The Promotion of In-home Medical Care Services by Community Pharmacists

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Abstract

The promotion of in-home medical and long-term care is a priority in Japan, as the birthrate is declining rapidly and population aging continues. In areas in which in-home medical care services are provided, there are problems concerning medicine administration and storage. As pharmacotherapy experts, pharmacists are expected to participate in in-home medical care. Although their participation is increasing overall, many pharmacies do not provide in-home medical care services. This study examined the obstacles and solutions to promoting in-home medical care services provided by community pharmacists in metropolitan areas, where the enhancement of in-home medical and long-term care is urgently required. The hearing survey conducted in metropolitan areas revealed details concerning the circumstances surrounding problems such as lack of pharmacists, cooperation, and understanding of other medical staff. The results suggest that holding conferences on in-home medical and long-term care and promoting the activities of the Japan Pharmaceutical Association are effective in strengthening the cooperation between pharmacists and other medical staff. An analysis of 47 prefectural medical care plans showed that, to operate the plan-do-check-act (PDCA) cycle effectively, it is important to establish indices of status and numerical targets that reflect status accurately, such as the number of pharmacies that provide in-home medical care services. Furthermore, examination of the establishment of numerical targets related to cooperation is critical, because cooperation between pharmacists and other medical staff is a very important issue in promoting in-home medical and long-term care.

抄録

急速に少子・高齢化が進む日本において、在宅医療・介護の推進は喫緊の課題となっている。在宅医療の現場では、薬の服薬や保管に関連する問題が散見されていることから、薬物治療の専門職である薬剤師の在宅医療への参画が強く求められている。一方、薬局薬剤師による訪問薬剤管理指導は全体としては増えてきているものの、まだ、積極的に取り組んでいる薬局は一部である。本研究では、在宅医療・介護の最重点整備地域である大都市部における薬局薬剤師による在宅業務の推進のための課題や対応策について検討を行った。大都市部の薬局に対するヒアリング調査を行った結果、在宅業務を推進する際の課題として人員不足、他職種との連携・理解不足などの状況が明らかとなった。他職種との連携強化のためには、在宅医療カンファレンスの実施や薬剤師会を通じた活動が有効であることが示唆された。全国47都道府県の医療計画の策定状況を分析した結果、PDCAサイクルを効率的に機能させるためにには、実際に在宅業務を実施している薬剤師数などにより正確に状況を把握できる指標を現状把握および数値目標として設定することが重要であると考えられた。また、在宅医療・介護の推進において薬剤師と他職種との連携は非常に重要な課題であることから、連携に関する数値目標の設定について検討する必要がある。
Introduction

In Japan, which has a declining birthrate and an aging population, the number of people aged 75 years or older will exceed 20 million in 2025 and 25% of the total population in 2055\(^1\). According to a survey concerning elderly people’s attitudes toward health\(^2\), the proportion of those who wished to die at home was 54.6%, which was the highest in those according to places in which people wish to die. Securing a place in which to spend one’s final days (promoting in-home medical and long-term care) is the most urgent issue with the rapidly declining birthrate and aging population in Japan.

In areas in which in-home medical care is provided, there are a number of problems concerning the administration and storage of medicines. Elderly people are at especially high-risk of medication side effects, because they usually take numerous types of medicine, and their physical functioning has decreased\(^3\). Under these circumstances, pharmacists, as pharmacotherapy experts, are expected to demonstrate proactive participation in in-home medical care. A review of community pharmacists’ provision of in-home medical care services indicated that the number of claims for in-home medication management and guidance fees (under medical and long-term care insurance) has doubled in the past five years\(^4\). However, less than 50 claims per year are made by approximately 70% of pharmacies (under medical insurance), which shows no significant change in recent years\(^4\). That is, although community pharmacists’ over-

all provision of in-home medical care services is increasing, many pharmacies do not provide them. It is therefore essential that community pharmacists are more active in providing in-home medical care services.

