

## Factors Hindering Collaboration between Hospital Pharmacists and Community Pharmacists

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Differences in ways of thinking due to different professional affiliations of pharmacists (e.g., community pharmacy vs. hospital pharmacy) and a gap in information needed for collaboration are presumed to be the factors hindering optimal collaboration between hospital pharmacists and community pharmacists (hereinafter referred to as “pharmacist-pharmacist collaboration”), although there have been almost no reports on them so far. In this study, we conducted a questionnaire survey of pharmacist-pharmacist collaboration on the basis of differences in professional affiliation. As an indicator, we examined differences in pharmacists’ aspiration to be a generalist or a specialist, according to differences in professional affiliation, i.e., whether they belong to community pharmacies or hospital pharmacies.

The need for pharmacist-pharmacist collaboration was scored on a 5-point scale. The results revealed considerable differences in the extent of collaboration between hospital pharmacists and community pharmacists, although both groups rated such collaboration as highly necessary. Pharmacists who accept prescriptions provided by designated cancer care hospitals gave a significantly higher rating for the need for pharmacist-pharmacist collaboration than pharmacists who do not accept prescriptions provided by designated cancer care hospitals. Comparisons of the generalist and specialist orientations of pharmacists revealed that hospital pharmacists were significantly more generalist- or specialist-oriented than community pharmacists. Furthermore, there appeared to be a gap in the information needed most by hospital pharmacists and community pharmacists engaging in pharmacist-pharmacist collaboration.

These findings suggest that differences in the focus of hospital pharmacists and community pharmacists and a gap in information needed for collaboration are likely the factors that hinder pharmacist-pharmacist collaboration.

**Key words;** pharmacist-pharmacist collaboration, hindering factors, generalist orientation, specialist orientation

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## **1. Introduction**

In recent years, collaboration between pharmacists across the care continuum (hereinafter referred to as “pharmacist-pharmacist collaboration”) has been promoted in order to improve safety of drug therapy and to meet the needs of patients in home care, which has grown in demand, as well as in regular visits to hospitals for outpatient cancer chemotherapy. However, as it stands, fully functional collaboration is rarely achieved at medical institutions. In order to provide patients with appropriate and safe medical care, the need for mutual exchange, such as sharing of patient information, between hospital pharmacies and community pharmacies has been proposed<sup>1)</sup>.

In the oral cancer chemotherapy setting<sup>2-5)</sup>, pharmacist-pharmacist collaborations include holding group trainings<sup>6)</sup>, disclosing regimens on the internet, sharing dosage schedules by fax, and providing patient information (e.g., laboratory data) necessary for patient education<sup>2)</sup>. Yet, in actuality, such collaborations have hardly reached a satisfactory level. This suggests that it is not simply due to the lack of sufficient knowledge or information that pharmacist-pharmacist collaboration has failed to advance, but rather, a number of underlying causes may exist.

In particular, differences arising from the different professional affiliations of pharmacists, methods of collaboration, and discrepancies in information focus between hospital pharmacists and community pharmacists, are presumed to be the main causes.

Hospital pharmacists are required to perform the role of a specialist, for example, an oncology

pharmacist. At the same time, they are called on to serve as a generalist who can respond flexibly to a wide range of situations or prescriptions at long-term care facilities and others<sup>7)</sup>. This situation applies to community pharmacists as well. In addition, acquiring additional certification is difficult for community pharmacists, which is presumed to be one of the factors that hinder them from becoming a specialized pharmacist. As mentioned above, the roles of hospital pharmacists and community pharmacists vary widely according to professional affiliation, and differences in ways of thinking between the two groups are considered to be the most important factor that hampers pharmacist-pharmacist collaboration<sup>8),9)</sup>.

Accordingly, in this study, we conducted a questionnaire survey to clarify differences in ways of thinking arising from the different professional affiliations of pharmacists based on the types of services rendered, for the purpose of examining differences in awareness regarding pharmacist-pharmacist collaboration between hospital pharmacists and community pharmacists.

