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The process of surplus medicine accumulation by elderly Japanese patients with chronic disease: A qualitative study

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Summary **The Japanese government actively urges pharmacists to support efforts to reduce surplus medicines. However, these activities currently serve only to dispose of surplus medicines; no measures are being taken to fundamentally prevent the accumulation of surplus medicines from the outset. A deep understanding of patients' views about storing medicines at home and how they might be accumulating surplus medicines would contribute to the prevention of surplus accumulation. This study aimed to characterize the process by which elderly chronic disease patients in Japan accumulate surplus medicines. Semi-structured interviews were conducted with 18 elderly patients, and the interview data were analyzed using a modified grounded theory approach (M-GTA) to present the process by which surplus medicines were accumulated at patients' homes. The results suggest that elderly patients with chronic diseases often wish to avoid unnecessary medications because of anxiety about medicines, and that these patients seek to maximize medicine suppression. In this context, patients use their own judgment to decide whether to use medicines as needed. Additionally, when patients accumulate surplus medicines, they hesitate to throw them away because they feel that to do so is *mottainai* (wasteful), or because they accumulate surplus medicines as emergency household medicines. These findings reveal when and how surplus medicine accumulation occurs and the points at which pharmacists can easily intervene to promote a close relationship with patients.**

Keywords: Modified grounded theory approach (M-GTA), medicine suppression, as-needed medications, family pharmacist

1. Introduction

It is estimated that the overall monetary value of surplus medicines in patients' homes exceeds tens of billions of yen annually (*1-2*). Such accumulation factors into serious problems, including the improper use of this surplus medicines, the burden it places on the medical economy, and associated environmental issues. In particular, cancer recurrence has been confirmed in patients who had taken doxifluridine for approximately one year following rectal cancer surgery and after these patients were switched to treatment using tegafur/gimeracil/oteracil potassium (S-1); a case report indicated that severe side effects arise from improper concomitant use of the pretreatment medicine doxifluridine, a contraindicated medicine that was stored in patients' homes prior to receiving S-1 (*3*). This incident drew attention to the issue of medicine interactions caused by the concomitant use of surplus medicines and newly prescribed medicines. In addition, accumulation of surplus medicines resulting from noncompliance is also at issue. Even when evaluating the outcomes of medicine treatment and evaluating the value of medicines themselves, there is a danger that medicines will be erroneously evaluated because of patients using medicines in ways other than their prescribed uses.

In light of this, the Japanese government actively urges pharmacists to support efforts to reduce surplus medicines. Following the revision of regulations for

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compensating compounding in 2012, "confirmation of surplus medicines" was specifically designated as an obligation of pharmacists (*4*). As a result of the revisions to dispensing fees made in 2014, pharmacists must "confirm patients' surplus medicines status following receipt of prescriptions before preparing their medicines" (*5*). Accordingly, excess-reduction bags and "brown bag" activities are now being implemented at pharmacies based on patients' declarations (*1*). However, these are merely interventions by pharmacists who are focused on adjusting the amount of medicines dispensed and are not fundamental measures to prevent the accumulation of surplus medicines from the outset. Specifically, for pharmacists to be able to intervene and resolve situations involving surplus medicines it is necessary that they understand the factors causing the accumulation of surplus medicines, such as how patients manage their medication and their reasons for not taking them, and take measures accordingly. Only several reports to date have addressed actual conditions, such as the amount and value of surplus medicines at patients' residences, as well as efforts to reduce surplus medicines and the effects of these efforts on reducing medicine costs (*2*). However, although some efforts have been made to identify the reasons that patients accumulate surplus medicines, there has been no discussion on the various processes and factors that lead to such accumulation.

It is believed that by developing a deep understanding of the kinds of ideas that patients have regarding medicines in their homes – *e.g.* how they are accumulating surplus medicines, how they perceive the situation, and so on – it will be possible to provide guidance on medicine in line with patients' perspectives, leading to improvements in medicine adherence and progress toward preventing the accumulation of surplus medicines.

Accordingly, this study aims to identify the process by which surplus medicines are accumulated in the homes of elderly Japanese chronic disease patients based on qualitative data, such as results of interviews on medication use and surplus medicines that were conducted with patients using a modified grounded theory approach (M-GTA) (*6*).