To discuss means of enhancing in-home medical and long-term care, it is necessary to comprehend future status and demand for each region. Takahashi et al. developed the Secondary Medical District Database, which contained information concerning population, area, number of hospitals, pharmacies, doctors, and pharmacists for each secondary medical district and classified all such districts in Japan into three types based on population and population density: metropolitan areas, provincial cities, and underpopulated areas\(^5\).

Analyzing changes in the total and elderly populations (75 years old or older) between 2010 and 2035 according to the three types of secondary medical districts, revealed that, in metropolitan areas, the total population increased slightly and the elderly population increased remarkably (by more than 40%), while in most underpopulated areas, the total population decreased by more than 10% and the elderly population increased by less than 40% and in most provincial cities, the total population decreased slightly and the elderly population increased by a range of 25% to 50\(^6\). This indicates that the enhancement of in-home medical and long-term care is required in metropolitan areas in which population aging is progressing rapidly. This study examined the circumstances surrounding the system via which in-home medical care services

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**Key words:** in-home medical care, aging population, community pharmacists, prefectural medical care plan, metropolitan areas
are provided by community pharmacists in metropolitan areas by comparing the characteristics of the three types of secondary medical district.

Previous surveys involving Nishitokyo-city and the entire country showed that obstacles to promoting community pharmacists’ provision of in-home medical care services included lack of pharmacists, cooperation, and understanding of other medical staff, and complicated operating procedures. In this study, a hearing survey involving pharmacies in metropolitan areas was conducted to elucidate the circumstances surrounding the problems highlighted in previous surveys and establish a solution.

The Ministry of Health, Labour and Welfare notified “Guidance for developing medical care plans by prefecture.” This notification showed the guidance for developing in-home medical care plan for the first time and required that each prefectures should establish indices for the identification of the status and numerical targets in medical care plans, which were needed to operate the plan-do-check-act (PDCA) cycle effectively. This study focused on analyzing the circumstances surrounding the establishment of indices to determine status and numerical targets and discussed methods of enhancing the in-home medical and long-term care offered by community pharmacists.

Methods

1. Survey of the status of in-home medical care services provided by community pharmacists in metropolitan areas

   (1) In-home medical care service supply systems in metropolitan areas

   The Secondary Medical District Database was used to analyze the circumstances surrounding systems for supplying in-home medical care services in metropolitan areas. The number of pharmacies and pharmacists per population, according to secondary medical district, were calculated by dividing the number of pharmacies and pharmacists by the 2010 population of the secondary district. Averages were then determined for metropolitan areas, provincial cities, and underpopulated areas. The proportion of pharmacies submitting the notification of in-home medication management and guidance, and the notification of additional fees for in-home medical care services and the preparation of sterile pharmaceutical products according to secondary medical district, were calculated by dividing the number of pharmacies submitting the respective notifications by the number of pharmacies in the secondary district. Averages were then determined for metropolitan areas, provincial cities, and underpopulated areas.

   (2) The status of, and issues concerning, in-home medical care services provided by community pharmacists in metropolitan areas

   A hearing survey, which included 11 pharmacies located in metropolitan areas, was conducted between May 2013 and June 2014, and involved visiting the pharmacies and recording the status of, and issues surrounding, the in-home medical care services they provided.

   The pharmacies surveyed, located in secondary medical districts of metropolitan areas, were among 16 pharmacies that served as facilities for practical pharmacology training for fifth-grade students of the Regulatory Science Laboratory, Faculty of Pharmaceutical Sciences, Musashino University in FY 2013 and FY 2014. The hearing items were determined by analyzing problems concerning in-home medical care services, which were highlighted in previous surveys conducted by the Nishitokyo-city Pharmaceutical Associa-
2. Analysis of prefectural medical care plans for in-home medical care

Each prefectural medical care plan with a link to the prefectural medical care plan site of the Ministry of Health, Labour and Welfare was accessed in December 2014 and January 2015, and the circumstances surrounding the development of medical care plans for in-home medical care was analyzed according to prefecture.

(1) The situation regarding the establishment of indices of status

The number of prefectures that had determined how many pharmacies were submitting the notification of in-home medication management and guidance as an index of status was examined. Thereafter, analysis units (established according to prefecture, medical district, or municipality) were examined for these prefectures. Moreover, index types, excluding pharmacies submitting the notification of in-home medication management and guidance, were explored.

