



## A cross-sectional study on the differences among age groups in independence for stoma management in Japan

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### Abstract

**Background:** As the population ages, the number of operations for ostomy construction and the need for stoma management increases. On the other hand, the length of hospitalization has been shortened, but it is difficult for nurses to decide which skills to train patients in for their independence in stoma management during hospitalization.

**Objectives:** The degree of independence of the three items of stoma management, changing, emptying, and ordering the ostomy pouch, was surveyed by self-reported questionnaires to clarify the relationship of independence with the current age and stoma duration in Japan.

**Methods:** In total, 3,000 ostomates from the client list of 14 ostomy appliance sales agents throughout Japan were invited to the study. To investigate the relationship, the independence of the three stoma management items was analyzed by Chi-square and Cochran-Armitage trend tests according to duration and current age group.

**Results:** In total, 1,086 participants (36%) , including 640 men and 436 women, were recruited. Of the participants, 72% were independent in changing the ostomy pouch, 93% in emptying, and 77% in ordering. The proportions of those independent in stoma management were lower for changing and ordering, consistent with the shortness of stoma duration and age of the ostomates; however, almost the same proportion was observed for emptying among ages.

**Conclusions:** For hospitalized elderly ostomates, emptying of the ostomy pouch is a basic skill, whereas long-term support is needed for changing and ordering the ostomy pouch.

Key Words : elderly people, cross-sectional survey, ostomy, patient care, self-care

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## Introduction

Among people in Japan with gastrointestinal stomas and urostomas (hereafter referred to as “ostomates”), approximately 200,000 are permanent ostomates<sup>1)</sup>. This number is presumed to be even higher if the number of temporary ostomates is added. The age distribution of ostomates<sup>2)</sup> is generally higher than that of patients with cancer<sup>3) 4)</sup>. Japan is one of the few countries in which active medical care can be received regardless of age according to the national health insurance system, and stoma construction is performed for patients older than 90 years. As the number of operations for stoma construction continues to increase<sup>5)</sup>, an increase in the number of advanced-age ostomates is predicted. Ostomates require special skills for excretion management such as changing, emptying, and ordering the ostomy pouch. Thus, many challenges must be overcome for these ostomates to acquire new skills after surgery and return to social life<sup>6) 7)</sup>. Approximately 40% of elderly people aged 70 years or more are reported to have difficulties with activities of daily living (ADL)<sup>8)</sup>. As autonomy of excretion behavior greatly affects the ADL and quality of life, it is necessary to clarify the tasks that must be performed to support people of advanced age who undergo stoma construction, thereby enabling them to master new excretion management skills without difficulty and maintain their daily life.

The main problems reported by ostomates are skin irritation and poor quality of life<sup>9) - 11)</sup>. Preliminary research with a focus on ostomy appliance exchange (hereafter referred to as “changing the ostomy pouch”) has been published in the field of stoma management<sup>12) 13)</sup>. As excretion independence is important for maintaining ADL in elderly people<sup>8)</sup>, autonomy in emptying excrement from the ostomy pouch (hereafter referred to as “emptying the ostomy pouch”) is an important element to maintain the quality of life among ostomates. In addition, it is essential to be able to purchase an ostomy appliance (hereafter referred to as “ordering the ostomy pouch”) necessary for excretion management. However, no survey studies have focused on emptying the ostomy pouch or purchasing/ordering the ostomy pouch.

Therefore, the purpose of this study was to clarify ostomates’ independence in regards to changing, emptying, and ordering their ostomy pouch according to age and stoma duration, and to clarify the long-term support problems regarding independence of stoma management.

## Materials and Methods

### 1. Definitions

The following terms were used in the present study: “People of advanced age” are people aged  $\geq 70$  years. According to the recommendation of the Japanese Gerontological Society and Japan Geriatric Society Definition Study on the Elderly Working Group (2017)<sup>14)</sup>, mental and physical health can be maintained and active social activities are possible for elderly people aged 65 to 74 years old. According to age group, people aged 65 to 74 years can be classified as pre-old, whereas those over 75 years are considered elderly adults. In addition, people aged over 90 years can be classified as oldest-old or super-old. We consider the range of “older adults” to “super elderly adults” to be over 75 years old in the future. In this study, we considered the range of elderly to super elderly adults to be over 70 years of age.