2. Materials and Methods

2.1. *Definition of surplus medicines*

Although the definition of "surplus" differs among medical professionals and patients (*2,7,8*), all surplus medicines existing in patients' homes have been considered to be used inappropriately or misused from the viewpoint that there is an inherent danger in surplus medicines. The term "surplus medicines" is uniquely defined in this study as "medicines taken by patients that were prescribed in the past that are not meant to be used at present, but were kept without being discarded." However, cases of patients planning to keep a certain amount of medicines on hand for situations in which seeking medical attention is difficult, because of sudden disaster or unforeseen circumstances, were not considered surplus medicines.

2.2. *Setting and participants*

Through several pharmacies that employ cooperating pharmacists, the researchers visited patients' houses and conducted interviews, after acquiring patients' consent. The subjects were elderly patients aged 60 years or older who were receiving ongoing medicine therapy for chronic conditions. The reasons for this selection of participants were as follows: multiple chronic diseases develop as people age; with aging, the number of medicines taken increases, patients' cognitive function declines, and patients leave their homes less frequently; and, in contrast with younger patients, the process by which elderly patients accumulate surplus medicines is believed to have procedural characteristics. This survey was conducted between January 2013 and October 2015.

Interviews were conducted following a semi-structured format. Subjects were asked semi-structured questions such as "How do you feel about acknowledging your illness or symptoms?"; "How do you feel about having leftover prescription medicine (if there is any remaining prescription medicine after use)?"; "How do you feel when you leave leftover prescription medicine? Why do you think you leave extra medicine?"; and "Do you reuse leftover prescription medicine? If so, what kind of medicines do you reuse and in what situations do you do this?". Subjects responded freely to these questions. Subjects' responses were recorded using an IC recorder only when their consent to do so had been obtained. Interview lengths differed for each subject but were generally approximately 1-2 hours long. The data gathered during the interviews were recorded verbatim. A total of 18 subjects were eligible. Table 1 shows characteristics of the participants.

2.3. *Data analysis*

A qualitative research method, M-GTA, proposed by Kinoshita (*6*), was used in the present study. M-GTA is the revised version of the grounded theory approach (*9*) that permits the application of the original method to real research data.

The reasons for selecting M-GTA for analysis of the interview data are given below. Kinoshita highlighted each of the following as study types suitable for the M-GTA (*10*): 1) Research related to social interaction, in which people interact with other people. 2) Research concerning human service areas. (Research cycles that return theories accumulated as research results back to practice sites and there enter active application and validation are the most natural.) 3) Research concerning

Table 1. Characteristics of the participants

No.	Gender	Age	Diagnoses	Family situation	Individual(s) responsible for administering medication
A	M	60s	asthma, depression	living alone	self, home-visiting nurse
B	F	70s	cardiac disorder (The patient herself is unaware of the specific diagnosis)	living alone	self
C	F	80s	arrhythmia, hypertension, fibromyalgia syndrome	living alone	self
D	M	80s	diabetes mellitus, digestive disorder	living alone	self
E	F	70s	cardiomyopathy, cardiomegaly, atrial fibrillation	living alone	self
F	F	70s	hypertension	living alone	self
G	M	80s	diabetes mellitus, hypertension	living alone	self
H	F	70s	diabetes mellitus, hypertension	living alone	self
I	M	60s	bradycardiac atrial fibrillation, implanted pacemaker, cerebral infarction	living with family	self, spouse
J	M	70s	diabetes mellitus	living alone	self
K	M	80s	implanted pacemaker, hemifacial spasm	living alone	self
L	M	70s	intracerebral bleeding, dementia	living alone	self
M	M	60s	atrial fibrillation, diabetes mellitus	living with family	self, spouse
N	M	70s	cerebral infarction, arrhythmia	living with family	self
O	M	70s	cerebrovascular/vascular stenosis, diabetes mellitus, hypertension	living with family	self
P	F	90s	Implanted pacemaker, diabetes mellitus	living with family	self
Q	M	80s	esophageal cancer, urinary bladder cancer, prostate cancer, esophagostenosis, reflux esophagitis	living with family	self
R	F	60s	colorectal cancer, diabetes mellitus	living with family	self

Gender – M: male / F: female

phenomena exhibiting procedural characteristics.

The current study meets all these criteria, as shown below. 1) This research clarifies changes in the patient's medication situation and the state of medicine management at their home according to direct and indirect exchanges (interactions) with the patient's pharmacist, physician, and acquaintances. 2) This research examines the human-service components of pharmacists' work by considering patients' prescriptions, medications, and methods of home medicine management leading to proper medicine use. In addition, based on the circumstances in patients' homes, this research can offer recommendations regarding how pharmacist guidance on medication and intervention can stop the accumulation of surplus medicines (and the improper use thereof) at patients' homes and to promote proper medicine use. 3) This research aims to characterize the underlying processes that result in accumulations of surplus medicines at patients' homes through interviews with patients.

