

A Feasibility Study of an Individualized Voiding Program in Japan to Improve the Sense of Control in Older People with Functional Urinary Incontinence

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Abstract

Purpose: This study intended to assess the feasibility of an individualized voiding program in Japan aimed at improving the sense of micturition control in older people with functional urinary incontinence. **Method:** Following the interview guide, FGIs were conducted in two groups (4 - 6 participants) consisting of nurses and care workers with more than 5 years of experience as practitioners of urination care. Data were analyzed using a qualitative descriptive approach. **Results:** We determined that the program purpose is to “enable caregivers to work as a well-coordinated team to humanely facilitate excretion independence in older people, which is essential for living with dignity”, as this confirmed the importance of maintaining the sense of micturition control in older people for their well-being. In the program outline, we extracted the following five categories: 1) setting selection criteria for recipients considering the status of micturition induction, 2) careful collection of information and assessment of lower urinary tract symptoms in older people in case of environmental changes, 3) examination of methods used for assessing lower urinary tract symptoms according to the facility environment, 4) confirmation of the recipient’s micturition habits and request for assistance, and 5) conducting necessary examination for setting the intervention period and evaluation period according to the target condition. The feedback on the program guide was summarized in the statement—specific successful cases help frame and implement the micturition induction plan. **Conclusion:** We confirmed the feasibility of the micturition induction plan for improving the sense of control in older people with functional urinary incontinence. Upon evaluating the program guide, we deemed that referring to specific

successful cases helps frame and implement the micturition induction plan. It is extremely important to verify the effectiveness of the program going forward.

Keywords

Individualized Voiding Program, Functional Urinary Incontinence, Sense of Control, Facility for Older People

1. Introduction

The population in Japan is aging much faster than in the rest of the world. The high aging rate is accompanied by a rising number of people with dementia who require long-term care and support. Since urinary dysfunction aggravates with age, the rate of urinary incontinence is particularly high in facilities for older people [1]. Physical, psycho-emotional, and social problems adversely affect urinary incontinence in older people. In particular, the percentage of functional urinary incontinence is high [2], and facility-admitted older people are additionally affected by communication disorders such as dementia and aphasia. Although micturition induction is implemented for functional urinary incontinence, the induction method is often left for the caregivers to decide since older people find it difficult to express what they want. Among other concerns are those surrounding empirical judgments founded on ambiguous bases and judgments based on the individual values of support providers. Individualized urination care is important because aside from diseases, physical functions (such as ADL), psychological and mental functions, and social factors influence each other. Urinary urgency is an important indicator for predicting micturition possibilities and performing voluntary micturition behaviors. The caregiver must strive to grasp older people's urinary urgency and build a support method that aims to maintain and improve the sense of urinary control in them.

Micturition Induction Therapy (MIT) is recommended for improvement in functional urinary incontinence [3] [4]; it is widely implemented in Japan because it has no side effects. In the United States, programs that do not hinder the daily life of care recipients have been historically recommended [5] [6] [7]. At Japanese facilities for the elderly, the rate of timed voiding is higher than that of habit training, and the lifestyle and urination patterns of the elderly are not sufficiently understood. Also, it has been pointed out that the implementation status of care based on urination assessment differs depending on the care worker [8]. We thought that it was necessary to provide support so that effective urination guidance could be implemented through a collaborative system of care workers. Although prompted voiding—which has the highest evidence level among scheduled voiding regimens—has been practiced [9] [10] [11] [12], it is yet to fully penetrate Japan owing to the lack of established methods to evaluate how factors such as lower urinary tract function, difficulties in multidisciplinary

collaboration, and frequent inspection of padded diapers become a psychological burden for older people [13]. Therefore, we found it necessary to develop and operate a comprehensive program that is also culturally compatible. A previous study by Katagami *et al.* [14] confirmed that older people with dementia, who have difficulty expressing urinary urgency, had normal lower urinary tract symptoms. The study also revealed that implementing micturition induction while confirming urinary urgency improves communication of urinary urgency complaints and reduces the rate of incontinence. However, the specific interaction that re-enabled the expression of urinary urgency remains unclear. Further, although this survey adapted the bladder function evaluation of Iwatsubo and Yagi [15], with the recent developments in assessment methods for lower urinary tract function [16] [17], evaluation methods that do not burden older people and caregivers have also been proposed [18]. In the development of a micturition induction program, we believe, it is necessary to review components that include an assessment of micturition behavior.

In the 2016 revision of medical fees, a “micturition independence guidance fee” was included in insurance coverage, and in the 2018 revision of long-term care fees, “supplementary support for excretion” was added to realize high-quality long-term care services contributing to independence support and severity prevention. There is a tendency to consider care plans and aim for appropriate independent excretion for care recipients whose excretion status is expected to improve based on multidisciplinary cooperation. As a result of super-aging, Japan is seeing an explosive increase in older people with dementia. In this context, the development of a micturition induction program for older people with functional urinary incontinence could improve the sense of micturition control in older people and help promote micturition independence. The purpose of this study is to examine the feasibility of an individualized voiding program in Japan to improve micturition control in older people with functional urinary incontinence.

2. Methods

2.1. Contents of an Individualized Voiding Program

An individualized voiding program in this study is a program unique to Japan developed by researchers based on previous studies. The program outline was created as the framework of the program, and the program guide was created to support care workers in effectively implementing urination guidance. The program guide included knowledge to help perform micturition induction, assessment points, and care instructions (Table 1).