“Stoma duration” refers to the period after construction of the stoma. “Changing the ostomy pouch” refers to removal of the stoma bag, including the fixing plate, from the body and attachment of a stoma bag with a new fixing plate. “Emptying the ostomy pouch” refers to elimination of excrement (stool or urine) by either draining or changing the stoma bag while keeping the fixing plate in place. “Ordering the ostomy pouch” refers to the purchasing of the ostomy appliance from a sales agent. The ordering frequency and method of ordering vary according to the local government and sales agents. “Stoma management” refers to the operations and procedures necessary to use and care for the ostomy appliance, and generally involve the above-mentioned “changing”, “emptying”, and “ordering” of the ostomy pouch. “Independence” refers to the performance of a task by the patient alone, and “dependence” refers to the performance of a task by the patient with assistance from others.

## 2. Study design

This study comprised the administration of a self-reporting questionnaire.

## 3. Methods

### 1) Subjects and investigation period

In total, 3,000 questionnaires were sent to Japanese residents who were included in the list of customers of 14 ostomy appliance sales agents throughout Japan. When a store mailed an ostomy appliance to an ostomate, we enclosed a self-reporting questionnaire and a reply envelope. The subjects of this study were ostomates aged  $\geq 20$  years in Japan. The investigation period was from April 2017 to March 2018.

### 2) Questionnaire content

We made questionnaire items regarding the independence of stoma management by referencing previously published preliminary research<sup>3)</sup>. To assess changing, emptying, and ordering the ostomy pouch, we asked the question "Are you able to perform this task by yourself?" The answer to the question was a choice of either yes or no.

### 3) Ethical considerations

Ostomy appliance sales agents cooperated in packaging and shipping stoma appliances for the purpose of this study and the questionnaire. Consent was received after it was explained that sales agents would have no extra expenses.

The cover page of the questionnaire contained statements guaranteeing anonymity and explaining that participation was voluntary, and sales agents agreed with the return. The completed questionnaires were sent directly to a researcher who was not an ostomy appliance sales agent. This study was approved by the hospital ethics review board of the Osaka University Clinical Research Review Committee (approval number 16254).

## 4. Data analysis

We calculated the descriptive statistics for the subjects. We used the Chi-square test to investigate the difference in the proportion of independent participants among the current age groups.

We also performed a residual analysis, as described by Haberman<sup>15)</sup>, to find the tipping point among the current age groups. The Cochran-Armitage trend test<sup>16) 17)</sup> was performed to clarify the linear

relationship of the independence in three items with the current age group or stoma duration.

In all statistical analyses, a two-tailed p-value of  $<0.05$  was considered significant, and analyses were performed using SPSS Version 25 for Windows (IBM Corp., Armonk, NY, USA) and JMP Pro Version 13 for Windows (SAS Institute, Cary, NC, USA).

## Results

### 1. Recovery rate

Of the 3,000 questionnaires sent out, 1,087 were returned (36% recovery rate). Of these, 1,086 contained effective responses. A total of 1,059 respondents provided effective answers to each question regarding "changing the ostomy pouch" and "emptying the ostomy pouch," and 1,055 respondents' answers to "ordering the ostomy pouch" were targeted for analysis.

### 2. Respondents' attributes (Table 1)

Most ostomates were in their 70s ( $n = 369, 34.0\%$ ), followed by those in their 60s ( $n = 320, 29.5\%$ ) and 80s ( $n = 188, 17.3\%$ ). The respondents comprised 640 men (58.9%) and 436 women (40.2%).

Gastrointestinal stomas were present in 792 ostomates (72.9%) and urinary stomas were present in 203 (18.7%). Double stomas were present in 30 ostomates (2.8%). Permanent stomas were present in 753 ostomates (69.3%) and temporary stomas were present in 157 (14.5%).

The stomas were present for  $<6$  months in 90 ostomates (8.3%), from 6 months to 1 year in 129 (11.9%), from 1 to 3 years in 297 (27.3%), from 4 to 5 years in 135 (12.4%), from 6 to 10 years in 195 (18.0%), and for  $>11$  years in 225 (20.7%).

Regarding the living situation, 1,037 (95.5%) ostomates lived at home, 22 (2.0%) ostomates lived in nursing homes, and 5 (0.5%) ostomates lived in hospitals.

### 3. Independence of stoma management

A total of 1,059 ostomates (97.5%) provided effective answers for changing and emptying the ostomy pouch, and 1,055 (97.2%) provided effective answers for ordering the ostomy pouch.