2.4. *Method of analysis*

The focus of this analysis was the "process by which elderly chronic disease patients accumulate surplus medicines in their homes." A series of underlying concepts guided this analysis using analysis worksheets (hereinafter "worksheets"). An example of an analysis worksheet is shown in Table 2. Next, the verbatim interview transcripts were read repeatedly, and portions of the data considered to be related to the surplus medicine accumulation process analysis theme were extracted and inserted in the "Variations" row. This portion of the data then helped the researchers to interpret the meaning of the participants' own viewpoints on the process of accumulation of surplus medicines and was provisionally described in the "Definitions" row. Next, a brief way to express the definition was created while paying attention to theoretical applicability and then described as a provisional concept in the "Concept" row. Other similar portions of the data were then searched for; findings were individually added to the sheet and then compared against the provisional definition and the concept name, with corrections and refinements made as necessary. Ideas and doubts during concept creation were described in the "Theoretical notes" row. When concept generation reached a certain point, the researchers began investigating the relationship between the concepts. Directional concepts were

Table 2. Example analysis worksheet

Concept	Medicine, in excess, can also be poison
Definition	Medicines are considered to be "unnatural" and "bad for you," and patients' dislike of medicines and anxiety regarding side effects are strengthened.
Variations	1) *I try not to take too much, you know? I would be in trouble if I took the same medicine twice or made some other mistake. I think they are, so I take as little as I can. (Patient E)* 2) *This medicine, Adoair, it is a steroid medicine, is it not? I wonder if it has side effects. I have been taking it for a long time. (Patient A)* 3) *I take medicines in the morning, noon, and at night. I have been taking this medicine for many years. I have been taking those small ones from before for decades too. I wonder if these medicines have any kind of surplus effects on my body. (Patient J)* 4) *Because medicines are scary. I do not know what kinds of effects they might have. (Patient P)*
Theoretical notes	• Taking medicine is considered to be treatment for a disease; however, patients have a vague sense of anxiety and dislike of medicines (medicine, in excess, can also be poison). Patients feel ambivalent towards medicines. • Why do you feel anxious? Because you experienced side effects? Because you heard that taking too many medicines was bad?

illustrated using arrows. Additionally, in the course of studying relationships between concepts, when it was possible to determine that a relationship between multiple concepts could be more briefly expressed using one label, these concepts were aggregated into a category. There were also cases in which a concept with a high abstract explanatory capacity was adopted as a category as well. Lastly, the researchers examined the categories and concepts to create a results diagram that would ultimately explain the process of surplus accumulation and the story line (*11*).

During the analysis, after the first author performed data analysis, the other two researchers checked the content of the analysis worksheets, concepts, results diagram, and the story line. Moreover, conceptions of the analytical focus and targets were shared among the three researchers; data were extracted from the interview recordings; concepts and categories were created; analytical results were prepared; and validity was maintained as far as possible through repeated discussion and analytical operations.

2.5. *Ethical concerns*

This study was conducted with the approval of the "Research Ethics Committee for Human Studies" of the Faculty of Pharmaceutical Sciences, Graduate School of Pharmaceutical Sciences at The University of Tokyo. Written informed consent was obtained prior to conducting interviews. The survey subjects were briefed regarding the purpose of this study and they agreed to its purpose and methodology. In addition, the researchers explained to the subjects that their personal information would be protected, and that any information that could be used to identify individuals would not be made public when the research results were published.

3. Results

In the following section, the process by which surplus medicines were accumulated at patients' homes is described using the central categories, concepts, and narratives obtained during interviews (indicated by lenticular brackets [], angle brackets <>, and *italics* respectively). The central categories and concepts are given in Table 3. Supplementary explanations are provided in parentheses (), when the subject's narrative is unclear from a direct quotation alone. Finally, results in the story line and diagram were proposed using four categories as stated below.

Table 3. Central categories and concepts

Central categories	Concepts
Maximal medicine suppression	underestimate their conditions in excess, can also be poison doubts about prescriptions
As-needed medications	using body sensory as the base alternative practice grading medicine efficacy by pill count decision-making based on accessible information
Loss of yakushiki	stay away from unreadable information judging by medicine look just have to take the medicines
Emergency household medicines	in case of an emergency mottainai (wasteful)

3.1. *Central categories*

3.1.1. *Maximal medicine suppression*

The elderly patients all adhere to the socially accepted notion that medicine <in excess, can also be poison>. These patients believe that medicines are inherently "unnatural" or "bad for you" and feel anxious about medications and their potential side effects. These feelings become stronger as the number of medications they take increases, or if their doctor keeps them on a medication for a long time, and eventually they begin to want to minimize medicine use as much as possible.

