University Hospital has been conducting its own advanced pharmacist traineeship (APhT) since January 2020 (Fukawa *et al.*, 2021) before the SPhT started. The APhT aims to improve the APCM skills of community pharmacists; it is an intensive three-month practical training programme with a focus on oncology and is nearly equivalent to the BPACC specialist training programme. However, unlike the SPhT, it is conducted independently, rather than by any official society for specialist pharmacists; completing the training does not result in certification as a specialist pharmacist. A previous survey related to this topic found that 39.1% of community pharmacists wished to receive training at a hospital so that they could collaborate between community and hospital pharmacists (Iga *et al.*, 2020).

Aim

There is currently no report stating the need for APhT or outlining the course requirements. Therefore, this study aimed to identify the needs of community pharmacists for APCM-related training. A web-based survey of the members of the Kanagawa Pharmaceutical Association (KPA) who might be eligible for the APhT and the SPhT conducted, and the needs of the community pharmacists concerning APhT were examined.

Methods

Participants

The survey targeted 4,286 members of the KPA, including hospital pharmacists and non-pharmacists such as pharmacy owners. Respondents who were not community pharmacists or had less than one - experience were excluded from the analysis. The KPA is composed mainly of pharmacists who may potentially

take the authors' APhT or the SPhT at Kitasato University Hospital, located in Kanagawa Prefecture, Japan.

Survey method

The survey was conducted through a questionnaire using a web application, Google forms. A document comprising an explanation of the survey and a QR code to access the web page of the survey response form was sent to the members enclosed in the KPA membership magazine. An e-mail containing a website link to access the response form was also sent to all KPA members to seek their participation in the survey.

The questionnaire was administered in accordance with the "Ethics Guidelines for Internet-mediated Research" of the British Psychological Society (2021). Consent was obtained from the participants by providing an explanation of the printed document and the web response page, and answering the questionnaire would be regarded as consent to participate in the study.

Survey period

The study period was from 4 March 2021 to 8 June 2021.

Survey details

The questions and the response options used are listed in Appendix A. The questionnaire consisted of 10 questions: four questions on the attributes of the respondents, four on their needs in the event of taking APhT, and two asking whether hospitals should preferentially accept APhT or SPhT. The questions related to pharmacist experience and certification, length of training, and reasons for getting trained were open-ended, while the other questions were in the form of multiple-choice items.

Statistical analysis

To examine the impact of the length of a pharmacist's experience on the desire to participate in the APhT, this study compared the experience and desire to participate.

The relationship between training style and length of training was examined, considering the needs of those attending the APhT. Training styles were divided into two groups: the most preferred training style, and other training styles (*i.e.* all styles except the most preferred training style). The training period was calculated based on the authors' APhT (three months), divided into categories of every three months. They were categorised into two groups: a long- and short-

term group, using the minimum training period of six months (Japanese Medical Specialty Board, 2020), for specialist traineeship of physicians. This was done because the SPHT duration was not standardised: once a week for five years, once a week for 30 weeks, or 30 consecutive days. Since the response to the training period was a free description, answers of 'A to B months' were tabulated as an average value of [(B-A)/2].

Welch's t-test was used to compare the quantitative data collected from the two unpaired groups, while Fisher's exact test was used to compare the categorical data. A significance level of $p < 0.05$ (two-tailed) was set for both tests. JMP 14.2.0 for Windows (32-bit) (Statistical Analysis System Institute Inc., Cary, NC, USA) was used for statistical analyses. Input errors were treated as missing data and were excluded from the analysis.

Ethical approval

This study was approved by the Kitasato Institute Hospital Research Ethics Committee in October 2019 (Approval No. 19044).

Results

Of 4,286 KPA members administered questionnaires, responses were received from only 106 members, resulting in a response rate of 2.5%. A total of 101 community pharmacists were included in the analysis, excluding those who worked in hospitals (three respondents) and those who did not work in pharmacies (two respondents). The pharmacists' experience ranged from 1 to 41 years. A total of 78 pharmacists were certified: three in oncology, 49 in general, and eight in other fields. Three respondents were certified in more than one area, while 21 respondents did not provide details of their

certification. There were no specialist pharmacists, but two and one of the respondents were in the process of earning credits to become a BPACC and a JSPHCS-certified oncology pharmacist of community pharmaceutical care, respectively. Seventy-five respondents (74.3%) answered that they would like to participate in APHT.

Sixty-six respondents (65.3%) answered that they would like hospitals to provide both APHT and SPHT. The stated reasons included more learning opportunities for community pharmacists, the need for broad and in-depth learning, and future training prospects for areas other than oncology. Twelve respondents (11.9%) answered that they only needed a SPHT, 11 respondents (10.9%) indicated that they only needed an APHT. Twelve provided other responses, including three who opted for a training programme depending on the characteristics of the hospital, and one who did not want to be trained.