## **2. Methods**

We conducted a self-administered questionnaire survey targeting hospital and community pharmacists from January to February 2015. In the case of hospital pharmacists, the survey targeted those at 11 hospitals that agreed to participate in the survey, from among designated cancer care hospitals and local core cancer hospitals in all prefectures. In the case of community pharmacists, those at four pharmacy chains operating nationwide responded

to the survey. We did the request with the questionnaire, but conducted a questionnaire in the online because two companies recommended a questionnaire in the online. We also sent a self-administered questionnaire to pharmacists at the remaining two community pharmacies and those at the 11 hospitals, and collected their responses. The questions sought to identify pharmacist-pharmacist collaboration in the oral cancer chemotherapy setting, levels of awareness of the need for pharmacist-pharmacist collaboration, and information needed for pharmacist-pharmacist collaboration.

The collection rate was 92.4% for the hospital pharmacists. For the community pharmacists, responses were collected from 47 pharmacists from the two community pharmacies to whom we sent the questionnaire, and the collection rate was 88.7%. As for the 1,387 respondents from the other two community pharmacies, as they responded online, we were unable to calculate the collection rate.

Data are shown as means ± S.E. and statistical analysis was performed using Mann-Whitney's U-test. Statistical significance was accepted at  $P < 0.05$ .  $P < 0.10$  was considered there was a tendency.

The study was conducted upon receipt of confirmation from the chairman of the university ethics committee that application for approval of this study from the committee was unnecessary.

### 3. Results

#### 1. Attributes of pharmacists

Responses were obtained from 121 hospital pharmacists (56 males, 65 females) and 1,431 community pharmacists (676 males, 755 females). No difference in age composition was noted between the two groups (Figure 1). The hospital pharmacists were affiliated with such facilities as designated cancer care hospitals (82%), university hospitals (8%), and general hospitals (multiple departments) (10%). The community pharmacists were affiliated with pharmacies that mainly respond to the demands of general hospitals (multiple departments) (46%), clinics/medical offices (33%), municipal hospitals (9%), specialized hospitals (single department) (6%), regional core centers for cancer therapy (i.e., designated cancer care hospitals) (4%), and university hospitals (2%).

#### 2. Achievement of pharmacist-pharmacist collaboration

Participants were asked to respond to the question, "Do you engage in pharmacist-pharmacist collaboration?" using the following 4-point scale: 1) Yes, 2) Sometimes, 3)

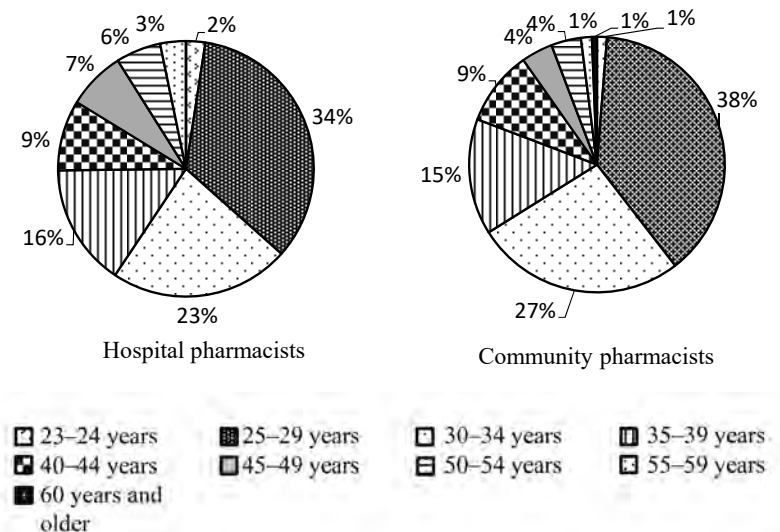


Figure 1. Age composition of hospital pharmacists and community pharmacists

Not often, and 4) No. The responses collected from hospital pharmacists working at designated cancer care hospitals and community pharmacists who accept prescriptions provided by designated cancer care hospitals, respectively, were as follows: 1) 26.0% and 46.0%, 2) 24.0% and 22.0%, 3) 25.0% and 14.0%, and 4) 25.0% and 18.0%. It was revealed that by combining those who chose 1) Yes and 2) Sometimes, roughly 70% of the community pharmacists were engaged in pharmacist-pharmacist collaboration in the oral cancer chemotherapy setting.

