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ORIGINAL ARTICLE

An Awareness Survey Involving Employees of Welfare Facilities for Older Persons to Develop an Education Program for Functional Recovery Care:

Comparing Japan and South Korea

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ABSTRACT

We compared awareness of functional recovery care among employees of welfare facilities for older persons in Japan and South Korea, with the aim of obtaining basic materials to develop an education program for functional recovery care, which is also useful for other countries. We conducted a questionnaire survey in both countries, sending 2,000 and 254 copies of a questionnaire to 200 Japanese and 5 Korean facilities, respectively, and obtaining 540 (valid response rate: 27.0%) and 220 (86.6%) valid responses from them, respectively.

An older age, higher proportion of non-regular employees, and similar or higher level of awareness of the necessity of expertise and support were characteristic of Korean compared with Japanese care workers. The results support the feasibility of providing education for functional recovery care based on basic medicine in South Korea. It may be necessary to develop a practical education program for the dissemination of functional recovery care through active collaboration with Korean researchers.

＜Key-words＞
functional recovery care (FRC), Japan, South Korea, employees of welfare facilities for older persons, education program

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I. Introduction

In eastern Asian countries, it is expected that aging will unprecedentedly rapidly progress in the future. Among these countries, Japan and South Korea are ahead of others in public care services. Japan launched a long-term care insurance system in 2000, and South Korea started long-term geriatric health insurance in 2008 to ensure equal access to care services as a human right (Masuda, 2014; Takegawa & Lee, 2006). They have also established systems to nationally certify professionals who provide care services: certified care workers in Japan and certified long-term care workers in South Korea. Comparisons of the 2 countries with legally established long-term care systems may be of much significance in examining effective anti-aging measures for eastern Asian countries in such a situation.

In Japan, approaches to functional recovery support were accelerated in 2016, when such support was defined as the focus of future care at a meeting of the Growth Strategy Council with the Prime Minister as the chairman, and the objectives of such care were also clarified at an event of the Asia Health and Human Well-being Initiative (Office of Healthcare Policy, Cabinet Secretariat, 2016). Subsequently, in 2017, when the Long-Term Care Insurance Act was revised, functional recovery support and the prevention of severe dysfunction were clearly defined as Japan’s basic policies. At this point, the importance of functional recovery care as a principle of care insurances was further emphasized. Additionally, when medical fees were reviewed in 2018, outcome evaluation was incorporated into outpatient care for the first time in care services, following outpatient rehabilitation services, and the allocation of monetary incentives for the improvement of users’ activities of daily living (ADL) and prevention of severe dysfunction was determined.

As aging is likely to progress even more rapidly in South Korea compared with Japan, ADL improvement and the prevention of severe dysfunction may similarly become national challenges.

Although practical approaches and research activities to improve care-dependent older persons’ ADL and prevent severe dysfunction among them have been systematically developed under the leadership of the Japan Society of Functional Recovery Care and Power Rehabilitation, education for functional recovery care has remained insufficient. The current care worker training curriculum refers to the term “functional recovery support”, but it does not present practical measures for ADL improvement. As it is likely that functional recovery care will expand in East Asia based on the Asia Health and Human Well-being Initiative in the future, it may be important to examine awareness of care-dependent older persons’ functional recovery and daily care services among geriatric care providers themselves as a basis for the development of a practical education program.

Some previous studies comparing care systems in Japan and South Korea dealt with:

the marketing of welfare services, institutions supporting care service use, and care costs/the evaluation of family caregiving (Choi, Woo & Wake, 2016; Lee, 2015; Masuda, 2012). Furukawa (2017) compared care workers actually providing care services in Japan and South Korea, and reported that the tendency of recognizing their own job as "highly specialized and socially significant", but "socially underestimated" was more marked among Japanese compared with Korean care workers. However, there have been no studies comparing Japan and South Korea in views on ADL improvement/the prevention of severe dysfunction or education programs for functional recovery care. Therefore, we conducted a comparative study, involving employees of welfare facilities for older persons in Japan and South Korea, to examine their awareness of functional recovery care.