Regarding the need for APHT, the most common response for the training style was e-learning, with 42 respondents (41.6%). This was followed by training at university hospitals with 37 respondents (36.6%), group training at local pharmacists' associations with 13 respondents (12.9%), and training by inviting hospital pharmacists to community pharmacies with one respondent (1.0%). The remaining eight responses (7.9%) could not be categorised.

In terms of the training period, 70 respondents (69.3%) were in the 'short-term group' (six months or less). Seventeen respondents (16.9%) opted for the 'long-term group'. Responses from 14 respondents (13.9%) were excluded because they could not be aggregated as a period (e.g., responses based on frequency or 'don't know' responses). Table I shows the breakdown of training style needs against the training period needs. Regardless of the training style needs, the highest preference was for one to three months, with 43 respondents (42.6%).

Table I: Categorisation of training style needs against the training period needs for advanced pharmacist traineeship

Training period		Training style			p-value
		E-learning	Non-e-learning		
			At university hospital	Others ^a	
Short term	<1 month	5	4	3	$p < 0.01$
	1–3 months	18	16	9	
	4–6 months	1	9	5	
		24		46	
Long term	7–9 months	3	0	0	
	10–12 months	9	3	0	
	>12 months	1	0	1	
		13		4	

Note: Out of the total responses for the training period, 14 free descriptions were excluded because they could not be aggregated as a period. 'A-B months' was counted as (B-A)/two months. The p-values were calculated using Fisher's exact test. a) "Others" includes answers from respondents interested in training at local pharmacists' associations or inviting university hospital pharmacists to community pharmacies.

The most in-demand training content was “learning about outpatient oncology chemotherapy,” selected by 33 respondents (32.7%). This was followed by “opportunity to pursue certification as a specialist or certified pharmacist” with 17 respondents (16.8%),

“learn about the work of hospital pharmacists” with ten respondents (9.9%), and “permission to participate in the hospital department’s clinical conferences” with ten respondents (9.9%). Table II gives a breakdown of the training content and style needs that were emphasised.

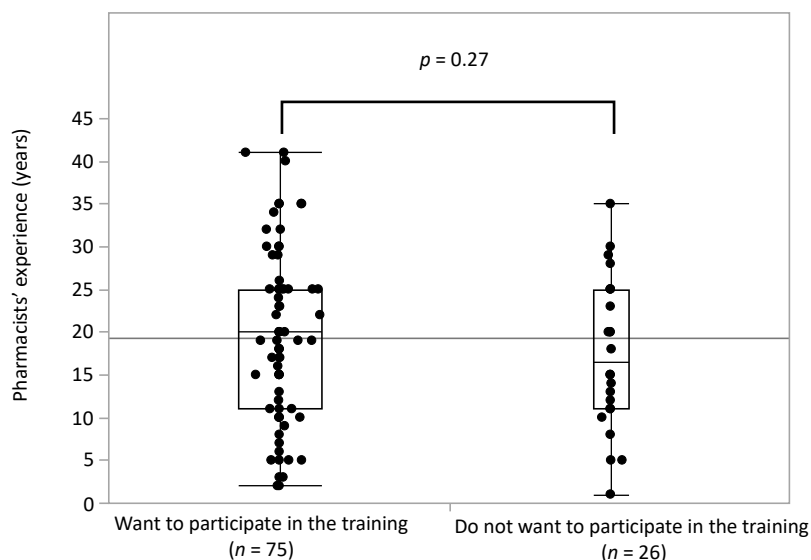
Table II: Categorisation of the training content and training style needs emphasised in advanced pharmacist traineeship

Most in-demand training content	Training style			Total
	E-learning	At university hospital	Others*	
Learning about outpatient oncology chemotherapy	18	11	4	33
Opportunity to pursue certification as a specialist pharmacist or certified pharmacist	5	5	7	17
Learning about the work of hospital pharmacists	2	7	1	10
Participation in the hospital department’s clinical conferences	1	7	2	10
Training required to become a specialist pharmacist or certified pharmacist	6	0	1	7
Learning about incurable diseases	3	2	1	6
Participation in internal training sessions related to advanced pharmaceutical care management	2	1	2	5
Participation in external training sessions related to advanced pharmaceutical care management	3	0	2	5
Learning the technique of aseptic preparation of anticancer drugs	0	1	2	3
Experience working as a hospital ward pharmacist	0	2	0	2
Learning with resident pharmacists	1	1	0	2
Collaboration with medical social workers	1	0	0	1
Total	42	37	22	101

*“Others” includes answers from respondents interested in training at local pharmacists’ associations or inviting university hospital pharmacists to community pharmacies.