Meanwhile, among the hospital pharmacists, those engaged in pharmacist-pharmacist collaboration in the said setting and who selected 1) and 2) combined accounted for 52.1%, whereas among the community pharmacists, the percentage was no more than 11.5%.

### 3. Need for pharmacist-pharmacist collaboration

With regard to the “need for pharmacist-pharmacist collaboration,” hospital pharmacists working at designated cancer care hospitals and community pharmacists who accept

prescriptions provided by designated cancer care hospitals were asked to score using the following 5-point scale: 1) I very much think so, 2) I think so, 3) Not sure, 4) I don’t really think so, and 5) I don’t think so. The results showed that roughly 90% or more of respondents in both groups saw the need for pharmacist-pharmacist collaboration (Figure 2).

Moreover, with regard to the “need for pharmacist-pharmacist collaboration,” participants scored using the following 5-point scale: 1) I very much think so (+2 points), 2) I think so (+1 point), 3) Not sure (0 point), 4) I don’t really think so (-1 point), and 5) I don’t think so (-2 points). Then, the responses of hospital pharmacists working at designated cancer care hospitals and those working at other hospitals were compared. No significant differences were found with regard to the need for collaboration (Figure 3A). On the other hand, the need for pharmacist-pharmacist collaboration was significantly higher for community pharmacists who accept prescriptions provided by designated cancer care hospitals than for those

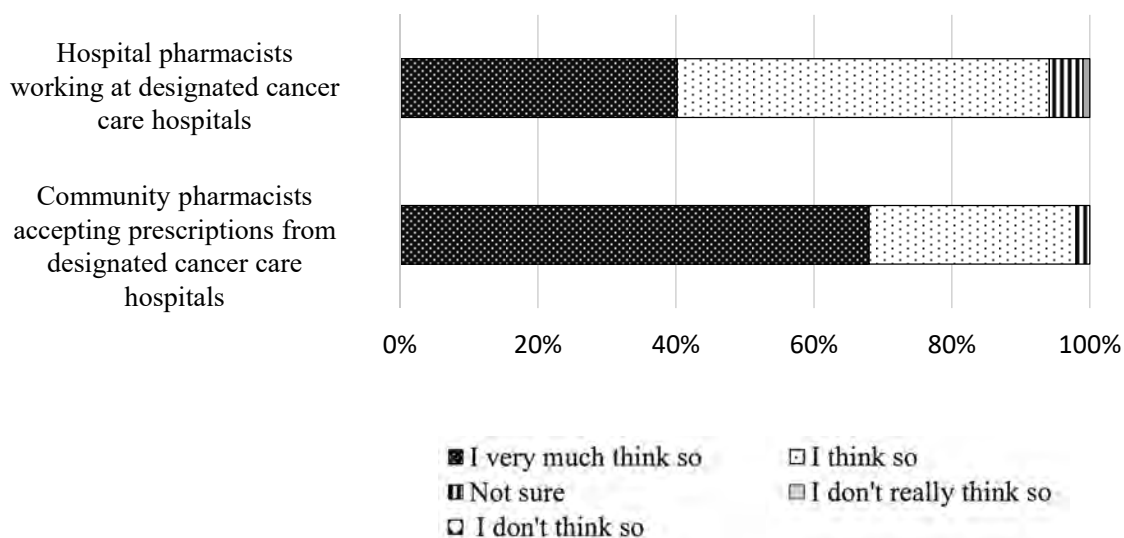


Figure 2. Responses to the Question: “Do you think that pharmacist-pharmacist collaboration is necessary?”

who do not (Figure 3B).