To compare awareness of functional recovery care among employees of welfare facilities for older persons in Japan and South Korea, with the aim of obtaining basic materials to develop an education program for functional recovery care, which is also useful for other countries.

II.Subjects and Methods

1. Definitions of terms

1) Functional recovery care

Functional recovery care is a theory of care established and defined by Takeuchi (2017) as "supporting individuals to achieve and improve/maintain their physical, mental, and social independence through care".

2) Basic care approaches

Functional recovery care is provided through basic care approaches, covering 4 important areas of health: hydration, nutrition, exercise, and excretion. These areas should be commonly addressed in any type of geriatric care (Takeuchi, 2017).

2. Subjects

1) Japan

Among the 296 special nursing homes for older persons listed on the website of A-Prefecture as of April 2018, 200 were randomly selected to examine all of their employees engaged in care services, including care workers, social workers, facility care managers, nurses, and rehabilitation experts.

2) South Korea

Among geriatric health service facilities in B-City, where our Korean collaborative researchers are based, 5 were studied with their written consent to investigate all of their employees engaged in care services, including care workers, social workers, nurses, and rehabilitation experts.

3. Study period

From June 11 to September 30, 2018, in both Japan and South Korea.

4. Study procedures

1) Distribution of a questionnaire and collection of responses

(1) Distribution of a questionnaire and collection of responses in Japan

We conducted a mail self-administered questionnaire survey. In June 2018, we sent 10 copies of a questionnaire to the managers of all candidate facilities, with a letter and poster of cooperation request, specifying the study objective, methods, and ethical considerations. We also asked each facility manager to display the poster in the employees' room, and place the 10 copies of the questionnaire nearby. We clipped a return envelope to each copy, so that respondents themselves would seal these envelopes after responding to the questionnaire, and directly return their responses to us. By this measure, we mailed 2,000 copies of the questionnaire to 200 facilities within June 2018.

(2) Distribution of a questionnaire and collection of responses in South Korea

We conducted a mail self-administered questionnaire survey. In June 2018, we sent a written document, specifying the study objective, methods, and ethical considerations, to the managers of all candidate facilities to confirm their intention to voluntarily participate in the study. We also asked them the numbers of their employees for questionnaire distribution.

Subsequently, we sent an instructed number of copies of the questionnaire to each facility, with a return envelope clipped to each copy, so that respondents themselves would seal these envelopes after responding to the questionnaire, and directly return their responses to us. By this measure, we mailed 254 copies of the questionnaire to 5 facilities within June 2018.

2) Study items

We created a draft questionnaire in Japanese to mainly examine facility employees' views on functional recovery support, knowledge needed, and team systems, which was subsequently translated into Korean by our collaborative researcher Jong Uk BACK. To confirm the accuracy of the translation, we performed back translation, and examined the presence/absence of mistranslations and equivalence of expressions. Upon repeated deliberations, we created 17 statements. In both Japan and South Korea, the validity of these statements was confirmed by a supervisor with extensive experience of functional recovery support and facility operation/management.

Some of us considered a 7-point scale as a more desirable answering style, but we finally reduced the number of answer choices, placing importance on the ease of answering. At the same time, to prevent unclear answers, we adopted a 4-point scale, rather than 5-, with a rating line: <1: Strongly disagree>, <2: Disagree>, <3: Agree>, and

<4: Strongly agree>. As for personal attributes, appropriate answer choices for each question were created.

The tables (2-5) in the Results section list all of the 17 statements in detail, and their focuses are explained below:

(1) Feasibility of improving care-dependent older persons' conditions (3 statements)

There were statements regarding the feasibility of improving care-dependent older persons' physical conditions and dementia symptoms. There was also a question regarding the relationship between the age and care dependence.

(2) Knowledge needed to improve care-dependent older persons' physical conditions (3 statements)

Statements regarding knowledge needed to improve care-dependent older persons' physical conditions were created from the perspective of basic medicine, which is regarded as important in functional recovery care.