Patient E: I try not to take too much, you know? I

would be in trouble if I took the same medicine twice or made some other mistake. Aren't medicines scary? I think they are, so I take as little as I can.

In addition, because many chronic diseases progress slowly and subjective symptoms are minimal, patients are less likely to realize the importance of taking their medications and tend to <underestimate their conditions>.

Patient O: Sometimes, about once per week, I will go golfing. I go play without taking my medicine. I know that I did not take it. I will be fine even if I do not take it; I am confident that nothing will happen.

Elderly patients with chronic diseases justify their accumulation of surplus medicines using [maximal medicine suppression] as a behavioral standard, alongside their socially accepted notion that medicine <in excess, can also be poison> and a trend to <underestimate their conditions>. Patients have <doubts about prescriptions> and their preference for [maximal medicine suppression] is reinforced, particularly when they do not fully understand the intent of their physician's prescription and begin to believe that their medications are unnecessary.

Patient Q: I do not understand it. Diuretics are a good example – I do not have any swelling or pain, no fever (but I received medicine from my doctor)…why do I have to take it?

3.1.2. *As-needed medications*

Elderly patients with chronic diseases, although given prescriptions that must be taken on a specific schedule for pharmacological reasons, will consider these medicines as [as-needed medications] based on their preference for [maximal medicine suppression]. These patients place great trust in their own judgment. They often decide that medicines have no effect and are unnecessary if they do not feel that their symptoms are being relieved or if they feel that they are healthy without the medicines.

Patient O: I will not use my psoriasis medication if my skin condition improves. I use it when it gets really bad, but when I think I feel better…I come off.

In this way, patient self-adjustment or interruption of a course of medication is done without consulting a physician or a pharmacist, based on how patients feel about their physical conditions. Such ideas of <decision-making based on accessible information> are reinforced by mass media and friends.

Patient J: The plaster, something in it makes me cough, so I stopped using it. I am allergic to it. Aspirin medicines. It is happening even now. So, I stopped using that medicine because I heard that you could put a medicine in it that will not make me cough. I tried looking it up on the Internet. It might start again.

These patients consider the instructions of a physician or pharmacist to be only one of various sources of medicine information. Patients who feel repulsed by or anxious about their medicines may seek out <alternative practices> as much as possible, such as diet restriction, exercise, and massage rather than medication.

Patient O: Just now I'm dieting. Hmm, (the size of the meal) have portion control. I only take this medicine in the morning. So, I just changed how I eat. Doing this was great.

In this way, when patients' physical conditions improve, and especially if the improvement is seen as a result of <alternative practices>, patients begin to believe that they can improve their condition without using medicine. Thus, they interrupt their medication regimen using their own judgment, leading to accumulation of the remaining medicine.

Furthermore, because many patients take many medications in the morning, it is believed that morning periods are the most important. The result is that patients sometimes neglect their medication schedules for the remainder of the day or for other medications.

Patient P: In the morning, I take a lot of pills, so I think that my (most important) medicines must be taken then.

Patients' whose own <grading medicine efficacy by pill count> results in medicines being considered low priority are considered to be in non-compliance. Medicines that seem to patients to be important are taken regularly, and the rest are taken only when the patient believes it to be necessary, further establishing their idea of [as-needed medications].

3.1.3. *Loss of yakushiki (medicational self-understanding)*

Yakushiki is defined as patients having not only medical knowledge regarding their prescriptions but also an understanding and acceptance of the importance of taking prescribed medications (*12*). Patients often do not know the exact names of their medications or what kind of effects they will experience when taking medicines, and they may experience [loss of *yakushiki*]. These patients leave or discard medicine information sheets, often without reading them. For elderly people with chronic diseases, this information can be quite a challenge to understand as the letters are small, it uses complicated medical terms, and the names of medicines that are foreign words are written in katakana, and they

may <stay away from unreadable information>.

Patient J: I cannot read a thing on those (medicine bags or medicine labels) without my glasses. I did not really look at it. It is just too much of a pain to read that tiny text.

Patients thus distinguish different types of medicines and how to take them on the basis of their colors or the appearance of their containers.