Program outline (Figure 1)

The purpose of this program is to improve functional urinary incontinence in older people and enable them to urinate according to their urinary urgency (improvement of the sense of micturition control) through the implementation of micturition induction by nurses and long-term care workers based on micturition assessment.

According to a previous study by Katagami *et al.* [8] and Nakamura *et al.* [14], an individualized voiding program consists of the following: 1) selection of recipients, 2) assessment of lower urinary tract symptoms and micturition behavior

Table 1. Outline of the program guide of the individualized voiding program in Japan aimed at improving the sense of micturition control in older people with functional urinary incontinence.

Purpose: This program aims to strengthen the sense of micturition control in older people with functional urinary incontinence and enable them to urinate according to their urinary urgency through the delivery of micturition induction by nurses and long-term care workers based on micturition assessment.		
C l a r i f i c a t w i t h o p f l a m i n c t i u g r i a t n i d o n e v c a l r u e t g i o o a n l s t e a n m d s . d i s c u s s i o n s	[a. Selection of recipients]	<ul style="list-style-type: none"> Nurses and long-term care workers who have a good understanding of the recipients' health will select those who meet the selection criteria. *Refer to the program outline for comprehensive and exclusion criteria.
	[b. Assessment of lower urinary tract symptoms and micturition behavior and capability]	<ul style="list-style-type: none"> Assess the possibility of improving urinary incontinence and recovering from urinary urgency (regaining the ability to voluntarily urinate). Assessment of lower urinary tract symptoms is based on the evaluation of lower urinary tract dysfunction that was carried out while calculating the micturition independence guidance fee. In order to assess lower urinary tract symptoms, information is collected by recording the daily micturition status in the micturition log for 3 days. In the micturition log, the time of urination, volume per micturition, urinary incontinence (leakage), volume of urinary incontinence, volume of residual urine, urinary intention, and method of complaint are recorded over time. Since the recipient has urinary incontinence, the urinary function assessment incorporates the usage of diaper or pad to perform a reliable evaluation and avoid causing psychological stress to the care recipient. <p>Determination of factors affecting lower urinary tract symptoms</p> <ul style="list-style-type: none"> Understand the results of urinalysis (signs of urinary tract infection) in older people. Carefully observe the symptoms and signs of urinary retention. Pay attention to the water intake of older people or water intake required by older people. Observe whether medicines being used are affecting micturition. <p>Performing residual urine measurement in case of lower urinary tract symptoms</p> <ul style="list-style-type: none"> If there are symptoms or signs of urinary retention, use an ultrasound device or perform urethral catheterization to measure the amount of residual urine.
	[c. Framing and implementation of a plan for effective execution]	<p>Created with reference to the prompted voiding protocol and toileting assistance based on urinary urgency confirmation (Katagami <i>et al.</i>, 2011)</p> <ul style="list-style-type: none"> During micturition induction, respect the urinary urgency complaints of older people, and induce micturition based on such complaints. Implement micturition induction according to individual micturition patterns (micturition intervals). When asking about micturition, be calm and keep your attention on the older person. When approaching the care recipient, be sensitive to the likelihood of them feeling ashamed. Check whether they are currently feeling the urge to urinate. If so, guide them to the toilet, and praise them after urination. <p>Environmental adjustment utilizing observation of cognitive function and transfer/movement ability of older people</p> <ul style="list-style-type: none"> Observe whether the older person knows the location of the toilet or living room when they move. Carefully observe the older person for apraxia and agnosia when using the toilet. Consider factors in the environment that affect the ease of accessing the toilet, such as location of the older person's room, obstacles to the toilet, and possibility of installing handrails, according to the transfer or movement capability of the older person. Carefully observe the transfer or movement capability and toilet usage of the older person. Before or after urination induction, perform functional training according to the physical function of the older person and change the movement or transfer method in consultation with various workers. <p>Examination of causes based on confirmation of intention of older people in case of urinary incontinence or refusal to urinate</p> <ul style="list-style-type: none"> Carefully observe changes in feelings based on their words and actions when failing to urinate or when urinary incontinence occurs. In case of urinary incontinence or refusal of micturition assistance, consider the cause. Confirm the expression of intention regarding urination behavior with the older person. <p>Examination of micturition schedule considering micturition pattern of older people and daily routine</p> <ul style="list-style-type: none"> Discuss the micturition interval schedule with the staff (members).
	[d. Monitoring urinary urgency complaints and changes in lower urinary function]	<p>Examination with the older person, family, and professionals to solve social problems caused by urinary incontinence</p> <ul style="list-style-type: none"> Clarify changes in their interaction with people due to urinary incontinence. Consider financial problems caused by urinary incontinence through discussions with the older adult and their family. If the micturition problem is difficult to solve, consult a professional outside of the workplace.
	[e. Evaluation of intervention]	<p>Primary endpoints: Urinary incontinence rate, success rate of toilet urination, voluntary urinary urgency complaint</p> <p>Secondary endpoints:</p> <ol style="list-style-type: none"> Lower urinary tract function, and urination independence as direct effects of micturition induction FIM, and motivation as a ripple effect



Discussion about micturition care at home for older people after discharge between family members and caregivers.

