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A Questionnaire Survey of the Inhalation Instruction in Pharmacies

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Few studies have focused on the inhalation instruction in pharmacies which have the crucial role on the inhalation instruction. The aim of this study is to evaluate the level of knowledge and the degree of interest for asthma inhalation instruction methods among pharmacists receiving prescription from clinics. We conducted questionnaire surveys to chief pharmacists of 39 consecutive pharmacies belonging to HANSHIN Dispensing Pharmacy in Hyogo, Japan at July 2011. We obtained valid responses from 35 pharmacies. Among them, 14 pharmacies dealt with prescriptions mainly from the clinics (clinic pharmacies) and 21 pharmacies dealt with prescriptions originated from hospitals (hospital pharmacies), including 13 pharmacies that dealt with prescription filled by respiratory physicians (specialty hospital pharmacies). Although the inhalation instruction at the first visit was provided at every pharmacy, only 54.3% of all pharmacies provided inhalation instructions after the second visit. Compared to 0% of the clinic pharmacies, 40% of the specialty hospital pharmacies visually checked the patient's inhalation procedure after the second visit. Visual confirmation of the inhalation technique, especially in the clinic pharmacies, might play an important role in maintaining treatment adherence.

INTRODUCTION

Inhaled corticosteroids (ICSs) treatment have a central role in achieving long-term control of bronchial asthma. In order to obtain sufficient effects of ICSs, it is important for patients to become familiar with methods of inhalation to improve their adherence to the treatment. Indeed, non-adherence is associated with asthma-related hospitalizations and death (1-4). Since inhalation drugs currently in widespread use do not necessarily have simple inhalation procedures, oftentimes inhalation drugs do not exert adequate effects to the users and subsequently decrease the therapeutic adherence (5-7). To ensure proper technique could be mastered by the users and achieve a sufficient level of therapeutic adherence, adequate inhalation instruction is necessary (8, 9). Because the prescribing doctors generally do not have enough time to give said inhalation instruction, pharmacists play a central role in giving adequate inhalation instruction in the doctor's stead. Unfortunately, it is often difficult for all pharmacists to acquire proper inhalation technique education due to the fact that pharmacists of dispensing pharmacies who are receiving prescriptions mainly from clinics are less likely to contact asthma experts in special hospitals or educate patients about proper inhalation techniques.

In this study, we conducted a questionnaire survey in order to evaluate the level of knowledge and the degree of interest for asthma inhalation instruction methods among pharmacists receiving prescription from clinics.

MATERIALS AND METHODS

Participants

Consecutive 39 dispensing pharmacies represented in the questionnaire by each store's responsible pharmacist (store manager) belonging to Hanshin dispensing pharmacy Co., Ltd. were selected as subjects of this study. In July 2011 we distributed questionnaires to each dispensing pharmacy from the head office of Hanshin dispensing pharmacy. After obtaining consent, the questionnaire was performed anonymously. This survey was approved by the Review Board of Hyogo Prefecture Medical Association (permission number, R1-006).

Questionnaires

Our questionnaire was designed specifically for this project and featured three sections: (1) current situation of asthma treatment; (2) current situation of inhalation instruction; and (3) medical cooperation (Table I). We

divided the pharmacies into 3 categories: (1) pharmacies dealing with prescriptions mainly from the clinics (clinic pharmacy), (2) pharmacies dealing with prescriptions mainly from hospitals (hospital pharmacy), and (3) pharmacies dealing with prescription filled by respiratory physician in hospital (specialty hospital pharmacy). After questionnaire response collection, we then compared the responses of the clinic pharmacy group specialty hospital pharmacy based on the aforementioned sections.

Table I. Questionnaire for pharmacies.