Patient D: Usually, I…uh, the colored one…the one that was light pink…it was multicolored, right? I wonder what kind of medicine that was.

As these patients cannot easily access knowledge about the action and efficacy of different medicines, when they consider different medicines using their own judgment they tend to believe that they <just have to take the medicines> prescribed by their physician.

Patient E: I have not really thought too seriously about my medicine until now. I just felt like I was given them, so I have to take them. I know that these medicines have various side effects, but I have not really thought much about what each of them are.

Patients <stay away from unreadable information> and identify which medicines to take <judging by medicine look>. Also, they come to think that they <just have to take the medicines> at some point but not on the prescribed schedule. This mindset causes patients to experience an increasing sense of [loss of *yakushiki*], reinforces reliance on [as-needed medications], and leads to the accumulation of surplus medication.

3.1.4. *Emergency household medicines*

Elderly patients with chronic diseases identify surplus medicines not only as if they are [as-needed medications] but also as if they may be [emergency household medicines] that can be stocked. While possibly a product of their upbringing, some of these patients dislike throwing away medicines because they find it <*mottainai* (wasteful)>.

Patient J: I basically never throw away medicine. It is a psychological thing. I almost never throw them away.

These patients also believe that surplus medicines should be stored away <in case of an emergency>.

Patient H: I keep any leftovers over there. I think I might need them again someday.

The patient quoted above believed that it is <*mottainai* (wasteful)> to throw away surplus medicines, believing that they may be useful <in case of an emergency>. Such surpluses are often viewed as [emergency household medicines]; patients do not have awareness of them being "surpluses" and do not consider them as such.

3.2. *Summary of the process by which elderly chronic disease patients accumulate surplus medicines in their homes*

Elderly Japanese with chronic diseases routinely seek [maximal medicine suppression]. This is caused by their belief that medicine, <in excess, can also be poison>, while their tendency to <underestimate their conditions> is due to a lack of subjective symptoms. [Maximal medicine suppression] is especially reinforced when patients have <doubts about prescriptions>: that is, they suspect that their doctors are overprescribing.

Because of these beliefs, tendencies, and doubts, patients begin to perceive prescribed medicines they need to take regularly as [as-needed medications]. Patients' regard for how they feel about their physical conditions serves as a reliable criterion in deciding whether or not to take medicines. This belief is supported by their lay knowledge of medication, which is based on information from mass media and friends. When patients feel well and do not think taking medicines is necessary, they resort to <alternative practices> such as exercise.

Patients' perceptions and practices about [as-needed medications] are reinforced when [loss of *yakushiki*] occurs. Medicine information sheets often contain too much and too technical information written in small letters, discouraging elderly patients from reading them. Patients <stay away from unreadable information>, choosing to identify which medicines to take <judging by medicine look>. Also, they come to think that they <just have to take the medicines>. Finally, they come to believe that the self-reduced dosage is good enough so long as they are not completely off medications.

[Maximal medicine suppression], [as-needed medications], and [loss of *yakushiki*] cause medicine surplus. Elderly Japanese with chronic diseases do not regard keeping surplus medicines as problematic. They feel that discarding surplus medicines is <*mottainai* (wasteful)> and that these medicines will be useful on future occasions. Ultimately, patients positively identify surplus medicines as [emergency household medicines] to be stocked.

Figure 1 summarizes the result diagram identified above.

4. Discussion

The process revealed by the results of this study, as identified above, makes it clear that it is difficult

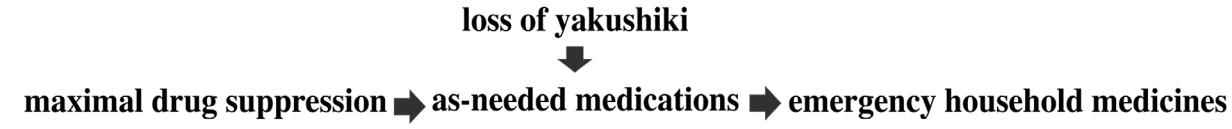

Figure 1. Process by which elderly chronic disease patients accumulate surplus medicines in their homes.

to identify the factors leading to surplus medicine accumulation while relying solely on the information reported at pharmacies by patients themselves. The concepts and categories offered by this study reveal why and when surplus medicine accumulation occurs as well as the points at which pharmacists can easily intervene. In addition, regarding patients' avoidance of declaring or consulting on surpluses with healthcare professionals, the interview data obtained suggests that patients believe that it is impossible to talk with physicians and pharmacists on an equal footing because they lack medical knowledge, and therefore patients tend to simply defer to the professional.