(3) Support needed to improve care-dependent older persons' physical conditions (6 statements)

Statements regarding support needed to improve care-dependent older persons' physical conditions were created based on the findings of previous studies (Furukawa, Kodaira, Fujio et al., 2018; Fujio, Kurokawa, Furukawa et al., 2018) that addressed functional recovery support for care-dependent older persons.

(4) Appropriate types of profession for team leaders to improve care-dependent older persons' physical conditions (5 statements)

Statements regarding appropriate types of profession for team leaders to improve care-dependent older persons' physical conditions were created while considering professionals who directly support care-dependent older persons. In all cases, we defined certified long-term care workers in South Korea as a profession equivalent to certified care workers in Japan.

(5) Personal attributes

We also examined the type of profession, sex, age (in 10-year increments), certification, years of experience, and type of employment as personal attributes.

3) Analysis

In both countries, responses to each question were listed and analyzed by conducting the Mann-Whitney U-test. For all analytical processes, SPSS Statistics 24 for Windows was used.

4) Ethical considerations

We attached a document entitled: <Measures Related to Respondents' Rights, Personal Privacy, and Research Ethics> to the cover of the questionnaire, specifying that participation in the study was based on free will, and a returned response would be regarded as consent from a respondent. The study was previously examined and approved by the Ethics Committee of Seirei Christopher University (approval number: 18009).

III. Results

1. Respondents' basic attributes (Table 1)

There were 540 (valid response rate: 27.0%) and 220 (86.6%) valid responses in Japan and South Korea, respectively. Table 1 compares respondents' basic attributes in the 2 countries.

2. Feasibility of improving care-dependent older persons' conditions (Table 2)

The positive answer (<Strongly agree> + <Agree> in all cases) rate for the statement: <It is natural that a person becomes care-dependent with age> was 73.9% in Japan and 94.5% in South Korea, revealing a difference of 20.6% ($p<0.001$). In contrast, the positive answer rates for <It is feasible to improve care-dependent older persons' physical conditions through support provided by care workers> in the 2 countries were 86.1 and 84.1%, respectively; the value was similarly high ($p<0.05$). On the other hand, the positive answer rate for <It is feasible to improve dementia symptoms in care-dependent older persons through support provided by care workers> was slightly lower than that for the feasibility of improving their physical conditions in both countries, at 70.6 and 68.2%, respectively ($p=0.680$).

A Cronbach's coefficient alpha of 0.398 was calculated to determine the reliability of the 3 items related to "Feasibility of improving care-depending older persons' conditions".

3. Knowledge needed to improve care-dependent older persons' physical conditions (Table 3)

Among the statements regarding physiology, anatomy, and kinematics as elements of basic medicine that are regarded as important in functional recovery care, <knowledge of kinematics is needed to improve care-dependent older persons' physical conditions through support> achieved the highest positive answer rate, at 84.2% in Japan and 89.1% in South Korea; the value was significantly high in both cases ($p<0.001$). The rate for <knowledge of physiology> was also high, whereas that for <knowledge of anatomy> was markedly lower than those for the other elements in both countries, at 44.7 and 54.1%, respectively ($p=0.342$).

A Cronbach's coefficient alpha of 0.717 was calculated to determine the reliability of the 3 items related to “Knowledge needed to improve care-dependent older persons’ physical conditions”.