4. Generalist and specialist orientations

With regard to generalist and specialist orientations, both hospital pharmacists and community pharmacists rated their orientations on the following 5-point scale, and scores were compared by orientation: 1) Yes, very much (+2 points), 2) Yes (+1 point), 3) Not sure (0 point),

4) Not really (-1 point), and 5) No (-2 points).

The results showed that hospital pharmacists had significantly higher scores for both generalist and specialist orientations than community pharmacists (Figures 4A and 4B).

Furthermore, we surveyed the generalist and specialist orientations of hospital pharmacists who work at designated cancer care hospitals and those who work at other hospitals, and of

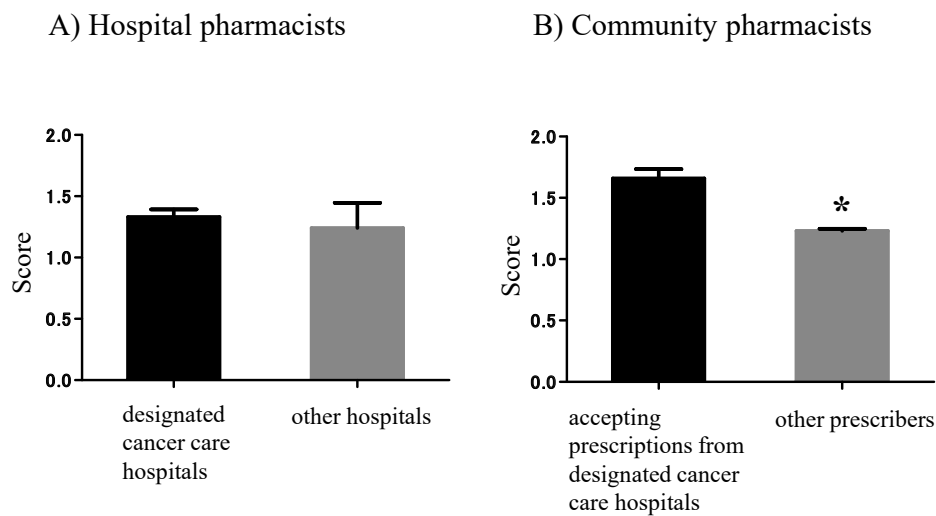


Figure 3. Comparison of need for pharmacist-pharmacist collaboration by place of employment

A) Hospital pharmacists working at designated cancer care hospitals and those working at other hospitals  
 B) Community pharmacists accepting prescriptions from designated cancer care hospitals and other prescribers  
 Mean ± S.E., \* : P < 0.05

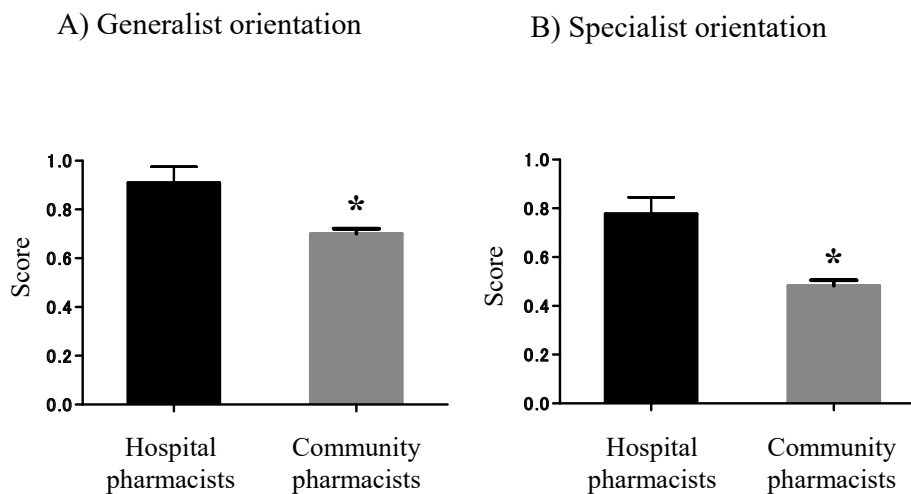


Figure 4. Differences in generalist and specialist orientations between hospital pharmacists and community pharmacists  
 Mean ± S.E., \* : P < 0.05

Table 1. Comparison of generalist and specialist orientations by affiliation of hospital pharmacists

Affiliation of hospital pharmacists	Designated cancer care hospitals	Other hospitals	Significant difference
Number of pharmacists	99	22	—
Generalist orientation	1.04 ± 0.67	0.86 ± 0.57	N.S.
Specialist orientation	0.88 ± 0.70	1.00 ± 0.63	N.S.