It is clear that communication between pharmacists and patients is important in solving these problems. There have also been reports that patients who were given brief explanations about their medications had lower levels of satisfaction (*13*), even when there was no voluntary consultation from the patient who had no changes in prescriptions. Pharmacists should assume that their customers' situations are changing and make efforts to determine whether a patient is wondering about taking medicines and whether they have any concerns.

As shown by the anxieties reported by participants during this study, they believe that medicine, <in excess, can also be poison>. Elderly patients with chronic diseases also have feelings of concern, fear, and disgust toward medicines. In the past, most patients have stated that they want information regarding possible side effects when prescribed a new medication; 60 percent want their doctors to explain these effects (*14,15*). Pharmacists must advise patients taking medicine while recognizing that patients' resistance to their medication may be stronger than any professional's direction to "take medicine." However, there have been reports that pharmacists tend to overestimate patients' cognitive abilities more than physicians in terms of a patient's understanding of medical terminology (*16*); pharmacists must accurately convey medicine information to patients, but if they cannot accurately assess patients' level of literacy they may be unable to provide sufficient information.

The results of this study also revealed that many of the patients interviewed had not taken advantage of offers for medicine information sheets, medicine bags, medicine diaries, or similar explanations and tools. Pharmacists often provide a one-sided explanation, promoting patients' <*loss of yakushiki*>. In elderly patients, visual acuity, hearing ability, and cognitive function are often declining, suggesting that more innovation is needed in provision of information. In the interviews conducted during this study, many patients stated that they could not read the fine print on medicine information sheets or could not remember details when they were provided a large amount of information. For such patients, when receiving directions regarding medications, for example, it is believed that by providing information that incorporates photographs, illustrations, and large print, and confirming what information the patient wishes to know in advance, patients are provided with easy-to-use guides on how to take their medications. It is also important to establish systems (*e.g.* 24-hour correspondence, home visits, making regular phone calls, *etc.*) that allow patients to talk to a pharmacist even between consultations.

This study has some limitations. The data necessary for theoretical sampling were insufficient, and in one case an idea that was considered important was ultimately deleted from the results diagram because of lack of variation. For example, in the research process, it was believed that the presence or absence of the involvement of patients' families, such as spouses in medicine management, was primarily related to the process of surplus accumulation, but only three of the 18 subjects had spouses involved in medicine management; therefore, variations were insufficient in number to establish this as a concept. However, one prior report has suggested that family member cooperation can affect medicine adherence (*17*).

Also, there were several cases cited in this study in which patients' wives had to consult their husband's PTP sheets on a daily basis to prevent them forgetting to take medications, and in other cases spouses reminded patients when they found that they had forgotten to take their medications; family cooperation and engagement are considered important. In another instance, it was believed that "forgetting to take medicines" is an important factor in surplus medicine accumulation, but sufficient variations were not established. This factor requires further research.

Differences in diseases also greatly affected the way patients understood their conditions. Two of the 18 patients interviewed were cancer patients, and there was a strong tendency for these two patients to have a more substantial understanding of their conditions, but this number of samples is insufficient. In order to obtain findings that enable deeper insight, it is necessary to conduct a theoretical sampling on a specific population, such as patients with a specific disease, patients who

rely on spousal support, solitary patients, and so on.

Finally, this study analyzed elderly patients with chronic diseases, and these findings cannot be generalized to all patients with conditions such as acute diseases or to younger patients.

Previously, a qualitative interview study with five patients analyzed various factors in the prevalence of surplus medicines among senior patients in Japan (*18*). However, this study was the first attempt to characterize the process by which surplus medicines accumulate in the homes of elderly chronic disease patients using M-GTA for analysis of interview data.

Accurately grasping patients' medication situations, assessing their actual condition and therapeutic effects pharmacologically, and proposing optimal treatment for each patient are duties of pharmacists. It is necessary for pharmacists to build trust between patients and their physicians by fulfilling the role of "family pharmacist," who connects patients with physicians through actions such as listening to patients' dissatisfaction with their conditions and prescription medicines, alleviating unnecessary anxiety, suggesting lifestyle changes, and describing medication rules for individual patients and proposing prescription plans to physicians.

Some of the concepts that emerged from analysis of interview data may include reasons for the accumulation of surplus medicines that had previously been regarded as tacit knowledge. However, the results of this study made it possible to provide new perspectives on methods to check surplus medicines that had been previously left to be addressed by pharmacists' own experiences and skills.

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