**Table 1** Baseline characteristics of participants

Variable	N=1086	
	n	(%)
Age, years		
20-29	6	( 0.6)
30-39	13	( 1.2)
40-49	45	( 4.1)
50-59	104	( 9.6)
60-69	320	(29.5)
70-79	369	(34.0)
80-89	188	(17.3)
≥ 90	27	( 2.5)
No response	14	( 1.3)
Type of stoma		
Gastrointestinal stoma	792	(72.9)
Colostoma	603	(55.5)
Ileostoma	113	(10.4)
Other gastrointestinal stoma	76	( 7.0)
Urostoma	203	(18.7)
Ileal conduit	86	( 7.9)
Uretero-cutaneostomy	66	( 6.1)
Other urostoma	51	( 4.7)
Double stomas	30	( 2.8)
Other type	7	( 0.6)
No response	54	( 5.0)
Permanent/temporary		
Permanent	753	(69.3)
Temporary	157	(14.5)
Both	1	( 0.1)
Unknown	118	(10.9)
No response	57	( 5.2)
Stoma Duration		
< 6 months	90	( 8.3)
6 months-1 year	129	(11.9)
1-3 years	297	(27.3)
4-5 years	135	(12.4)
6-10 years	195	(18.0)
≥ 11 years	225	(20.7)
Unknown	2	( 0.2)
No response	13	( 1.2)
Living Situation		
Home	1037	(95.5)
Nursing home	22	( 2.0)
Hospital	5	( 0.5)
Other	4	( 0.4)
No response	18	( 1.7)

**Table 2 Comparison of dependence of stoma care among age groups**

		N=1086					
		Total n (%)	Age groups, years				p
			≤ 59	60-69	70-79	≥ 80	
Changing the ostomy pouch							<0.0001
Independent	n	762 (72.0)	147	254	251	110	
	Adjusted residual		4.9 **	3.8 **	-1.5 **	-7.1 **	
Dependent	n	297 (28.1)	21	64	112	100	
	Adjusted residual		-4.9 **	-3.8 **	1.5 **	7.1 **	
Emptying the ostomy pouch							<0.0001
Independent	n	982 (92.7)	160	303	346	173	
	Adjusted residual		1.4	2.1 *	2.3 *	-6.4 **	
Dependent	n	77 (7.3)	8	15	17	37	
	Adjusted residual		-1.4	-2.1 *	-2.3 *	6.4 **	
Ordering the ostomy pouch							<0.0001
Independent	n	817 (77.4)	150	270	286	111	
	Adjusted residual		4.2 **	3.8 **	0.9	-9.3 **	
Dependent	n	238 (22.6)	17	48	76	97	
	Adjusted residual		-4.2 **	-3.8 **	-0.9	9.3 **	

\*\*p < 0.01, \*p < 0.05 by Haberman's adjusted residuals test  
P-values obtained by the Chi-square test

1) Independence of stoma management according to age (Table 2)

Independence of changing the ostomy pouch according to age: In total, 762 (72.0%) of 1,059 ostomates answered "I can do it myself" to changing the ostomy pouch; therefore, 297 (28.1%) ostomates were dependent on others. A significant age-related difference in changing the ostomy pouch was found when we compared the proportion of assistance required with independence according to each age group ( $\chi^2 = 71.563$ ,  $p < 0.0001$ ). Furthermore, examination of the different age groups revealed differences between independence and dependence in the residual analysis; the proportion of those who were independent was significantly high among ostomates aged <50 years and among those in their 50s and 60s (adjusted residuals: 4.9 and 3.8), and was significantly low in ostomates aged  $\geq 80$  years, including those in their 90s (-7.1).

Independence of emptying ostomy pouch according to age: In total, 982 (92.7%) of 1,059 ostomates answered "I can do it myself" to emptying the ostomy pouch; therefore, 77 (7.3%) ostomates were dependent on others. Even among ostomates in their

80s, 173 (82.0%) of 210 ostomates were independent. When comparing the proportion of those who were independent with those who needed assistance in each age group, we found a significant association between age and independence of emptying the ostomy pouch ( $\chi^2 = 33.901$ ,  $p < 0.0001$ ).