Mean ± S.E., N.S. : not significant

Table 2. Comparison of generalist and specialist orientations according to difference in the prescriber of prescriptions accepted by community pharmacists

Prescriber of prescriptions accepted by community pharmacist	Designated cancer care hospitals	Other prescribers	Significant difference
Number of pharmacists	50	1,381	—
Generalist orientation	0.88 ± 0.72	0.69 ± 0.79	*
Specialist orientation	0.66 ± 0.82	0.48 ± 0.87	+

Mean ± S.E., \* : P < 0.05, + : P < 0.10

community pharmacists who accept prescriptions provided by designated cancer care hospitals and those who accept prescriptions provided by other prescribers.

No significant differences were observed in both generalist and specialist orientations between hospital pharmacists who work at designated cancer care hospitals and those who work at other hospitals (Table 1).

On the other hand, significant differences or tendency were observed in both generalist and specialist orientations between community pharmacists who accept prescriptions provided by designated cancer care hospitals and those who accept prescriptions provided by other prescribers (Table 2).

No significant differences were observed in both generalist and specialist orientations between hospital pharmacists working at designated cancer care hospitals and community pharmacists who accept prescriptions provided by

designated cancer care hospitals.

Moreover, with regard to generalist and specialist orientations, analysis by age group revealed that hospital pharmacists in the “35–39 year old” and “40–44 year old” age groups had significantly higher scores for generalist orientation than community pharmacists in the same age groups (Figure 5A). Similarly, hospital pharmacists in the “35–39 year old” age group had a significantly higher score for specialist orientation than community pharmacists in the same age group (Figure 5B).

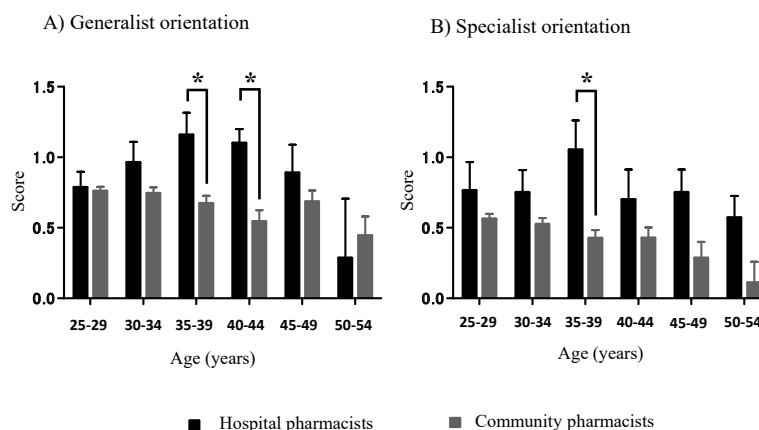


Figure 5. Stratified analysis by age group of generalist and specialist orientations of hospital pharmacists and community pharmacists  
Mean ± S.E., \* : P < 0.05

Table 3. Information needed most for pharmacist-pharmacist collaboration between hospital pharmacists who work at designated cancer care hospitals and community pharmacists who accept prescriptions provided by designated cancer care hospitals

	Hospital pharmacists working at designated cancer care hospitals	Community pharmacists who accept prescriptions provided by designated cancer care hospitals
1	Regimens 30.4%	Regimens 30.6%
2	Name of disease 19.6%	Contents of patient education at the hospital 26.5%
3	Contents of patient education at the pharmacy 13.0%	Contents of treatment at the hospital 16.3%
4	Handling of adverse drug reactions 12.0%	Handling of adverse drug reactions 8.2%
5	Symptoms of adverse drug reactions 9.8%	Name of disease 6.1%
6	Whether patients are informed or not 7.6%	Symptoms of adverse drug reactions 6.1%
7	Laboratory data 6.5%	Whether patients are informed or not 6.1%
8	Other 1.1%	Laboratory data 0.0%