(2) The situation regarding the establishment of numerical targets

The number of prefectures that established numerical targets related to in-home medical care services provided by pharmacies, clinics, and hospitals was determined. Thereafter, the types of numerical target that were related to cooperation between pharmacies and other medical institutions were investigated.

Results

1. Survey of the status of in-home medical care services provided by community pharmacists in metropolitan areas

(1) In-home medical care service supply systems in metropolitan areas

Fig. 1 shows the number of pharmacies and pharmacists per population in three types of secondary medical district, including metropolitan areas, provincial cities, and underpopulated areas, according to the assumption that the national average was 100. The numbers of pharmacies per population in these three types of secondary medical district were between 94.5 and 101.7, and the districts did not differ significantly in this regard. The numbers of pharmacists per population in metropolitan and underpopulated areas were 113.0 and 70.8, respectively.

Fig. 2 shows the proportion of pharmacies that submitted notifications regarding in-home medical care services, according to the assumption that the national average was 100. The proportions of pharmacies that submitted the notification of in-home medication management and guidance ranged from 97.1 to 102.7. The proportions of pharmacies that submitted the notification of additional fees for in-home medical care services in metropolitan (130.0) and underpopulated areas (56.9) were higher and lower relative to those of the national average, respectively. The proportions of pharmacies that submitted the notification of additional fees for the preparation of sterile pharmaceutical products in metropolitan and underpopulated areas were 113.6 and 71.6, respectively.
The number of pharmacies and pharmacists per population, assuming the national average was 100

The number of pharmacies and pharmacists per population according to secondary medical district, were calculated by dividing the number of pharmacies and pharmacists by the 2010 population of the secondary district. Averages for metropolitan areas, provincial cities, and underpopulated areas were then determined, with the assumption that the national average was 100. Error bars show standard deviation (SD).


The three types of secondary medical district are defined as follows:

1 Metropolitan areas: secondary medical districts with populations of more than 1 million and/or population density of more than 2,000/km².
2 Provincial cities: secondary medical districts with populations of more than 200,000, or populations of more than 100,000 with population density of more than 200/km², excluding metropolitan areas.
3 Underpopulated areas: secondary medical districts other than metropolitan areas and provincial cities.

The proportion of pharmacies submitting the notification related to in-home medical care services, assuming the national average was 100

The proportion of pharmacies submitting the notification of in-home medication management and guidance and the notification of additional fees for in-home medical care services and the preparation of sterile pharmaceutical products by secondary medical district were calculated by dividing the number of pharmacies submitting the respective notifications by the number of pharmacies in the secondary district. Averages for metropolitan areas, provincial cities, and underpopulated areas were determined, assuming a national average of 100. Error bars show standard deviation (SD).


The three types of secondary medical district are defined as follows:

1 Metropolitan areas: secondary medical districts with populations of more than 1 million and/or population density of more than 2,000/km².
2 Provincial cities: secondary medical districts with populations of more than 200,000, or populations of more than 100,000 with population density of more than 200/km², excluding metropolitan areas.
3 Underpopulated areas: secondary medical districts other than metropolitan areas and provincial cities.
Table 1 Problems highlighted in previous surveys

<table>
<thead>
<tr>
<th>Problems of in-home medical care services</th>
<th>Survey by the Nishitokyo-city pharmaceutical association</th>
<th>Survey by the Japan Pharmaceutical Association</th>
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<tr>
<td>Lack of pharmacists</td>
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<td>Lack of cooperation and understanding of other medical staff</td>
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<td>Complicated operating procedures</td>
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<td>Securing profitability</td>
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<td>Poor understanding of patients</td>
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<td>Lack of experience</td>
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<td>Lack of facilities for the preparation of sterile pharmaceutical products</td>
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<td>Inability to providing medical and hygienic materials</td>
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<td>Travel time and ability</td>
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a–f: Included similar items as follows:
a) Difficulty in cooperation with other medical staff, no instruction from doctor.
b) Lack of cooperation between various types of medical staff, lack of understanding of relevant medical staff including doctors, no dissemination of information on the pharmacies that provide the services.
c) Taking a long time to produce a document, format of document, inability to understand billing for health insurance.
d) Burden of medical expenses on patients, no need expressed by patients.
e) Lack of understanding of patients, self-pay burden of patients.
f) Inability to understand specific service content, concern regarding providing services without help from other pharmacies.