Furthermore, when we examined the differences between independence and the need for assistance in each age group, the proportion of those who were independent was significantly higher among ostomates in their 60s and 70s (adjusted residuals: 2.1 and 2.3, respectively) than the expected proportion (-6.4).

Independence of ordering ostomy pouch according to age: In total, 817 (77.4%) of 1,055 ostomates answered "I can do it myself" to ordering the ostomy appliance; therefore, 238 (22.6%) ostomates were dependent on others. A significant association was found between age and independence of ordering the ostomy pouch ( $\chi^2 = 87.290$ ,  $p < 0.0001$ ). Furthermore, when we examined the differences between self-reliance and the need for assistance in each age group, the residual analysis revealed that the proportion of self-reliance was significantly higher among ostomates aged <50 years and among those in their 60s (adjusted

residuals: 4.2 and 3.8, respectively), and significantly lower among those in their 80s (-9.3).

## 2) Independence of stoma management according to stoma duration

Comparison of autonomous independence of changing the ostomy pouch with stoma duration among the different age groups revealed that the proportion of independent ostomates increased linearly as the stoma duration increased among those aged  $\geq 60$  years (ostomates in their 60s:  $p = 0.0092$ ; ostomates in their 70s and  $\geq 80$ s:  $p < 0.001$ ). (Table 3, Figure 1)

Comparison of independence of emptying the ostomy pouch with stoma duration among the different age groups revealed that the proportion of independent ostomates increased linearly as the stoma duration increased among those in their 70s ( $p = 0.004$ ). However, among ostomates in their  $\leq 50$ s ( $p = 0.3285$ ), 60s ( $p = 0.5345$ ), and  $\geq 80$ s ( $p = 0.0924$ ), the stoma duration had no influence on the independence of emptying the ostomy pouch. (Table 4, Figure 2)

Comparison of independence of ordering the ostomy pouch with stoma duration among the different age groups revealed that the proportion of independence increased as the stoma duration increased among both ostomates in their 70s and those in their  $\geq 80$ s ( $p < 0.001$ ). (Table 5, Figure 3)

## Discussion

In the present study, we focused on the independence of stoma management regarding three items: changing the ostomy pouch, emptying the ostomy pouch, and ordering the ostomy pouch. As the previous survey was carried out by the ostomate association group<sup>4)</sup>, there may have been selection bias because the target population belonged to the specific ostomate association group. Our survey was distributed via ostomy appliance sales agents throughout Japan. Therefore, this study reflected the current situation of older ostomates in Japan.

As a result, independent features of the current age group and stoma duration were clarified in terms of three aspects of stoma management.

### 1. Current situation of independence of stoma management

The residual analysis demonstrated that the

proportion of ostomates independent in changing their ostomy pouch was significantly lower among those in their 70s and those older than 80 years. The advanced-age ostomates had lower independence in stoma management (Chi-squared test for trend).

This suggests that after stoma construction, independence becomes more difficult as the patient ages. As the need for health care services increases with age<sup>18) 19)</sup>, the advanced-age ostomates in this study may have been affected by the need for assistance to maintain their activities of daily living. Therefore, for ostomates in their  $\leq 70$ s, it is important to strengthen the support for family members and improve the surroundings of the ostomates, as well as support their independence in stoma management.

Approximately 80% of ostomates, including those aged  $\geq 80$  years, were independent in emptying the ostomy pouch. Excretion is an independent activity for non-ostomates who live at home<sup>8)</sup>. As most of the subjects in this study lived at home, it is possible that independence in the management of excretion, regardless of the possession of a stoma, may be a necessary element for continuing home life. Therefore, emptying the ostomy pouch must be a criterion for excretion independence when considering how to support the lives of advanced-age ostomates.