#### 5. Information needed for pharmacist-pharmacist collaboration

We also examined the information needed most for pharmacist-pharmacist collaboration. For hospital pharmacists working at designated cancer care hospitals, the following 8 items were considered: 1) name of disease, 2) laboratory data 3) regimen, 4) whether patients are informed or not, 5) symptoms of adverse drug reactions, 6) handling of adverse drug reactions, 7) contents of patient education at the pharmacy, and 8) other. For community pharmacists who accept prescriptions provided by designated cancer care hospitals, the following 8 items were considered: 1) name of disease, 2) laboratory data, 3) regimen, 4) whether patients are informed or not, 5) symptoms of adverse drug reactions, 6) handling of adverse drug reactions, 7) contents of patient education at the hospital, and 8) contents of treatment at the hospital. The results revealed a gap between hospital pharmacists and community pharmacists regarding the information needed most for pharmacist-pharmacist collaboration. Of note were the significant differences in the percentages of “contents of patient education at the hospital (or pharmacy) ” and “name of

disease” (Table 3).

#### 4. Discussion

We conducted a survey where hospital pharmacists and part of community pharmacists were asked to fill out a self-administered questionnaire and another part of community pharmacists were asked to fill out an online self-administered questionnaire. As the questions in the questionnaire and its online counterpart were the same and the pharmacist had to answer them in person, we assumed that there were no differences in the results of the two methods.

With regard to the need for pharmacist-pharmacist collaboration, a significant difference was observed between community pharmacists who accept prescriptions provided by designated cancer care hospitals and those who accept prescriptions provided by other prescribers. In addition, with regard to generalist and specialist orientations, community pharmacists who accept prescriptions provided by designated cancer care hospitals had higher scores than community pharmacists who accept prescriptions provided by other prescribers. Also,

no significant differences were observed in both generalist and specialist orientations between hospital pharmacists working at designated cancer care hospitals and community pharmacists who accept prescriptions provided by designated cancer care hospitals. As community pharmacists who accept prescriptions provided by designated cancer care hospitals give drug administration guidance to cancer patients and check adverse drug reactions, they are required to have an accurate understanding of the background leading to diagnosis as well as the treatment course and the patient's knowledge of medication. Therefore, they are likely to be highly aware of the need for pharmacist-pharmacist collaboration, and at the same time, have higher generalist and specialist orientations than community pharmacists who accept prescriptions provided by other prescribers.

We scored the level of generalist and specialist orientations and compared them by pharmacists' professional affiliation, i.e., hospital pharmacy vs. community pharmacy. We found that hospital pharmacists had significantly higher scores for both generalist and specialist orientations than community pharmacists. Tanaka et al.<sup>9)</sup> reported that hospital pharmacists who do more clinical work have higher team medical care related work execution rates than those who do less clinical work, and are also more actively engaged in new services. As hospital pharmacists can communicate actively with other medical professionals in order to improve patient QOL and increase the effects of drug therapy, they are required to pursue self-improvement in order to enhance services pertaining to medication management and guidance in hospital wards. This

is likely related to the significant difference in generalist and specialist orientations, as compared to community pharmacists.

The difference in the volume of clinical work is one of the possible reasons why hospital pharmacists have higher scores for generalist and specialist orientations than community pharmacists. The volume of clinical work reflects differences in the acquired qualification of specialized pharmacists. At hospitals, pharmacists are required to engage actively in clinical work, and this may increase opportunities for them to show motivation for continued learning. Moreover, unlike hospital pharmacists who have been involved in the chemotherapy of hospitalized patients, community pharmacists face difficulty in grasping the contents of patient education at hospitals and the treatment modalities due to the recent increase in the number of patients undergoing outpatient chemotherapy. In addition, patient medical information is lacking. Under such circumstances, they feel that they are not acquiring enough knowledge about drug therapy or medication. This may have influenced the generalist and specialist orientations of community pharmacists in the present study. Compared with community pharmacists, hospital pharmacists have more time to interact with patients and can acquire a more accurate understanding of the treatment background from physicians or through electronic medical records. Accordingly, differences in the environment related to different professional affiliations may have contributed to their motivation and orientations.