1. Selection of facilities for older people with managers and excretion leaders who are enthusiastic about improving excretion care
2. Workshop on understanding the program for nurses and long-term care workers who implement micturition induction programs

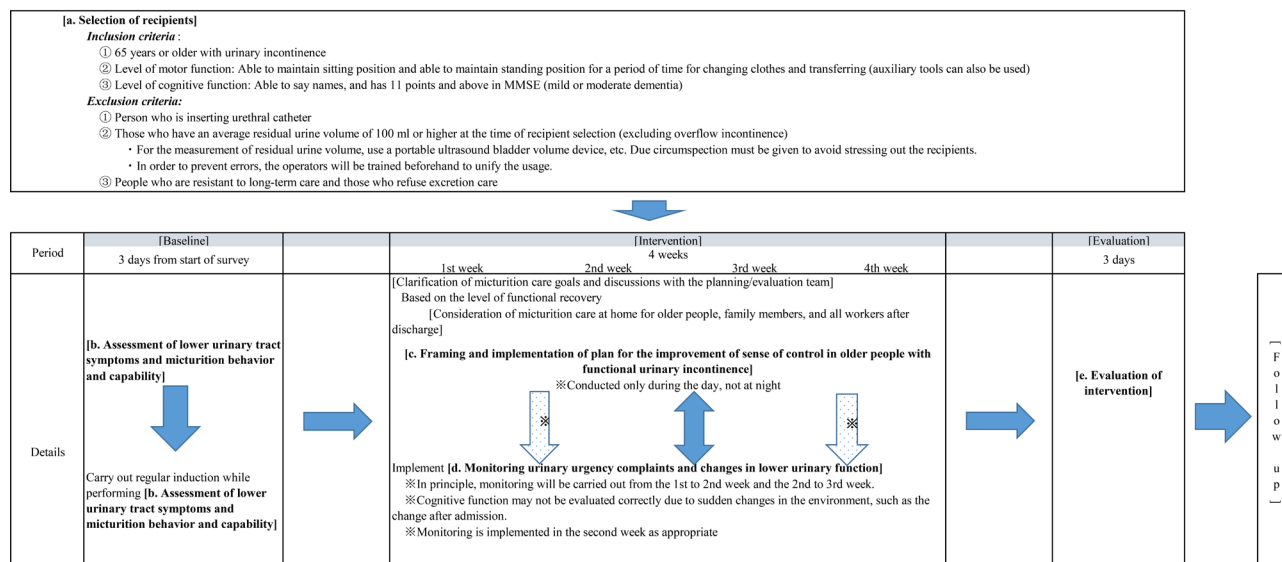


Figure 1. Outline of the individualized voiding program in Japan aimed at improving the sense of micturition control in older people with functional urinary incontinence.

and capability, 3) framing and implementation of a plan for effective execution, 4) monitoring urinary urgency complaints, and 5) changes in lower urinary function and evaluation of the intervention. This program aims to improve the sense of micturition control in older people with dementia by applying the components of “assessment of lower urinary tract symptoms and micturition behavior and capability” through multidisciplinary collaboration and individualized “framing and implementation of a plan for effective execution” in facilities for older people receiving individualized care. Of the program implementation period, the baseline period (before implementation) and evaluation period (after implementation) took three days each, while the intervention period was four weeks. Monitoring was conducted in the second week of the implementation period.

Program components

Selection of recipients: Older people with urinary incontinence caused by cognitive decline or motor dysfunction and people whose primary treatment/ care is micturition induction were selected. Those with suspected overflow incontinence were excluded.

Assessment of lower urinary tract symptoms and micturition behavior and capability: The possibility of improving urinary incontinence and regaining the ability to voluntarily urinate was assessed through a collaborative system of nurses and long-term care workers. The assessment of lower urinary tract symptoms involved checking the daily micturition status for three days and referring to previous evaluation reports [18] to ensure reliable assessment. During the assessment, recipients were allowed to wear diapers so that they were not psychologically burdened. It was necessary to conduct an individualized assessment as recipients suffer from behavioral disorders caused by dementia. Excretion is an activity of daily living repeated several times a day to which the caregiver can easily

get accustomed. However, changes in behavioral disorders related to excretion in the early stages of dementia are subtle and difficult to grasp.

Framing and implementation of a plan for effective execution: This component involves the creation of a plan by referring to the micturition induction method based on urinary urgency confirmation by Katagami *et al.* [14] and prompted voiding protocol for the deterioration of cognitive function and motivation. Respecting the urinary urgency complaints of older people, micturition was to be induced based on such complaints. Environmental adjustment, which is based on observation of cognitive function and transfer/movement ability of older people, and functional training, which is based on the physical function of older people during micturition induction, were to be implemented to prevent deterioration of physical function. All caregivers engaged in the program would jointly determine changes necessary to the excretion aids being used after examining changes in the movement/transfer method. Further, they would create and implement a micturition induction plan that utilized the potential of the selected recipients. Thus, the sense of micturition control would improve older people with dementia by respecting their urinary urgency and encouraging independence despite the assistance required for excretion.

Monitoring urinary urgency complaints and changes in lower urinary function: If possible, before incontinence occurs, micturition guidance was to be performed, and the manner of urinary urgency complaints and changes in the lower urinary tract symptoms monitored at micturition intervals according to the lower urinary tract function of the recipient. Caregivers would have discussions with the recipients, their families, and if required, professionals, to understand their social and financial problems caused by urinary incontinence and try to find solutions.

Evaluation of intervention: Comparing to pre-admission conditions, changes in urinary incontinence rate of older people, toilet micturition success rate, voluntary urinary urgency complaint, lower urinary tract function, level of micturition independence, FIM, and motivation would be analyzed and evaluated. Also, the staff would exchange thoughts on program implementation that would later be taken into account during the evaluation of the intervention.