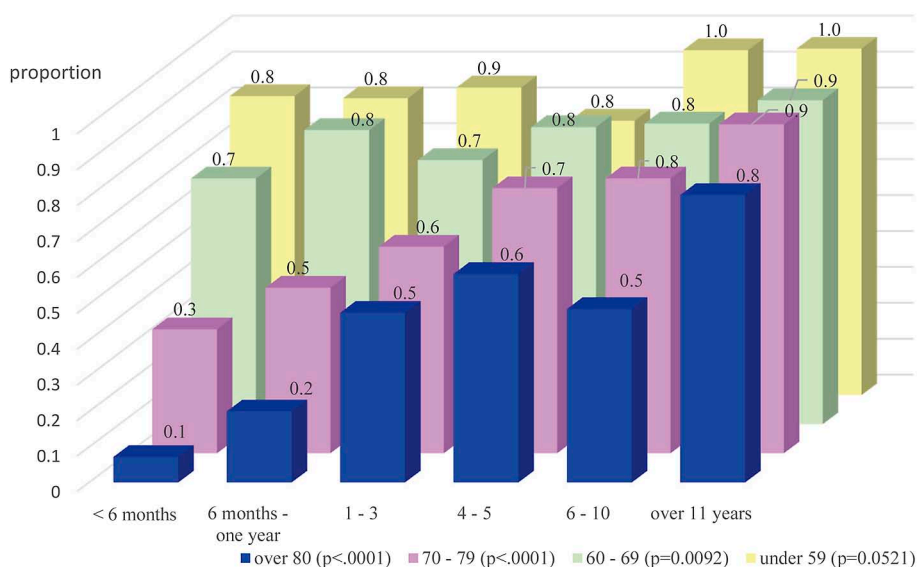
### 2. Independence of stoma management according to stoma duration

According to current age groups and stoma duration, the proportion of independent ostomates of advanced age was low when the stoma duration was short. Patients of advanced age require a long period for acquisition of stoma management techniques. Working memory is the process by which information is coded into memory, actively maintained, and subsequently retrieved, and the efficiency of this process declines with age<sup>20) 21)</sup>. In addition, learning excretion management techniques in the postoperative period is difficult for patients of advanced age because of their declining eyesight, hearing ability, and body function<sup>22)</sup>. The use of minimally invasive surgery, including laparoscopic surgery, has increased<sup>23)</sup>, and one study reported that body function recovered to the preoperative level within 6 months postoperatively in only 54% of ostomates with colorectal cancer<sup>24)</sup>.

**Table 3 Comparison of trend analysis of independence in changing the ostomy pouch**

	Independent	Dependent	P
Changing the ostomy pouch, n = 1059			
≤ 59 years	n = 147	n = 21	0.0521
< 6 months	15 (83.3%)	3 (16.7%)	
6 months–1 year	24 (82.8%)	5 (17.2%)	
1–3 years	42 (85.7%)	7 (14.3%)	
4–5 years	13 (76.5%)	4 (23.5%)	
6–10 years	25 (96.1%)	1 ( 3.9%)	
≥ 11 years	28 (96.5%)	1 ( 3.5%)	
60–69 years	n = 254	n = 64	0.0092
< 6 months	24 (68.6%)	11 (31.4%)	
6 months–1 year	32 (82.0%)	7 (18.0%)	
1–3 years	70 (73.7%)	25 (26.3%)	
4–5 years	29 (82.9%)	6 (17.1%)	
6–10 years	52 (83.9%)	10 (16.1%)	
≥ 11 years	47 (90.4%)	5 ( 9.6%)	
70–79 years	n = 251	n = 112	<0.0001
< 6 months	8 (34.8%)	15 (65.2%)	
6 months–1 year	19 (46.3%)	22 (53.7%)	
1–3 years	52 (57.8%)	38 (42.2%)	
4–5 years	40 (74.1%)	14 (25.9%)	
6–10 years	53 (76.8%)	16 (23.2%)	
≥ 11 years	79 (91.8%)	7 ( 8.2%)	
≥ 80 years	n = 110	n = 100	<0.0001
< 6 months	1 ( 7.1%)	13 (92.9%)	
6 months–1 year	4 (20.0%)	16 (80.0%)	
1–3 years	29 (47.5%)	32 (52.5%)	
4–5 years	14 (58.3%)	10 (41.7%)	
6–10 years	17 (48.6%)	18 (51.4%)	
≥ 11 years	45 (80.4%)	11 (19.6%)	