Q1	Who is your main client (Clinic/Hospital – Respiratory medicine/Allergy/Others)?
Q2	How many prescriptions did you usually receive in one month?
Q3	How many prescriptions that included asthma drugs did you usually receive in one month?
Q4	How many prescriptions that included inhaled corticosteroids for asthma did you usually receive in one month?
Q5	Do you know about the presence of asthma clinical guideline published by Japanese Society of Allergology?
Q6	Have you read the asthma guideline?
Q7	Did you use the asthma guideline in pharmacy?
Q8	How long did you usually provide inhalation instruction for one patient?
Q9	How did you teach inhalation technique to a patient?
Q10	How many times did you usually provide inhalation instruction for one patient?
Q11	How did you teach inhalation technique to a patient at the first visit?
Q12	How did you teach inhalation technique to a patient at the second visit or more?
Q13	Have you ever received questions regarding inhalation drugs from patients?
Q14	Did you pay special attention during inhalation instruction to the elderly?
Q15	Have you ever thought that inhalation instruction needs further medical cooperation?
Q16	What do you want to have in the medical cooperation?

Statistical analysis

All data were entered into a pre-constructed Microsoft Excel sheet. The entered data was checked by two authors and by a plausibility test during descriptive data analysis. Pearson chi-squared test and Mann–Whitney U test were used to assess the difference. *P*-values < 0.05 were considered statistically significant.

RESULTS

Study participants (Q1 to Q7)

We obtained valid responses from 35 (89.7%) pharmacies out of 39 recruited pharmacies. Of the 35, 14 clinic pharmacies and 21 hospital pharmacies, including 13 specialty hospital pharmacies, were included.

The mean number of prescriptions per month for all 35 pharmacies was 1803 (median, 1600; range, 500 to 8000), while the mean number of asthma medication prescriptions per month was 64 (median, 35; range, 8 to 500). Comparing between groups, the mean number of asthma medication prescriptions per month for clinic pharmacy and specialty hospital pharmacies were 42 and 83, respectively (*P* = 0.094). Looking from the kinds of asthma medication prescribed, the mean number of prescriptions that included either inhaled corticosteroid (ICS) only or combined with long-acting β_2 adrenoceptor agonist (LABA) per month for all 35 pharmacies is 32 (median, 17; range, 0 to 400). Between the groups, the mean number of prescriptions including ICS or ICS/LABA per month for clinic pharmacy and specialty hospital pharmacies were 13 and 59, respectively (*P* = 0.004). The ratio of inhalation medication prescriptions to asthma medication prescriptions was $55.2 \pm 5.0\%$ (clinic pharmacy $54.9 \pm 10.2\%$ vs specialty hospital pharmacy $66.3 \pm 6.0\%$, *P* = 0.34) (Table II).

Table II. The background of pharmacies.

	Total (N=35)	Clinic pharmacy (N=14)	Specialty hospital pharmacy (N=13)	<i>P</i> value
Average number of prescriptions per month	1803	1916	1718	0.732
Number of prescriptions that included asthma drugs	64	42	83	0.094
Number of prescriptions that included inhaled corticosteroids for asthma	32	13	59	0.004

The number is estimated per month per pharmacy (median and range).

Thirty-two pharmacies (91.4%) responded that they knew the existence of the asthma guideline. However, despite the high awareness of the guidelines, only 27 pharmacies (77.1%) responded that they actually consulted the guidelines, and only two pharmacies answered that they actually utilized it in their pharmacy (7.4%).

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Inhalation instruction (Q8 to Q14)

In all pharmacies, inhalation instructions were provided within 5 minutes. The contents of inhalation instruction for asthma patients are summarized in Figure 1. Almost all pharmacies performed the explanation about drug effect and side effect and provided inhalation instruction. On the other hand, less pharmacies explained the drug safety, checked the patient's asthma condition, and confirmed their asthma diary.

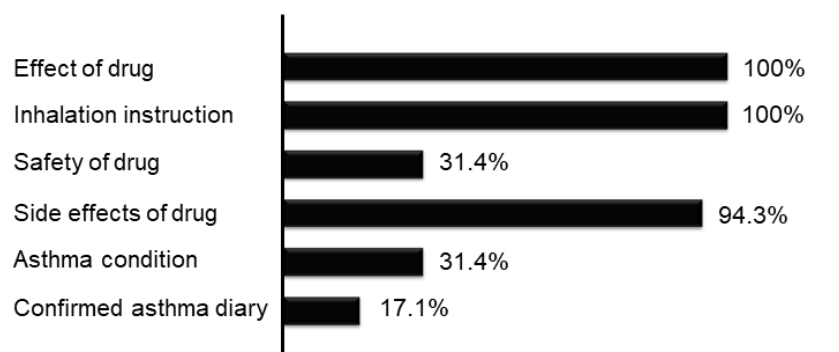


Figure 1. The contents of inhalation drug instruction for asthma patients.