Together with doctors, hospital pharmacists have access to new information when hospital



wards give drug administration guidance. As opposed to this, community pharmacists lack information on patients' treatment and according to some reports, because of their lack of knowledge of, and experience in, chemotherapy, doctors expect little from them<sup>11),12)</sup>. The promotion of pharmacist-pharmacist collaboration may lead to smoother collaboration between community pharmacists and other medical professionals, and by gaining an understanding of the contents of pharmacists' services, we anticipate that the potential of community pharmacists can be broadened further.

Furthermore, hospital pharmacists in the "35- to 39-year-old" and "40- to 44-year-old" age groups had significantly higher scores for generalist orientation than community pharmacists in the same age groups. In addition, hospital pharmacists in the "35- to 39-year-old" age group had significantly higher scores for specialist orientation than community pharmacists in the same age group. This can be attributed to the fact that hospital pharmacists in those age groups take the lead in business operations and can acquire specialized pharmacist certification on the basis of work experience, which probably gives them greater motivation to become a generalist or a specialist.

Differences were observed between hospital pharmacists working at designated cancer care hospitals and community pharmacists who accept prescriptions provided by designated cancer care hospitals as regards information needed most for implementing pharmacist-pharmacist collaboration. It is notable that 26.5% of community pharmacists who accept prescriptions provided by designated cancer care hospitals and

13.0% of hospital pharmacists working at designated cancer care hospitals indicated that "contents of patient education at the hospital (or pharmacy)" is needed. The higher percentage is attributable to the fact that community pharmacists who accept prescriptions provided by designated cancer care hospitals need to provide care to patients after discharge. Moreover, 19.6% of hospital pharmacists working at designated cancer care hospitals and 6.1% of community pharmacists who accept prescriptions provided by designated cancer care hospitals indicated that "name of disease" is needed. Given the fact that hospital pharmacists working at designated cancer care hospitals check the regimen, they need to know the name of the disease and the details, including the site or stage of cancer. Meanwhile, community pharmacists who accept prescriptions provided by designated cancer care hospitals deal with patients who are treated according to a regimen; thus, they attach importance to the regimen and the contents of treatment at the hospital, and this was considered to be one of the reasons for the difference. As shown above, as the duties of hospital pharmacists and community pharmacists vary, a gap was presumed to have been created in the type of information needed by hospital pharmacists and community pharmacists. The possibility that the current pharmacist-pharmacist collaboration may not meet the needs of community pharmacies has been pointed out, and while both hospital and community pharmacists recognize the need to collaborate, it is speculated that there is a gap between the information that hospital pharmacists consider necessary and the information that community pharmacists seek to

obtain<sup>13)</sup>. This is consistent with the results of the present study, and suggests the possibility that it is not the differences in awareness of the need for collaboration that hinder fully functional pharmacist-pharmacist collaboration, but rather, the differences in the ways of thinking and the focus of information arising from the different professional affiliations of pharmacists (e.g., hospital pharmacy, community pharmacy) may be the inhibiting factor.

In terms of actual efforts to promote pharmacist-pharmacist collaboration, it has been reported<sup>10)</sup> that in-depth, interactive, and cooperative drug administration guidance was provided by sharing patient information and guidance contents after first determining the persons in charge for both the hospital pharmacy and the community pharmacy and then establishing a face-to-face relationship between these individuals. We anticipate that in addition to promoting the active use of information and communication technology (ICT) and the cooperative participation of hospital pharmacists and community pharmacists in home care conferences, encouraging regular attendance of community pharmacists in case study meetings in hospital pharmacies may contribute further to the improvement of patient QOL via pharmacist-pharmacist collaboration.

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