2.2. Participants

The participants were nurses and long-term care workers employed in rehabilitative facilities for older people (recovery rehabilitation hospital and long-term care facility), who play a key role in the implementation and examination of micturition induction. We contacted facility nurses and long-term care supervisors who had participated before in case studies in excretion care research where this researcher was the sponsor. After providing an overview of the study and acquiring consent, we requested nurses and long-term care supervisors to select the micturition induction recipients for the program. Among the ten participants who consented to the study, one was male and nine were female. There

were five nurses and five long-term care workers all of whom had at least five years of experience in the field. Six participants were staff members at a long-term care facility and four were staff members at a recovery rehabilitation hospital. There were two groups, one group consisting of 6 people from the long-term care facility and the other group consisting of 4 people from the recovery rehabilitation hospital. Each group had half the nurses and half the care workers. They were practitioners who were considerate of the elderly and familiar with urination care.

2.3. Data Collection

This is a qualitative descriptive study and data was collected from November to December 2020. Focus group interviews (FGIs) were used to collect data in this study. FGIs were performed once in two groups according to the desired interview schedule of participants. Before conducting the interview, I explained the purpose of the research and distributed the program and program guide. The contents of the semistructured interview guide are 1) clarity of the purpose of the program, 2) contents and methods of implementation in the outline of the program and other things to be added, 3) clarity and improvement points of the program guide, and 4) feasibility of this program and further improvements when implementing. First of all, we gave an opening greeting and an orientation for the participants. Next, we asked participants about their experience as a nurse or care worker, the characteristics of the ward, and what they feel about urination care for the elderly. A group of four to six people discussed for around 60 minutes the purpose and content of the program, as well as the perspicuity of the guide. Discussion was refocused to the intended topic when the discussion digressed. The sessions began with the open question. The moderator was careful to promote and focus on the interaction of the participants. Remote interviews were conducted using a conference system because COVID-19 restrictions made it difficult to physically visit facilities for older people. We asked the facility supervisors to allow us to use separate rooms in the target facilities to ensure privacy. The FGI environment in which the interviews were held was private. Only the participants and researchers were included in the sessions. The researchers provided the computers and internet connection to conduct the remote interviews, which were recorded on a digital voice recorder with the consent of the participants for recording and use.

2.4. Data Analysis

Data were analyzed using a qualitative descriptive approach according to content analysis guidelines by Yatsu [19]. The verbatim transcript of the recorded interviews was used as descriptive data for analysis. First, the transcribed interviews were read through several times. The verbatim transcript of each group was carefully read and the content related to suggested improvements in the micturition induction program, such as comments on the program purpose, program

content, and the perspicuity of the guide, was extracted. In the second, keeping in mind content relevant to the purpose of the study and using each participant's words as much as possible, the content was coded to be faithful to its meaning and then checked by a fellow researcher. We classified coded content by comparing similarities and differences, summarized them into several codes, labeled them, and then extracted categories and subcategories. Finally, during the categorization process, we returned to the data to check content validity to name the categories to show semantic content.

2.5. Ethical Considerations

The purpose of the study, a method to be used, protection of personal information, voluntary participation in the study, the assurance that the participant will not bear disadvantages because of non-participation, and storage and disclosure of information were explained to the participants using the request form. Further, the participants were also informed that consent cannot be withdrawn after the analysis of the interview since the information acquired in this study is anonymized. Next, the written consent of the participants was acquired. This study was conducted after obtaining the approval of the Ethics Review Board of Osaka Medical College (Nursing 146-2890).

3. Results

The average interview duration was sixty-five minutes. FGIs were used as an exploratory method to examine the feasibility of the individualized voiding program for the elderly with functional urinary incontinence, which is undeveloped in Japan. A qualitative descriptive analysis was performed for each component of this program, and the details of the results are shown in **Tables 2-5**.

Feasibility of the Individualized Voiding Program

Purpose of an individualized voiding program (Table 2): We analyzed opinions regarding the purpose of an individualized voiding program and concluded that the purpose is: to enable caregivers to work as a well-coordinated team to humanely facilitate excretion independence in older people which is essential for living with dignity. It consists of four subcategories: 1) supporting excretion independence of older people to support their dignity, 2) provision of care based on the micturition status of the recipient, 3) adjustment toward a safe micturition environment for users, and 4) enabling the unified involvement of the staff.

Outline of an individualized voiding program (Table 3): An individualized voiding program consists of five components; however, it was difficult to classify and analyze each component because of the relationship between components. We believe that the essence can be grasped by comprehensively analyzing the aspect of functional urinary incontinence rather than individually analyzing each component. Thus, in this study, we analyzed the program outline. Through

Table 2. Purpose of an individualized voiding program in Japan aimed at improving the sense of control in older people with functional urinary incontinence.

Category	Subcategory	Code
Caregivers must be able to work as a well-coordinated team to humanely facilitate excretion independence in older people, which is essential for living with dignity.	Support for excretion independence of older people by a team is important for the dignity and well-being of older people.	Not only should urinary incontinence in older people be seen as related to age but support should also be given so that older people can live a human life.
		Excretion independence once the older person returns home is necessary as it is the most important issue for the family.
		For the elderly and their families, excretion is the most important deciding factor in returning home.
	Provision of care based on the micturition status of the recipient.	When I am involved in detailed analysis, I want to know the process that would best help the patient.
		As much as possible, I try to provide care that matches the micturition status of the recipient.
		I feel that the excretion checklist is useful for looking back.
	Adjustment toward a safe micturition environment for users	When implementing the program, I usually work on excretion, so I think it is possible to implement it in the ward.
		I want to adjust the toilet environment so that users can feel at ease.
	Enabling the unified involvement of the staff	I expect that implementing the program will leave a detailed process behind, making it easier for staff to share their tasks and the results, which may enable unified involvement.
		I expect that the implementation of this program will lead to a successful experience and a sense of unity among the staff.
		I expect that the program will enable the implementation of personalized care.