(a) The status of, and issues concerning, in-home medical care services provided by community pharmacists in metropolitan areas

Table 1 illustrates the results of the comparison between the problems concerning in-home medical care services, which were highlighted in a survey conducted by the Nishitokyo-city Pharmaceutical Association\(^1\), and a national survey conducted by the Japan Pharmaceutical Association\(^2\). Lack of pharmacists, cooperation, and understanding of other medical staff, complicated operating procedures, securing profitability, poor understanding of patients, and lack of experience were identified as issues in these surveys. In addition, travel time and ability, inability to provide medical and hygienic materials, and lack of facilities for the preparation of sterile pharmaceutical products were mentioned in the national survey. Based on these results, nine problems highlighted in these surveys that were stated in the left column in Table 1, were determined as the items of the hearing survey.

Table 2 includes details of the 11 pharmacies involved in the survey. All of the pharmacies submitted the notification of in-home medication management and guidance, and six provided in-
home medical care services. The monthly average numbers of home-care patients for whom in-home medical care services were provided ranged from 1 to 30. There was a considerable difference between pharmacies with respect to the circumstances surrounding the provision of in-home medical care services. Comments regarding the problems and issues concerning the promotion of in-home medical care services provided by community pharmacists are shown in Table 3. A lack of pharmacists was identified as an issue for three pharmacies providing in-home medical care services. One pharmacy provided services via the employment of a part-time pharmacist. Regarding lack of cooperation and understanding of other medical staff, the comments recorded included “other medical staff members do not understand the role of pharmacists” and “doctors refuse to receive reports concerning the in-home medical care services provided by pharmacists.” One pharmacy did not provide these services because it had not received
required instructions from doctors, but it could provide them if they were requested by doctors. With respect to ensuring good practice, some pharmacists stated the following: “holding a conference on in-home medical and long-term care is effective” or “the activities of the Japan Pharmaceutical Association could strengthen cooperation between pharmacists and other medical staff.” Concerning poor understanding of patients, one of the comments recorded was “performing sufficient work, balanced with the patient’s medical expenses, is important in gaining the patient’s understanding.” It was also apparent that the decision to provide in-home medical care services was occasionally made according to the location of the pharmacy. Furthermore, some pharmacy stated that the ability to communicate was needed more urgently relative to specialist knowledge and emphasized the importance of participating in in-home medical care. Regarding travel time and ability, some problems, such as “The street near the patient’s home is very narrow and/or there is no parking,” were considered peculiar to metropolitan areas.

2. Analysis of prefectoral medical care plans for in-home medical care

(1) The situation regarding the establishment of indices of status

Fig. 3 shows the circumstances surrounding the determination of the number of pharmacies that submitted the notification of in-home medication management and guidance as an index of status in 47 prefectoral medical care plans. More than 80% of prefectures had determined how many pharmacies were submitting the notification of in-home medication management and guidance as an index of status. From the perspective of the analysis unit, 13%, 51%, and 23% of prefectures established this index for the entire prefecture, each medical district, and each municipality, respectively.

As shown in Table 4, other indices established to determine status included the numbers of pharmacies that provide in-home medical care services (ten prefectures), can treat home-care patients during the holidays and at night (four prefectures), and are equipped with the facilities for the preparation of sterile pharmaceutical products (three prefectures), among others.

(2) The situation regarding the establishment of numerical targets

Fig. 4 illustrates the analysis of numerical targets related to pharmacies in 47 prefectoral medical care plans. The results showed that 28% of prefectures established some type of numerical target, such as the numbers of phar-
macies that submitted the notification of in-home medication management and guidance (21%) and provided in-home medical care services (7%). In contrast, the proportion of prefectures that established numerical targets related to clinics and hospitals, such as the numbers of clinics and hospitals that provided in-home medical care services, was high at approximately 80%.