\*Based on the Cochran–Armitage trend test for categorical variables



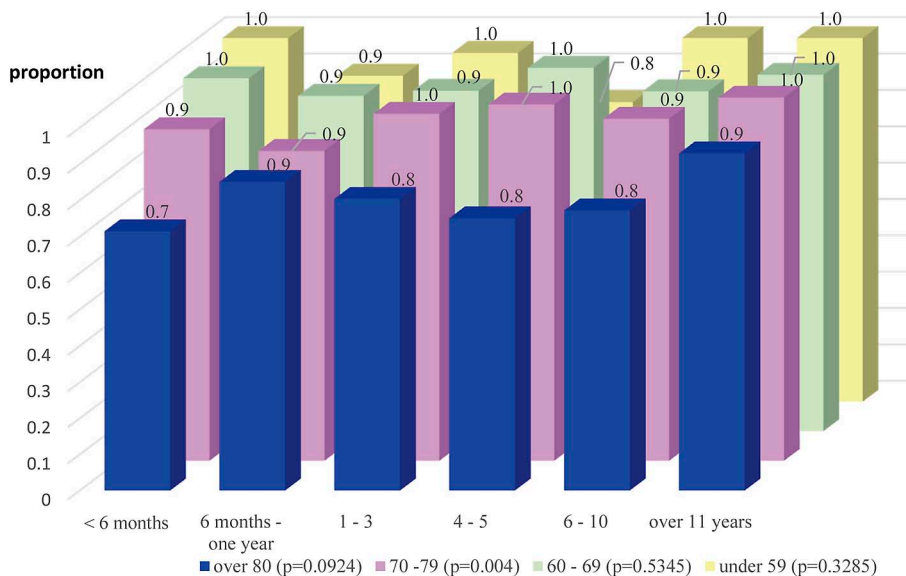
**Figure 1 Comparison of trend analysis of independence in changing the ostomy pouch**



**Table 4 Comparison of trend analysis of independence in emptying the ostomy pouch**

	Independent	Dependent	P
Emptying the ostomy pouch, n = 1059			
≤ 59 years	n = 160	n = 8	0.3285
< 6 months	18 (100.0%)	0 ( 0.0%)	
6 months-1 year	26 ( 89.7%)	3 (10.3%)	
1-3 years	47 ( 95.9%)	2 ( 4.1%)	
4-5 years	14 ( 82.4%)	3 (17.6%)	
6-10 years	26 (100.0%)	0 ( 0.0%)	
≥ 11 years	29 (100.0%)	0 ( 0.0%)	
60-69 years	n = 303	n = 15	0.5345
< 6 months	34 ( 97.1%)	1 ( 2.9%)	
6 months-1 year	36 ( 92.3%)	3 ( 7.7%)	
1-3 years	89 ( 93.7%)	6 ( 6.3%)	
4-5 years	35 (100.0%)	0 ( 0.0%)	
6-10 years	58 ( 93.5%)	4 ( 6.5%)	
≥ 11 years	51 ( 98.1%)	1 ( 1.9%)	
70-79 years	n = 346	n = 17	0.004
< 6 months	21 ( 91.3%)	2 ( 8.7%)	
6 months-1 year	35 ( 85.4%)	6 (14.6%)	
1-3 years	86 ( 95.6%)	4 ( 4.4%)	
4-5 years	53 ( 98.1%)	1 ( 1.9%)	
6-10 years	65 ( 94.2%)	4 ( 5.8%)	
≥ 11 years	86 (100.0%)	0 ( 0.0%)	
≥ 80 years	n = 173	n = 37	0.0924
< 6 months	10 ( 71.4%)	4 (28.6%)	
6 months-1 year	17 ( 85.0%)	3 (15.0%)	
1-3 years	49 ( 80.3%)	12 (19.7%)	
4-5 years	18 ( 75.0%)	6 (25.0%)	
6-10 years	27 ( 77.1%)	8 (22.9%)	
≥ 11 years	52 ( 92.9%)	4 ( 7.1%)	

\*Based on the Cochran-Armitage trend test for categorical variables



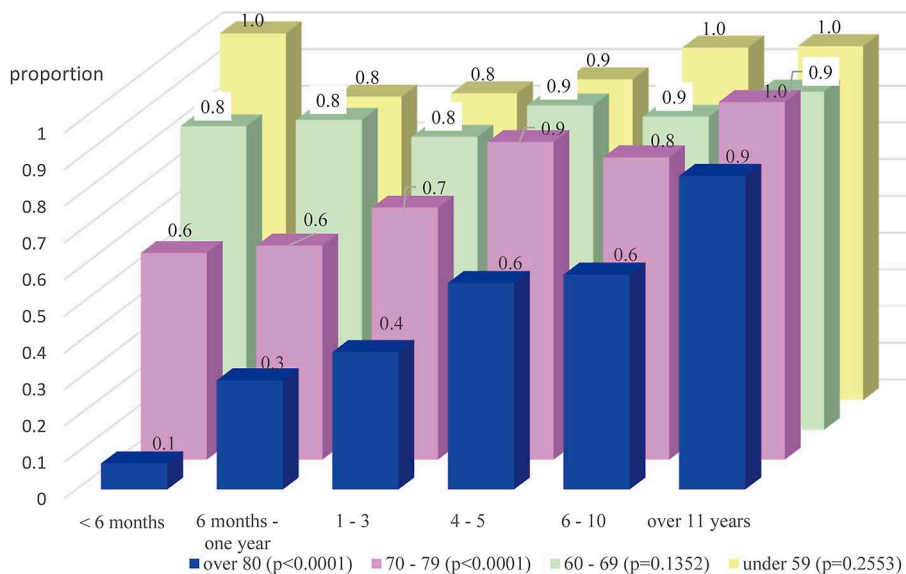
**Figure 2 Comparison of trend analysis of independence in emptying the ostomy pouch**