Table 3. Overview of an individualized voiding program in Japan aimed at improving the sense of control in older people with functional urinary incontinence.

Category	Subcategory	Code
Setting selection criteria for recipients considering the status of micturition induction	I feel burdened that micturition induction of very old people often does not produce good results no matter how hard I work.	It takes time and effort, but the hardest thing is that you never get good results no matter how hard you work.
		Micturition induction of very old people is time consuming.
	Excretion care may induce shame and as such, should be avoided immediately after admission.	Considering that the recipient may feel ashamed, I think it is preferable to get involved after building a certain relationship.
		Over the first week to 10 days after admission, the care recipient will get used to it, so it is surprisingly easy to collect data after that.
	Implementation of micturition induction is difficult for reluctant older people in long-term care.	Induction may be difficult due to resistance if the recipient has no voluntarism or has dementia.
		Micturition induction in recipients who refuse it is a painful experience for both parties.
	Securing staff in cases that require the assistance of two or more people is time-consuming.	Older people can stand, but it is very difficult for those who need assistance from two people when rotating or changing clothes due to their large physique.
		Assistance from two people may be required if the recipient reaches their load limit, finds it difficult to move their feet, or feels pain.
	Be careful of “knee buckling” during micturition induction.	Be careful because “knee buckling” often occurs during micturition induction.

Continued

	It is necessary to examine whether those who have had their urethral catheter removed should be selected as recipients.	Can older people who have had their urethral catheter removed be targeted? After removal of urethral catheter, how long would it take before an older person can be considered as eligible?
	Micturition control is difficult in cases with fecal incontinence.	Micturition control is difficult in older people with fecal incontinence.
	As “diapers” are associated with tape diapers (bedridden state), the term “diapers and pads” is easier to understand.	The term “diaper” is associated with a tape diaper which is used for bedridden people, so recipients were uncomfortable with the thought of performing micturition induction. The term “diaper” is associated with tape diapers.
	Utilizing the level of independence in daily life of older people with dementia for target selection	The daily life independence of older people with dementia is about IIb, so I think the program will be effective for IIIa patients. I think that the daily life independence of elderly people with dementia is about IIb, and in case of patients with IIIa, it will be effective in terms of level.
Careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change	Time-consuming process of information collection and assessment of excretory behavioral disorders in elderly people with dementia who have difficulty adapting to the environment The mental state of older people before discharge may be unstable which may also affect micturition status.	One-week excretion check may not be enough time to understand the pattern in newly admitted older people (with dementia). Older people with dementia are overwhelmed by environmental changes after admission and take time to get used to the surroundings and settle down. In some people, the micturition pattern becomes clear once the recipient calms down Before discharge, older people may have an unstable mental state, which makes them unable to do what they were able to do earlier, increases incontinence, and induces BPSD. In the recovery period, the older person’s way of thinking also reflects the family’s way of thinking, so it is necessary to consider the mental state of the recipient when considering the excretion method. It is difficult to monitor the relationship between the mental status and excretion status of older people before discharge.
	Understanding food and water intake is important for evaluating lower urinary tract function in older people	When micturition does not occur during scheduled induction, the relationship between water, food intake, and micturition status is confirmed. Evaluation of lower urinary tract function should also include food and water intake.
Examination of assessment methods for lower urinary tract symptoms according to the facility environment	Assessment of lower urinary tract symptoms can be grasped by those who have spent a period of one week (1 day = 24 hours). It is appropriate to change the evaluation method of lower urinary tract function depending on the availability of an ultrasound bladder volume device.	Assessment of lower urinary tract symptoms is difficult to grasp without conducting observation for at least about a week (1 day = 24 hours). A 24-hour micturition check is necessary, including at night. I think that a period of about a week is ideal in order to exchange and share information among staff members. Some recovery rehabilitation wards have ultrasound bladder volume device. Upon checking with an ultrasound bladder volume device, if residual urine is present, I attempt induction after 1 to 2 hours, which is more reliable than checking the diaper. Since the micturition status may vary, when and how many times should the residual urine be measured?

Continued

	Reducing the frequency of residual urine volume measurement would reduce workload	When measuring the residual urine volume by ultrasound, it would be laborious to have the recipient lie down again after having them sit down. After micturition induction, I am not sure whether recipients should be asleep or awake when lying down for measurement of residual urine.
Confirmation of the recipient's micturition habits and request for assistance	Examination of implementation of nighttime micturition induction	Micturition induction depends on the person, but since it is carried out not only during the day but also at night, I wonder how different is the implementation at night.
	Confirmation of request for same-sex assistance	It is necessary to confirm the recipient's gender and request for same-sex assistance.
	Understanding past excretory habits	Previous excretory habits and gender (especially men's posture during excretion) may affect the ease of micturition. If a portable toilet had been used before admission, use a portable toilet instead of a toilet.
Conducting necessary examination for setting the intervention period and evaluation period according to the status of the recipient	The intervention period can be kept short or the evaluation period can be set flexibly (depending on the status of the recipient)	I feel that the intervention period of about 5 to 6 weeks is long, so I think a shorter period could be used in practice.
		In order to implement the program in a busy long-term care site, we need to be flexible in order to monitor and perform evaluation once the results begin to show.
		Monitoring can be done on the second week, and once effect appears, we can move on to evaluation.