There was no statistically significant difference in pharmacists’ experience concerning the desire to participate in APHT ($p = 0.27$) (Figure 1). In terms of training style, pharmacists who responded with a

preference for e-learning had a significantly greater need for a long-term training period as compared to others ($p < 0.01$) (Table I).



Note: Of the 101 respondents, 75 indicated that they would like to participate in the training. Pharmacists’ experience ranged from 1 to 41 years. There was no significant difference in the willingness to participate in the training based on the pharmacists’ experience. *p-values* were calculated using Welch’s t-test.

Figure 1: Relationship between years of experience as a pharmacist and willingness to participate in the advanced pharmacist traineeship at Kitasato University Hospital

Discussion

The study revealed that many community pharmacists need APhT, and more than half of the community pharmacists wanted both APhT and SPhT. A training period of one to three months was preferred, with e-learning or training at a university hospital as the training style. The need and desire to learn about outpatient oncology chemotherapy were emphasised by most respondents. Providing APhT tailored to the needs of the respondents would contribute to improving the quality of cancer care in the region.

Community pharmacists across all age groups had a high level of interest in the APhT. The hurdles to obtaining the specialist pharmacist certification might have influenced the result. In this study, about 80% of the respondents were certified pharmacists, but only 3% were working toward becoming specialist pharmacists. As of February 2021, there were 155 provisionally JSPHCS-certified Oncology Pharmacists of Community Pharmaceutical Care (JSPHCS, 2021b), and only 72 community pharmacists of provisionally BPACC as of November 2021 (JASPO, 2021b). According to the 2018 statistical data on pharmacists (MHLW, 2018), there were 180,415 community pharmacy workers in Japan. As a result, the proportion of this specialist pharmacist certification is only about 0.1%.

SPhT is one of the requirements for specialist pharmacist certification. Hence, the hurdles in obtaining a specialist pharmacist certification have prevented pharmacists from participating in the SPhT. This automatically reduced their opportunity to learn APCM. The number of community pharmacists who wished to participate in training at the given hospital was clearly higher than previously reported (JSPHCS, 2020); this can be attributed to the large number of community pharmacists who felt compelled to learn about APCM. There were also opinions that, in the future, APCM training in areas other than oncology, for which SPhT is not available, will be required.

Respondents who preferred e-learning were more oriented toward specialist or certified pharmacists, while those who preferred training at university hospitals showed an inclination toward practical experience, including working in wards (Table II). Regarding the educational impact of e-learning, it has been reported that six-week, small, private, online courses led to improved care of oncology patients (Vaysse *et al.*, 2018). At present, the long-term educational impact of e-learning is unknown (Salter *et al.*, 2014), and a negative correlation has been reported between the length of massive open online courses and course completion rates (Jordan, 2014). Most respondents who preferred e-learning also wanted

long-term training. When implementing APhT via e-learning, it might be effective to introduce mechanisms to prevent dropout and evaluate the learning effectiveness.

The most in-demand training content for the respondents was outpatient oncology chemotherapy. Oncology is the first disease category for community pharmacies in collaboration with specialised medical institutions. According to the 2017 statistical data on patients (MHLW, 2017), the total number of patients with malignant neoplasms in Japan was estimated to be 1.782 million. Japan's total population, as of 1 August 2021, was estimated to be 125.633 million (Statistics Bureau of Japan, Population Estimates Monthly Report, 2022), which brings the ratio of cancer patients to approximately 1.4% of the total population. The number of newly diagnosed cancer patients continues to increase, and the probability of developing cancer in one's lifetime is estimated to be one in two (National Cancer Center Japan, 2021). For implementing APCM for the increasing number of cancer patients, there is an urgent need to increase the number of community pharmacies in collaboration with specialised medical institutions. This survey has highlighted the high level of need for and interest in APhT, emphasising outpatient oncology and chemotherapy. Although APhT will not contribute to an increase in community pharmacies in collaboration with specialised medical institutions, community pharmacists learning APCM for oncology will enable them to better deal with the side effects that occur in between consultations for cancer patients.

Community-based pharmacists provide a wide range of services and contribute to improving the lives of patients in their communities. Further, to enhance community healthcare, educating pharmacists and making them leaders in medical care is as important a task in Japan as it is in the United States (Goode *et al.*, 2019). SPhT is limited to facilities that provide specialist care accredited by JSPHCS and JASPO. Of the 8,300 hospitals in Japan (MHLW, 2019), only 255 were accredited as training hospitals. Most community-based pharmacists perceive the need for APCM practices and want more training opportunities. Providing them with accessible training programmes and opportunities would increase the number of medical care providers with APCM skills and improve the quality of community health care. Data on the number of facilities offering APhT are not available, but it is unlikely to be very high. It is hoped that learning opportunities for community pharmacists will expand nationwide in the future.