Some prefectures established numerical targets related to cooperation between pharmacies and other medical institutions including clinics and visiting nursing stations. Table 5 shows the numerical targets used in the medical care plans, which included the number of centers that collaborated with others to provide in-home medical and long-term care, the number of municipalities that established teams to facilitate cooperation with regional in-home medical and long-term care, and the number of collaboration groups providing in-home medical and long-term care.

**Discussion**

1. **Survey of the status of in-home medical care services provided by community pharmacists in metropolitan areas**

   (1) In-home medical care service supply systems in metropolitan areas

   The characteristics of in-home medical care service supply systems provided by pharmacies in three types of secondary medical district, namely metropolitan areas, provincial cities, and underpopulated areas, were examined. The numbers of pharmacies per population did not differ significantly between the three types of district, while the number of pharmacists per
population in metropolitan areas was 1.6 times that of underpopulated areas. The maintenance of human resources in metropolitan areas was superior to that of those in underpopulated areas, because the numbers of pharmacists per pharmacy were higher in metropolitan areas relative to those of underpopulated areas. There was very little difference in the proportions of pharmacies submitting the notification of in-home medication management and guidance between the three types of district. However, it became clear that the proportion of pharmacies in which the function of in-home medical care services was maintained, such as those that submitted the notification of additional fees for in-home medical care services or the preparation of sterile pharmaceutical products, was higher in metropolitan areas relative to that of underpopulated areas. This led to the conclusion that the maintenance of in-home medical care service supply systems provided by pharmacies in metropolitan areas was superior to that of those in underpopulated areas.

(2) The status of, and issues concerning, in-home medical care services provided by community pharmacists in metropolitan areas

According to the survey on in-home medical care provided by pharmacies in Nishitokyo-city, lack of pharmacists (64.7%), lack of cooperation and understanding of other medical staff (61.8%), complicated operating procedures (35.2%), securing profitability (26.5%), poor understanding of patients (26.4%) and lack of experience (23.6%) were identified as issues for in-home medical care.

Conducting the hearing survey provided a detailed understanding of the circumstances surrounding these issues and the manner in which pharmacies handle them. In particular, many comments concerning lack of cooperation and understanding of other medical staff were reported. According to the results of research into the observation of medical fee revision in FY 2012, approximately 30% of hospital medical doctors knew about in-home medication management and guidance by pharmacists, and approximately 10% knew how to request that pharmacists provide in-home medication management. These results indicate that hospital medical doctors' recognition of in-home medical care services provided by community pharmacists remains poor. The dissemination of information regarding the content and manner of doctors' instruction to pharmacists regarding in-home medical care services is considered necessary. The survey conducted in Nishitokyo-city showed that 44.1% of pharmacies did not cooperate with other medical institutions. The promotion of cooperation between pharmacies and other medical institutions was assumed necessary. In this hearing survey, some pharmacists stated the following: "holding a conference on in-home medical and long-term care is effective" or "activities by the Japan Pharmaceutical Association could strengthen the cooperation between pharmacists and other medical staff." This result suggests that it is essential to advance these efforts.

2. Analysis of prefectural medical care plans for in-home medical care

(1) The situation regarding the establishment of indices of status

More than 80% of prefectures had determined how many pharmacies were submitting the notification of in-home medication management and guidance as an index of status, and 23% established this number for each municipal-
ity. Considering that in-home medical care service supply systems should be developed per unit for integrated daily living areas used by patients who require in-home medical and long-term care, it is important that indices that determine status are established per unit for each municipality and analyzed to determine the current circumstances surrounding the systems provided by pharmacies. A detailed understanding of the current circumstances surrounding each municipality unit is required.