Table 4. Guide of an individualized voiding program in Japan aimed at improving the sense of control in older people with functional urinary incontinence.

Category	Subcategory	Code
Specific successful cases are effective in framing and implementing the micturition induction plan.	Content of the program guide is easy to understand and is useful for planning and implementing micturition induction.	I felt that the content of the guide was not difficult and it was easy to assess.
		Guides are immediately helpful in planning the micturition induction.
		The content of the program guide is not difficult, and I think induction will be easier using the guide.
		Guides are immediately helpful in planning the micturition induction.
	Request to present successful cases	Presenting successful cases may motivate caregivers.
		Request to present successful cases that emphasize teamwork
	Request for specific notes since symptoms caused by dementia are often troublesome	The content of the guide needs more concrete details, especially regarding symptoms caused by dementia.
		The content of the guide often presents negative examples, especially regarding the symptoms caused by dementia.

analysis, the comments, opinions, and suggestions for improvement were summarized into 38 codes, 19 subcategories, and 5 broad categories. The five categories are: 1) setting selection criteria for recipients considering the status of micturition induction, 2) careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change, 3) examination of assessment methods for lower urinary tract symptoms according to the facility environment, 4) confirmation of the recipient's micturition habits

Table 5. Implementation status and issues in micturition induction.

Category	Subcategory	Code (excerpt from representative codes)
Recognizing the implementation of timed induction that does not consider the intention and the micturition status of older people as an issue	Insufficient observation of micturition status when performing time induction	The current situation is that people tend to rely on highly absorbent diapers rather than on micturition induction. At the time of scheduled induction, we check for incontinence but do not measure micturition volume.
	Micturition induction lacks confirming the intention of older people and becomes a mechanical assembly line activity without due consideration.	Currently, micturition induction is carried out according to the staff's will rather than the will of the older person. Lack of consideration in the assembly line-like implementation of micturition induction.
Leaders are an essential presence for new initiatives.	Staff awareness and leadership (when working on something new or different) is essential to implement the program.	Staff awareness and leadership are essential to implementing the program. A point person is necessary when implementing the program. Work is decided according to the work zone, and the system must be confirmed such as in cases where work needs to be adjusted to implement the program.
	Reluctance to adapt to new things	Difficulty in adapting to new things I think it is difficult to continue the program at the facility without an objective.
Inability to reliably implement the program while struggling with caring for several older people requiring long-term care	Request to implement the program on a small number of people considering the large number of older people requiring long-term care and insufficient staff	Difficulty in implementing a program in a setup where 50 people are in need of care Due to insufficient manpower, personalized care is limited.
	Postponement of induction if care separate from the research recipient needs to be prioritized	Implementation of the program may be postponed when responding to nurse calls. Caregivers may be caught up in recipients who can clearly express intention, resulting in delayed response to those who are unable to clearly express intention.
	Risk of mistaking the identity of the recipient due to the large number of older people undergoing micturition induction and involvement of several staff	Staff change daily, so some may not be familiar with the recipient There should be a means to identify the recipients among the numerous residents. Detailed information report is essential for effective implementation of the program.
	There should be a means to eliminate record omissions.	Clearly indicate the care recipient and eliminate record omission by being aware. There should be a means to eliminate record omissions during implementation.
Necessity of a place for information sharing and exchange of opinions using ordinary communication methods	Difficulty and huge burden associated with a descriptive record (assessment, planning, monitoring evaluation) during program implementation	Difficulty associated with descriptive records, such as assessment and planning, during program implementation Reduce workload by simplifying record-keeping during the program rather than using a descriptive format, and only emphasizing record-keeping. More details should be added in the guide, and the record-keeping during implementation should be selective rather than descriptive.
	Detailed information sharing between staff through oral communication is practiced, but record communication is insufficient.	When a problem arises in daily care, the person in charge considers how to address this and only verbally shares it during the conference. Although records are also used, information is often shared verbally. Usually, information is shared among the staff verbally or by sending notes.
	Nursing records (in recovery period) are useful for looking back	Nursing records provide an opportunity to look back.

Continued

Appropriate adjustment of the collaboration system with therapists and care managers in addition to nurses and long-term care workers	Discussion between all workers is possible in the process of program implementation when maintaining constant communication between the staff.	Since conferences can be held, it is possible to share information and exchange opinions on the implementation of the program.
		The staff try to exchange opinions.
		Opportunity to discuss better micturition care.
	During recovery period, the therapist may implement micturition induction apart from nurses and long-term care workers.	Multidisciplinary involvement in micturition induction.
		During the recovery period, therapists must cooperate when performing daytime micturition induction.
At geriatric health services facilities, care managers create the care plan.		Rather than creating nursing and long-term care plans, care managers only make care plans (planned and not implemented).
		The care plan of the facility is created by a dedicated care manager while listening to the opinions of the staff who are in charge of direct care.

and request for assistance, and 5) necessary examination for setting the intervention period and evaluation period according to the target condition.