Frequencies of response in regards to the drug explanation contents given to the patients by pharmacists during initial inhalation instruction. Multiple answers were possible.

Although the inhalation instruction at the first visit was provided at all kinds of pharmacies (Figure 2A), only 54.3% of all pharmacies provided inhalation instructions after the second visit (clinic pharmacy: 64.3%, special hospital pharmacy: 61.5%) (Figure 2B).

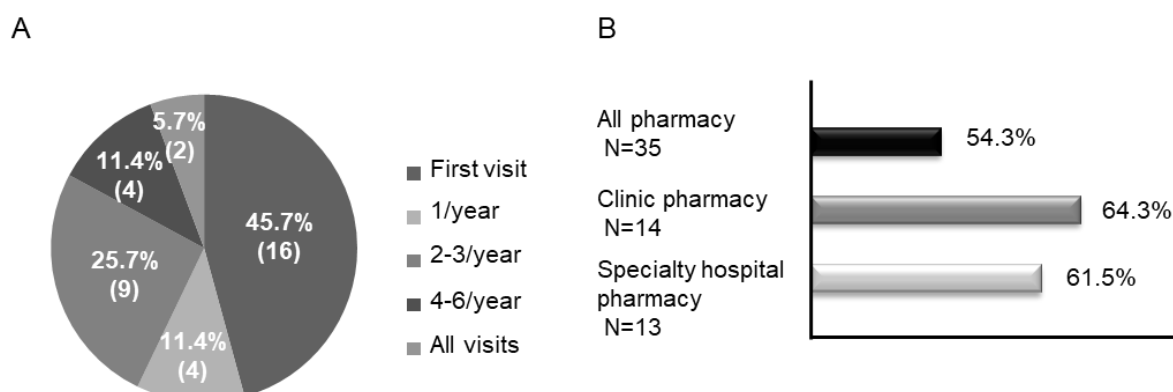


Figure 2. Frequencies of inhalation instruction.

(A) The frequency of inhalation instruction in all pharmacies (n=35) and (B) the percentage of pharmacies that provided inhalation instruction in each type of pharmacy.

The contents of inhalation instruction for asthma patients at first visit are summarized in Figure 3.

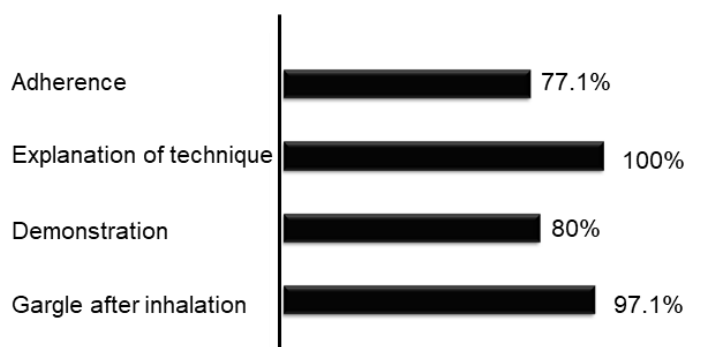


Figure 3.

The contents of inhalation instruction technique for asthma patients at first visit. Frequencies of the detailed contents from explained inhalation technique instruction to the patients from the pharmacists at the first visit. Multiple answers were possible.

The contents of inhalation re-instruction after the second visit were (1) confirmation of inhalation procedure (78.9%) (Figure 4A), (2) confirmation of side effect (89.5%), and (3) confirmation of inhalation frequency (89.5%). It is noteworthy that compared to 40% of the specialty hospital pharmacies, no clinic pharmacies visually checked the patient's inhalation procedure at inhalation re-instruction after the second visit (Figure 4B).