Some limitations need to be taken into consideration. Since the questionnaire was distributed only to

members of the KPA, it did not consider regional differences in needs. As a result of the low response rate, there may have been a bias toward pharmacists interested in APCM. Whether the background of KPA members is consistent with the background of the community pharmacist population, in general, is also unclear. The implementation of the questionnaire during the COVID-19 pandemic may have resulted in an overestimation of the need for training through e-learning. Community pharmacists' need for SPHT was not surveyed, and so differences in needs across training types could not be compared. Access to Kitasato University Hospital and facility characteristics such as major medical departments are likely to have influenced the results, and similar studies at multiple facilities nationwide are necessary.

Conclusion

It was evident that many community pharmacists required not only SPHT, but also APhT. APhT was considered a valuable training opportunity, particularly for community pharmacists who did not aim to become specialist pharmacists. Regarding training style, there was a need for both practical training at university hospitals and knowledge acquisition through e-learning. To respond to the increasing need for APCM for cancer and other diseases, it is important to educate community pharmacists, increase the number of community pharmacies in collaboration with specialised medical institutions, and train specialist pharmacists.

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Conflict of interest

The corresponding author received research funds from an endowed chair of Medical System Network Co. Ltd. Koichiro Atsuda, one of the authors received research funds from an endowed chair of Medical System Network Co. Ltd. Junichi Mohri and Masahiro Kobayashi declare no conflicts of interest.

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Appendix A: Questionnaire survey on community pharmacists' needs for training related to advanced pharmaceutical care management

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- D1 Which of the following applies to the facility where you work? Please select the one that most closely describes you.
- 1 Community pharmacy 2 Hospital pharmacy department 3 Not working in a pharmacy
- D2 Mention the years of experience you have as a pharmacist. If you are not a pharmacist, please answer 0 years.
- D3 Are you a certified pharmacist or a specialist pharmacist (excluding provisional)? Multiple answers are acceptable.
- 1 Certified pharmacist 2 Specialist pharmacist
- 3 Currently earning credits toward becoming a specialist pharmacist or certified pharmacist 4 None of these
- D3-2 Please provide details about the qualifications for the above responses.
- Q1 Would you be interested in taking the advanced pharmacist traineeship offered at Kitasato University Hospital?
- 1 Yes, I want to take the training 2 No, I do not want to take the training
- Q2 If you were to participate in an advanced pharmacist traineeship, which of the following training styles would you consider appropriate? Please select one.
- 1 Training at a university hospital 2 Training by inviting hospital pharmacists to community pharmacies
- 3 E-learning 4 Group training at local pharmacists' associations
- 5 Others
- Q3 If you were to participate in an advanced pharmacist traineeship, how long do you think would be appropriate?
- Q4 If you were to take an advanced pharmacist traineeship, what do you consider to be the most in-demand training content among the following?
- 1 Learning about the work of hospital pharmacists 2 Participation in the clinical conferences organized in the hospital departments
- 3 Experience working as a hospital ward pharmacist 4 Learning with resident pharmacists
- 5 Learning about outpatient oncology chemotherapy 6 Interacting with pharmacy students during training
- 7 Learning about HIV/AIDS treatment 8 Learning about incurable diseases
- 9 Opportunity to pursue certification as a specialist pharmacist or certified pharmacist 10 Training required to become a specialist pharmacist or certified pharmacist
- 11 Participation in internal training sessions related to advanced pharmaceutical care management 12 Participation in external training sessions related to advanced pharmaceutical care management
- 13 Collaboration with medical social workers 14 Learning the technique of aseptic preparation of anticancer drugs
- 15 Opportunity to participate in patient association events 16 Others
- Q5 (i) Please select that which most closely matches your opinion on the provision of community pharmacist training in hospitals. Note that there is a limit to the number of people a hospital can accept.
- 1 Only 'specialist pharmacist traineeship' is provided. 2 Only 'advanced pharmacist traineeship' is provided.
- 3 Both 'specialist pharmacist traineeship' and 'advanced pharmacist traineeship' are provided. 4 Others
- Q5(ii) What is the reason for your answer above?
-

Note: D: Demographic questions. Q: Survey questions. Advanced pharmacist traineeship: A programme designed to enable community pharmacists to practice advanced pharmaceutical care management skills. It differs from the programme required to become a specialist pharmacist. Specialist pharmacist traineeship: Training at hospitals offered by societies is a requirement for community pharmacists to become specialist pharmacists.