The first category “setting selection criteria for recipients considering the status of micturition induction” consists of nine subcategories, as avoiding induction immediately after admission to prevent shame, challenges posed by reluctant older people in long-term care, challenges of securing staff in cases that require the assistance of two or more people, etc. The category “careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change” consists of three subcategories, the time-consuming process of information collection and assessment of excretory behavioral disorders in elderly people with dementia who have difficulty adapting to the environment. The category “examination of assessment methods for lower urinary tract symptoms according to the facility environment” consists of three subcategories, as, changing the evaluation method for the lower urinary tract function as appropriate according to the presence of an ultrasound bladder volume device. The category “confirmation of the recipient’s micturition habits and request for assistance” consists of three subcategories such as grasping past excretory habits and examining the implementation of nighttime micturition induction. The category “necessary examination for setting the intervention period and evaluation period according to target condition” consists of the subcategory about setting a flexible evaluation period or a short intervention period considering the recipient’s condition.

Guide of an individualized voiding program (Table 4): Opinions regarding an individualized voiding program guide were summarized into the category “specific successful cases help frame and implement the micturition induction plan.” It consists of three subcategories: 1) ease of comprehension and usefulness for planning and implementing micturition induction, 2) request to present successful cases, and 3) request for specific directions since symptoms caused by dementia are often troublesome.

Implementation status and issues in micturition induction (Table 5): To effectively implement an individualized voiding program, we analyzed the current status of the implementation system of micturition induction. As a result,

we extracted 55 codes, 14 subcategories, and 5 categories. The five categories are as follows: 1) recognizing timed induction that does not consider the intention and micturition status of older people as an issue, 2) the importance of leaders in new initiatives, 3) inability to implement the program while struggling with caring for several older people requiring long-term care, 4) the necessity of a place for information sharing using ordinary communication methods, and 5) appropriate adjustment of the collaboration system with therapists and care managers in addition to nurses and long-term care workers.

The first category “recognizing timed induction that does not consider the intention and the micturition status of older people as an issue” consists of two subcategories: insufficient observation of micturition status when performing timed induction, and performing micturition induction like an assembly-line job without confirming the urinary intention of older people. The category “importance of leaders in new initiatives” consists of two subcategories: the importance of staff awareness and leadership when working on something new, and reluctance to adapt to new things. The category “inability to reliably implement the program while struggling with caring for several older people requiring long-term care” comprises four subcategories: request to implement the program on a small scale considering the large number of older people requiring long-term care and the insufficient number of staff, postponement of induction if care other than micturition assistance needs to be prioritized, risk of mistaking the program recipients due to the large number of older people undergoing micturition induction and involvement of some staff, and necessity of means to eliminate record omissions. The category of having a place for information sharing comprises three subcategories: burdensome maintenance of descriptive records during program implementation, detailed information sharing occurring through oral communication and absence of sufficient record communication, and utility of nursing records for reflection. The category “appropriate adjustment of the collaboration system with therapists and care managers in addition to nurses and long-term care workers” has three subcategories: possibility of a discussion among all workers during program implementation and maintaining constant communication, the therapist implementing micturition induction during the recovery period, apart from nurses and long-term care workers, and care managers creating the care plan at geriatric health services facilities.

4. Discussion

4.1. A Feasibility of an Individualized Voiding Program in Japan for the Improvement of the Sense of Micturition Control in Older People with Functional Urinary Incontinence

While determining the purpose of the micturition induction program, we extracted the category “enabling caregivers to work as a well-coordinated team to humanely facilitate excretion independence in older people which is essential for living with dignity.” Upon recognizing the importance of rehabilitation, the

study participants focused on the objective of this program—that is, improving the post-home return life of recipients—and strived to find solutions to lessen the burden of long-term care for the family. Believing that support for excretion independence would lead to a better life for older people, we searched for ways to improve the morale of the caregivers while hoping to improve the quality of geriatric care provided by the entire team as a whole. We believe that we were able to establish a common understanding of the importance of helping older people maintain a sense of urination control to improve their life.

In the outline of an individualized voiding program, the category “setting selection criteria for recipients considering the status of micturition induction” corresponded to the first component of a selection of recipients. Regarding this category, in consideration of older people with dementia, we confirmed that it is ideal to avoid micturition induction immediately after admission and only perform it after a relationship has been established between the caregiver and the recipient. People who require the assistance of two or more people during excretion, due to conditions that require treatment or physical dysfunction, etc., were excluded from the program. Long-term care reluctance has been identified as a factor that increases the burden on the caregiver during micturition induction. This is an unpleasant experience for both the older person and caregiver. This reluctance was added in the exclusion criteria presuming that it is not only caused by excretion. However, if this reluctance occurs during the implementation of the program, it is necessary to be with the older person and prioritize their safety and comfort. The categories “careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change” and “examination of assessment methods for lower urinary tract symptoms according to the facility environment” correspond to the second component—assessment of lower urinary tract symptoms and micturition behavior and capability. While analyzing the category “careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change,” we found that older people with dementia may have difficulty in adapting to an unfamiliar environment. Further, based on the relationship between lower urinary tract symptoms and mental state, we ascertained the timing of mental instability episodes to avoid inducing Behavioral Psychological Symptoms of Dementia (BPSD). The speech, conduct, and presence of the caregiver are also part of the environment. In Japan, the Professional Environmental Assessment Protocol (PEAP) is also used as it shows the mentality and policies for older people with dementia [20].