**Table 5 Comparison of trend analysis of independence in ordering the ostomy pouch**

	Independent	Dependent	P
Ordering the ostomy pouch, n = 1055			
≤ 59 years	n = 150	n = 17	0.2553
< 6 months	18 (100.0%)	0 ( 0.0%)	
6 months–1 year	24 ( 82.8%)	5 (17.2%)	
1–3 years	41 ( 83.7%)	8 (16.3%)	
4–5 years	14 ( 87.5%)	2 (12.5%)	
6–10 years	25 ( 96.2%)	1 ( 3.8%)	
≥ 11 years	28 ( 96.6%)	1 ( 3.4%)	
60–69 years	n = 270	n = 48	0.1352
< 6 months	29 ( 82.9%)	6 (17.1%)	
6 months–1 year	33 ( 84.6%)	6 (15.4%)	
1–3 years	76 ( 80.0%)	19 (20.0%)	
4–5 years	31 ( 88.6%)	4 (11.4%)	
6–10 years	53 ( 85.5%)	9 (14.5%)	
≥ 11 years	48 ( 92.3%)	4 ( 7.7%)	
70–79 years	n = 286	n = 76	<0.0001
< 6 months	13 (56.5 %)	10 (43.5 %)	
6 months–1 year	24 (58.5 %)	17 (41.5 %)	
1–3 years	62 (68.89%)	28 (31.11%)	
4–5 years	46 (86.79%)	7 (13.21%)	
6–10 years	57 (82.61%)	12 (17.39%)	
≥ 11 years	84 (97.7 %)	2 ( 2.3 %)	
≥ 80 years	n = 111	n = 97	<0.0001
< 6 months	1 ( 7.1%)	13 (92.9%)	
6 months–1 year	6 (30.0%)	14 (70.0%)	
1–3 years	23 (37.7%)	38 (62.3%)	
4–5 years	13 (56.5%)	10 (43.5%)	
6–10 years	20 (58.8%)	14 (41.2%)	
≥ 11 years	48 (85.7%)	8 (14.3%)	

\*Based on the Cochran–Armitage trend test for categorical variables



**Figure 3 Comparison of trend analysis of independence in ordering the ostomy pouch**

Postoperative body recovery is particularly difficult for patients of advanced age, and the time for learning new excretion habits and methods, and adapting oneself to them is insufficient.

Therefore, we believe that guidance on self-management is needed for advanced-age ostomates during both hospitalization and after discharge.

### 3. Support-related problems for advanced-age ostomates

In the present study, the proportion of ostomates independent in changing the ostomy pouch with a stoma duration of 6 months was 35% among those in their 70s and 7% among those in their 80s. This suggests that many patients of advanced age cannot easily learn how to change the ostomy pouch while hospitalized. In other words, sufficient time is required for patients of advanced age to learn stoma management.

Furthermore, the rate of prophylactic stoma construction to avoid complications is high, and based on the performance of lower digestive tract surgery in patients of advanced age, the number of advanced-age ostomates is expected to increase in the future<sup>5) 25) 26)</sup>.

In Japan, the hospitalization period for stoma construction and the stoma care acquisition period were reported to be 8 to 14 days<sup>13) 27)</sup>. The number of households in which people of advanced age live and the number of people of advanced age living alone are increasing Japan<sup>28) 29)</sup>, and it is highly important for the hospital to continue providing support to the community of people surrounding ostomates of advanced age and their families. In other words, we believe that the main goal after discharge is to establish support for ostomates of advanced age and continue this support.