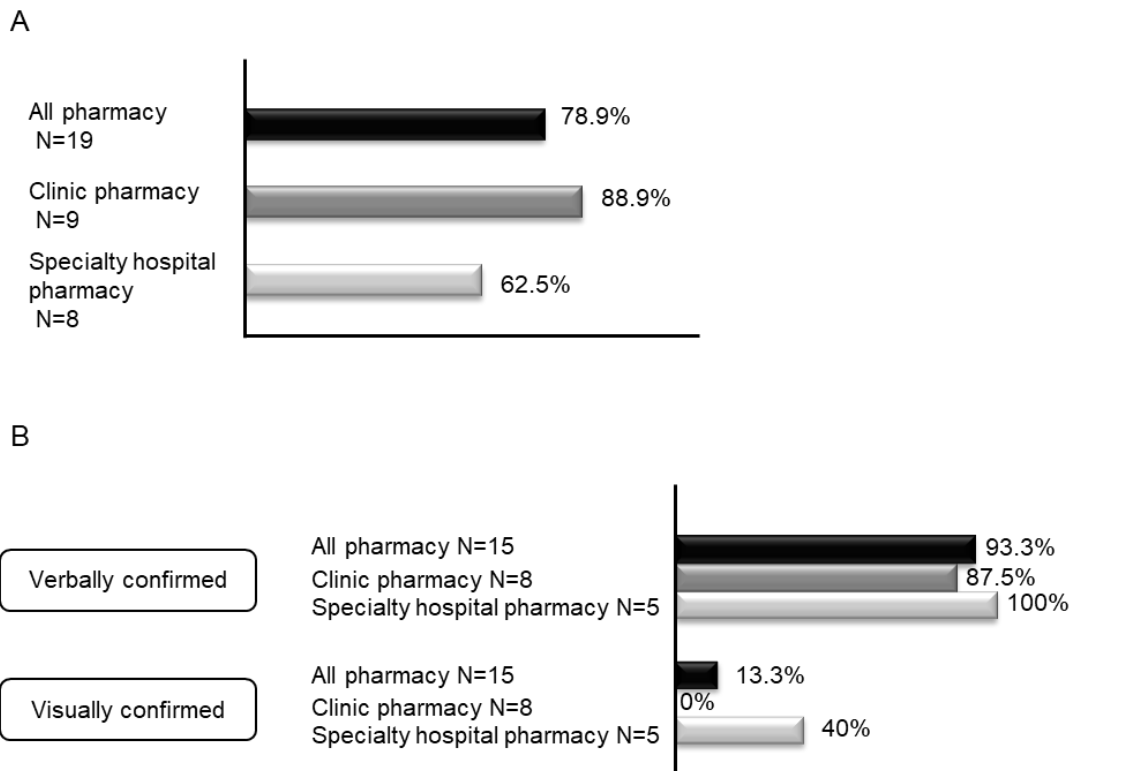


Figure 4. The contents of inhalation instruction for asthma patients after the second visit.

(A) Frequencies of inhalation procedure confirmation after second visit in indicated pharmacies.

(B) Frequencies of applied method of confirming inhalation procedure in indicated pharmacies.

Questions received from patients related to ICS medications were classified as follows: efficacy of drugs (43.8%), inhalation technique (90.6%), safety or side effect of drugs (37.5%), adherence (37.5%) (multiple answers were acceptable), suggesting that inhalation technique are of interest to patients. Additionally, 97.1% of all pharmacies feel the importance of giving special attention in instructing elderly patients.

Medical cooperation (Q15 to Q16)

77.1% of all pharmacies feel the importance of medical cooperation, or clear explanation, instruction, or notifications among medical personnel, especially between doctors and pharmacists, to perform proper inhalation instruction (Figure 5).

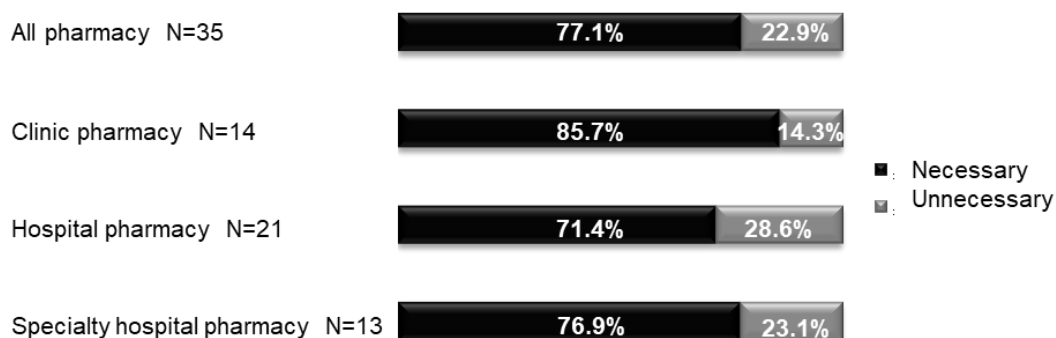


Figure 5. The importance of medical cooperation.