The eight dimensions of environmental support comprise an important component in excretion care. These are orientation support, support for functional ability, quality, and coordination of environmental stimuli, support for safety and comfort, support of the continuation of life, support for self-selection, ensuring privacy, and promotion of rapport with the recipient. The study participants were nurses and long-term care workers in recovery rehabilitation wards

and long-term care facilities—all of which are facilities that provide support for excretion independence so that older people can return home. However, under “examination of assessment methods for lower urinary tract symptoms according to the facility environment”, we found that the measurement method of residual urine volume varies depending on the availability of an ultrasound bladder volume device that allows non-invasive measurement. This measuring instrument is widely used in specialized fields and is effectively used in practice [21]. However, many facilities do not have this instrument owing to the high cost and relatively infrequent use and because it requires special training to use the device. It is necessary to modify the method of assessing lower urinary tract symptoms depending on the availability of the residual urine volume measuring device. The results of the interviews indicated that all the caregivers felt competent to perform residual urine measurement using the ultrasound bladder volume device. However, it has been reported that residual volume measurements at facilities for older people were performed more significantly by nurses than by care workers [8]. Based on this report, the assessment of lower urinary tract symptoms provides important clues in determining the direction of care. Considering the specialty of nurses in collaboration with other workers and the staffing in facilities for older people, nurses need to lead the assessment of lower urinary tract symptoms.

The category “confirmation of the recipient’s urination habits and request for assistance” corresponds to the component of “framing and implementing a plan for effective execution.” Although this was not particularly presented in the program, this topic was added since we realized that it is necessary information for effective micturition induction. The category “conducting necessary examination for setting the intervention period and evaluation period according to target condition” corresponds to components “framing and implementation of a plan for effective execution” and “monitoring urinary urgency complaints and changes in lower urinary function and evaluation of the intervention.” In this category, the subjects felt that a five-week program implementation period was too long. They also said that the efficacy of the intervention can be evaluated by monitoring in the second week. In a previous study [14], a four-week intervention period was set and efficacy was noted on several recipients during the second week. For this reason, we decided to perform monitoring in the second week of the program. Although we believe that the sustainability of the program should be examined, the intervention period must be reviewed by analyzing the level of efficacy by monitoring in the second and fourth week. There is also a study on the sustainability of prompted voiding intervention performed by staff which has not been verified to date [22]. Moving forward, after developing a micturition induction program and verifying its effectiveness in Japan, there is a need to build a system that can effectively, efficiently, and sustainably execute the program.

From the participant’s comments on the program guide, we extracted the category “specific successful cases help frame and implement the micturition in-

duction plan”. The subjects expressed positive opinions toward the program’s content saying that it was easy to understand and would be immediately useful when framing the micturition induction plan. The examples of excretory behavioral disorders caused by dementia were also easy to understand, but some participants opined that more examples need to be presented. There are several difficult cases and few successful experiences in the practice of micturition induction in facilities for older people. Therefore, the participants felt that presenting successful cases would motivate the team.

The interviewees gave suggestions for improving the program. To the best of our knowledge, our study of the feasibility of a micturition induction program in Japan for the improvement of the sense of control in older people with functional urinary incontinence is the first in this domain. However, since the causes of functional urinary incontinence are diverse and complex, verifying the efficacy of the refined program in the future is essential. Also, by verifying the effectiveness of the program, we believe that care methods according to the cause of functional urinary incontinence will be clarified.

4.2. Examination of the Implementation Status of the Individualized Voiding Program

In the data on status and issues in an individualized voiding program, we found that the practice of performing timed induction without considering the micturition intention and status of older people is difficult to correct as it the result of a heavy workload. However, taking the micturition intention and status of older people into account during timed inductions, designating a place for information and opinion sharing using ordinary communication methods, and including therapists and care managers in the collaboration system in addition to nurses and long-term care, workers have been proposed as specific measures for the effective implementation of this program. Based on this feedback, we determined that implementation is possible provided that the strengths cultivated so far could be demonstrated. However, the concern about “inability to reliably implement the program while struggling with caring for several older people requiring long-term care” was also identified. As such, due consideration is necessary when setting a feasible number of people to avoid increasing the staff’s workload. We were able to reconfirm the implementation of the program within the current set-up where a small staff is in charge of several older people requiring long-term care.

5. Conclusions

We performed a feasibility study on an individualized voiding program in Japan for the improvement of the sense of urinary control in older people with functional urinary incontinence. From the data, we identified that the purpose of the program is “to enable caregivers to work as a well-coordinated team to humanely facilitate excretion independence in older people which is essential for living

with dignity”, confirming the importance of helping older people maintain the sense of urinary control. Regarding the program outline, in “selection of recipients”, we confirmed the importance of “setting selection criteria for recipients, considering the status of micturition induction” and further refined the inclusion and exclusion criteria of recipients. In “assessment of lower urinary tract symptoms and micturition behavior and capability”, we confirmed “careful information collection and assessment of lower urinary tract symptoms in older people in case of environmental change” and “examination of assessment methods for lower urinary tract symptoms according to the facility environment”. Older people with dementia are easily influenced by environmental changes, and lower urinary tract symptoms are related to mental state. Based on these facts, assessments should be emphasized, and an assessment method of lower urinary tract symptoms should be presented based on the availability of an ultrasound bladder volume device. In “framing and implementation of a plan for effective execution”, we deliberately presented “confirmation of the recipient’s urination habits and request for assistance” as that information is important. The period at which change can be noted varies for different recipients, so it is impossible to set a definite intervention period. However, we believe that opinions on the “conducting necessary examination for setting the intervention period and evaluation period according to target condition” should be re-examined upon verifying the efficacy of the program.

The feedback on the program guide was summarized in the statement “specific successful cases help frame and implement the micturition induction plan”. The results confirmed that this program is feasible after modification. The efficacy of the intervention must be verified to clarify its effects. Further, in the implementation system, we believe that the key to sustainability is to create a system that could utilize the strengths of the three proposals and to consider team building that could address the two issues.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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