If independence in all aspects of stoma management is difficult during hospitalization of advanced-age ostomates, the goal at discharge should be limited to independence in emptying the ostomy pouch. The proportion of ostomates independent in emptying the ostomy pouch within 6 months postoperatively was high in this study. Thus, it may be necessary to continue improving independence in changing and ordering the ostomy pouch because learning these processes took a long time in the present study. In

addition, it is necessary to provide support by the family, nursing home visits, and in-home services upon discharge from the hospital.

Stoma outpatient clinics in Japan are now concentrated in hospitals that conduct stoma surgery. However, the future image of medical care in Japan is expected to involve introduction back to the family doctor at an early stage. Subsequent follow-up in the community area is recommended<sup>30) 31)</sup>. Additionally, ostomy appliance companies and sales agents are available for consultation with ostomates<sup>3)</sup>.

We believe that it is important to create a framework for society as a whole; such a framework should involve collaboration with not only medical institutions and administrative services, but also ostomy appliance companies and sales agents. One report stated that anxiety regarding the future of advanced-age ostomates makes independent stoma management impossible<sup>4)</sup>.

The results of this study will help both ostomates and healthcare workers determine how much support they need in changing, emptying, and ordering the ostomy pouch. Additionally, welfare service providers and healthcare workers can offer support to the patient's family. We believe that these measures will help alleviate concerns about the future.

### 4. Study limitations and practice suggestions

1,086 of 3,000 questionnaires were returned, and 95.5% of 1,086 respondents in this survey were living at home. This questionnaire was sent to the delivery destination of the ostomy appliance; therefore, replies were biased toward ostomates with sufficient cognitive function to respond to questionnaires and those in a healthy state enabling them to live at home.

We were unable to examine the change in the degree of independence with age because this was not a longitudinal investigation. Although there are these limitations, our data regarding the situation of independence of stoma management among ostomates living at home in Japan provides a meaningful baseline for the establishment of long-term support for ostomates and their families. It is possible to plan support for independence and ADL in advanced-age ostomates not only for the current age groups, but also during the postoperative period of stoma construction.

The next task will involve surveying the staff of visiting nursing stations and nursing care facilities to further investigate the current state of excretion management of ostomates who have not been able to continue their home life or who were unable to respond to the questionnaire survey.

### Conclusion

We examined the current situation of independence in changing, emptying, and ordering the ostomy pouch according to the current age group or stoma duration. We found that advanced-age ostomates had a low degree of independence. Even ostomates with a short stoma duration were able to empty the pouch. It is important for independent life to master emptying the ostomy pouch during hospitalization. Continuation of medical care and home nursing support after discharge, in addition to goal-setting, are suggested to ensure long-term support of advanced-age ostomates.

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### Conflict of Interest

None.

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## 日本における年齢群別ストーマ管理の自立の違いに関する横断的研究

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## 要 旨

背景：高齢化により高齢者へのストーマ造設手術が増加している。入院期間が短縮化するなかで高齢ストーマ保有者が入院中に技術を習得することは困難なことがある。

目的：ストーマ保有者の年齢群とストーマ保有年数ごとにストーマ装具注文、排泄物処理、および装具注文の自立の実態を明確にすることである。

方法：ストーマ装具交換、排泄物処理、装具注文におけるストーマ保有者の自立を問う自記式質問紙による横断的研究である。2017年4月から2018年3月にストーマ保有者3000人に調査用紙を送付した。得られたデータはストーマ保有期間と年齢群について $\chi^2$ 検定とCochran-Armitageの傾向検定を用いて分析した。

結果：男性640人、女性436人を含む1,086人の参加者（36%）から回答が得られた。全体ではストーマ装具交換においては72%が自立していた。さらに、93%がストーマ装具からの排泄物処理ができていた。77%のストーマ保有者がストーマ装具の注文ができた。現在の年齢群で自立の割合をみると、高齢者では装具交換と装具注文の自立の割合が低く、排泄物処理ではほとんど同じ割合が示された。

結語：高齢ストーマ保有者はストーマ保有時間が短い人でも排泄物処理は自立割合が高かった。入院中に排泄物処理の技術を習得することが生活の自立に重要である。また、装具交換や装具注文には長期的支援が重要である。

キーワード：高齢者、横断調査、ストーマ、患者支援、自己管理