A side from the number of pharmacies that submit the notification of in-home medication management and guidance, indices of status included the numbers of pharmacies that provide in-home medical care services (ten prefectures), can treat home-care patients during the holidays and at night (four prefectures), and are equipped with facilities for the preparation of sterile pharmaceutical products (three prefectures). Of the pharmacies submitting the notification of in-home medication management and guidance, approximately 10% were claiming in-home medication management and guidance fees\(^{12}\). Therefore, it is essential to know how many pharmacies perform in-home medical care services, to identify pharmacies’ current activities accurately.

According to a study examining pharmacies that did not provide services, obstacles to providing in-home medical care services included “treating home-care patients during the holidays and at night” (45.5%) and “not equipped with facilities for the preparation of sterile pharmaceutical products” (55.7%), followed by “lack of pharmacists” (70.8%)\(^{13}\). Therefore, it was essential in identifying the current situation to determine the number of pharmacies that can provide treatment for home-care patients during the holidays and at night and are equipped with facilities for the preparation of sterile pharmaceutical products. However, as Table 4 indicates, few prefectures determined status in this manner. Therefore, it is important to analyze the current situation accurately and identify the issues involved by establishing indices that could reflect such problems in future.

(2) The situation regarding the establishment of numerical targets

The proportion of prefectures in which numerical targets related to pharmacies, such as the number of pharmacies submitting the notification of in-home medication management and guidance, had been established was low at 28%, while numerical targets related to clinics and hospitals, such as the numbers of clinics and hospitals providing in-home medical care services had been established in 80% of prefectures. Considering that pharmacies play a significant role in promoting in-home medical care, setting numerical targets related to pharmacies as well as clinics and hospitals is essential.

In order to operate the PDCA cycle effectively, it is important to establish numerical targets that reflect status accurately, such as the numbers of pharmacies that provide in-home medical care services, can treat home-care patients during the holidays and at night, and are equipped with facilities for the preparation of sterile pharmaceutical products. According to the questionnaire results and the surveys conducted by the Nishitokyo-city Pharmaceutical Association and Japan Pharmaceutical Association, lack of cooperation and understanding of other medical staff were identified as issues in pharmacies’ provision of in-home medical care services. There were few prefectoral medical care plans that had established numeri-
cal targets related to cooperation (e.g., the numbers of collaboration centers and groups providing in-home medical and long-term care, and municipalities that had established teams for cooperation with regional in-home medical and long-term care). The establishment of numerical targets related to cooperation is essential, because cooperation between pharmacists and other medical staff is a very important issue in promoting in-home medical and long-term care.

Conclusion

This study examined the obstacles and solutions to promoting community pharmacists’ provision of in-home medical care services in metropolitan areas, in which the enhancement of these services is urgently required. The numbers of pharmacies per population did not differ significantly between metropolitan areas, provincial cities, and underpopulated areas. It was clear that the proportion of pharmacies in which the function of in-home medical care services was maintained, such as those submitting the notification of additional fees for in-home medical care services and the preparation of sterile pharmaceutical products, was higher in metropolitan areas relative to that of underpopulated areas. This led to the conclusion that the maintenance of in-home medical care service supply systems provided by pharmacies in metropolitan areas was superior relative to that in underpopulated areas. The hearing survey administered in metropolitan areas revealed the circumstances surrounding issues such as lack of pharmacists, cooperation, and understanding of other medical staff. The results suggest that holding conferences on in-home medical and long-term care and promoting activities by the Japan Pharmaceutical Association to strengthen the cooperation between pharmacists and other medical staff are effective.

The analysis of 47 prefectural medical care plans showed that some prefectures understood the current situation accurately, used suitable indices, and established appropriate goals, while others did not analyze the situation sufficiently or establish goals. To operate the PDCA cycle effectively, it is important to establish indices of status and numerical targets that reflect status accurately, such as numbers of pharmacies that provide in-home medical care services, can treat home-care patients during the holidays and at night, and are equipped with facilities for the preparation of sterile pharmaceutical products. Furthermore, examination of the establishment of numerical targets related to cooperation is critical, because cooperation between pharmacists and other medical staff is a very important issue in promoting in-home medical and long-term care.

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Conflicts of Interest Disclosure

The authors have no conflicts of interest to declare.

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