Frequencies of responses related to the importance of medical cooperation amongst doctors and pharmacists.

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In detail, the desired forms of medical cooperation were as follows: Direction of inhalation instruction to pharmacist from doctor (33.3%), notification of reason for change of prescription to pharmacist from doctor (48.1%), notification of patients' asthma control status to pharmacist from doctor (33.3%), notification of diagnosis to pharmacist from doctor (18.5%), notification of the frequency of inhalations to doctor from pharmacist (25.9%), report of contents of inhalation instruction to doctor from pharmacist (29.6%) (multiple answers are acceptable), suggesting that a more detailed information exchange between doctors and pharmacists in regards to the condition and medication/inhalation status of the patients were deemed crucial.

DISCUSSION

In this survey, effective responses were obtained from the majority of the recruited pharmacies (89.7%). Although we did not limit the respondents, responses were acquired from the person-in-charge or store manager from different branches of the same dispensing pharmacy company. By investigating various different branches from only one dispensing pharmacy company, we believe that we were able to minimize potential procedural differences between companies.

It is interesting to note that the medication instruction time per patient was less than 5 minutes in all pharmacies, suggesting that the overall instruction time is very limited and, subsequently, inhalation instruction might not be sufficient. Although various factors that could force said limitation, such as lack of personnel and lack of knowledge about inhaled devices operational standard in each pharmacy, are taken into consideration, it is still essential to investigate and improve them in the future.

Through this survey, we also wanted to know the rate of spread of guideline in the pharmacies. Another aspect that this study revealed is that even though the awareness level of asthma guidelines among pharmacists was at a high level (91.4%) in this survey, but only 7.4% responded that they are actually using the guidelines in their work, highlighting the challenging need to further spread the utilization of the guidelines among the pharmacies in the future.

Explanation of the inhalation technique during the initial inhalation instruction was performed at 100%. However, less than half (45.7%) of pharmacists performed subsequent inhalation re-instruction after the first visit. Even among pharmacists who conducted inhalation re-instruction after the second visit, most (78.9%) of these pharmacists only checked the inhalation procedure, and the majority of the checking procedure only consisted of verbal confirmation, with only 13.3% of the re-checkers confirmed the procedure visually, with none of the responders coming from clinic pharmacy. This might be because revisiting was relatively rare in clinic pharmacy. These results might reflect the need for immediate improve due to the importance of proper inhalation technique in asthma medication and subsequent control.

Most of the pharmacists acknowledged that inhalation instructions for elderly patients are important, reflecting on the aging population of asthmatic patients in Japan. In addition, many pharmacists (77.1%) also thought that medical cooperation in inhalation instruction is a necessity, suggesting that there is high interest among pharmacists for improving the application of inhalation instruction, even though there are still various problems recognized in regards to the contents of inhalation instruction to the patient, as inhalation instruction is considered to be the key factor to achieve long-term control of bronchial asthma, in addition to the drugs itself (10). As such, education of proper inhalation technique to pharmacist is crucial for proper patient education about inhalation (11).

Limitation of the present survey is that only one dispensing pharmacy company was investigated although to mitigate possible bias, we recruited all of the pharmacies in Hyogo prefecture. Although we checked the number of prescription in order to check the activities of pharmacies, we did not check the profile of respondents. We think this is also one of the limitations. Another limitation is that we did not check the profile and clinical outcomes of patients.

In conclusion, we found that even though the degree of pharmacist' interest in the inhalation instruction was high, various problems regarding the inhalation instruction were observed. Lack of visual confirmation of the inhalation technique after the second visit, in addition to medical cooperation improvement in the inhalation instruction, are important to address to improve overall patient inhalation medication adherence in the future.

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