<Table 1>Respondents’ Basic Attributes

Item	Japan (n=540)		Korea (n=220)	
Category	number (person)	(rate)	number (person)	(rate)
Sex				
Female	349	(64.6)	204	(92.7)
Male	189	(35.0)	16	(7.3)
Unknown（No answer）	2	(0.4)	0	(0.0)
Age				
10 - 19	2	(0.4)	0	(0.0)
20 - 29	101	(18.7)	2	(0.9)
30 - 39	159	(29.4)	19	(8.6)
40- 19	123	(22.8)	47	(21.4)
50 - 59	125	(23.1)	67	(30.5)
50 - 69	29	(5.4)	83	(37.7)
70 - 79	0	(0.0)	2	(0.9)
Unknown（No answer）	1	(0.2)	0	(0.0)
Type of profession				
Care workers	437	(80.9)	187	(85.0)
Social workers	36	(6.7)	15	(5.5)
Facility care managers	14	(2.6)	*	*
Nurses	21	(3.9)	1	(0.5)
Rehabilitation experts (including PTs and OTs)	8	(1.5)	2	(0.9)
Registered dieticians/dieticians	4	(0.7)	0	(0.0)
Others	17	(3.1)	15	(6.8)
Unknown（No answer）	3	(0.6)	0	(0.0)
Years of experience in medical/welfare services				
< 1 year	2	(0.4)	9	(4.1)
1 - 3	22	(4.1)	45	(20.5)
3 - 5	44	(8.1)	39	(17.7)
5 - 10	147	(27.2)	89	(40.5)
10 -15	140	(25.9)	34	(15.5)
15 ≤	163	(30.2)	4	(1.8)
Unknown（No answer）	22	(4.1)	0	(0.0)
Certification (multiple answers allowed; the percentage is the ratio to ‘n’)				
Certified care workers	430	(79.6)	200	(90.9)
Certified social workers	32	(5.9)	25	(11.4)
Nurses	21	(3.9)	0	(0.0)
Assistant nurses	6	(1.1)	12	(5.5)
Grade 2 helpers	169	(31.3)	*	*
Grade 1 helpers	14	(2.6)	*	*
Care workers after novice training	48	(8.9)	*	*
Care workers after basic training	31	(5.7)	*	*
Child care workers	23	(4.3)	0	(0.0)
Psychiatric social workers	2	(0.4)	*	*
Care managers	104	(19.3)	*	*
Type of employment				
Regular employees	503	(93.1)	111	(50.5)
Non-regular employees (part-timers working regularly)	23	(4.3)	106	(48.2)
Non-regular employees (part-timers working non-regularly)	8	(1.5)	3	(1.4)
Unknown（No answer）	6	(1.1)	0	(0.0)

1. The total is not necessarily 100%, as the values are rounded off.
2. The types of profession and certifications with an asterisk (*) do not exist in South Korea.

<Table 2>Feasibility of Improving Care-dependent Older Persons' Conditions in Japan and South Korea

		1 Strongly disagree		2 Disagree		3 Agree		4 Strongly agree		Missing value	Total	p-value
		Number (person)	(rate)	Number (person)	(rate)	Number (person)	(rate)	Number (person)	(rate)	Number (person)		
It is natural that a person becomes care-dependent with age	Japan	10	(1.9)	130	(24.2)	327	(60.9)	70	(13.0)	3	540	0.000 ***
	Korea	1	(0.5)	11	(5.0)	96	(43.6)	112	(50.9)	0	220	
It is feasible to improve care-dependent older persons' physical conditions through support provided by care workers	Japan	3	(0.6)	71	(13.3)	397	(74.3)	63	(11.8)	6	540	0.003 **
	Korea	2	(0.9)	33	(15.0)	126	(57.3)	59	(26.8)	0	220	
It is feasible to improve dementia symptoms in care-dependent older persons through support provided by care workers	Japan	8	(1.5)	147	(27.8)	320	(60.6)	53	(10.0)	12	540	0.680 n.s.
	Korea	15	(6.8)	55	(25.0)	111	(50.5)	39	(17.7)	0	220	

1. The values in parentheses indicate %. 2. Missing values were excluded on analysis.
3. Analysis (the Mann-Whitney's U-test): *** p<0.001, ** p<0.05, n.s.: No significant differences
4. The mean and median for each subscale were calculated.

<Table 3>Knowledge Needed to Improve Care-dependent Older Persons' Physical Conditions in Japan and South Korea

		1 Strongly disagree		2 Disagree		3 Agree		4 Strongly agree		Missing value	Total	p-value
		Number (person)	(rate)	Number (person)	(rate)	Number (person)	(rate)	Number (person)	(rate)	Number (person)		
Knowledge of physiology is needed to improve care-dependent older persons' physical conditions through support	Japan	3	(0.6)	103	(19.5)	365	(69.0)	58	(11.0)	11	540	0.001 **
	Korea	4	(1.8)	29	(13.2)	140	(63.6)	47	(21.4)	0	220	
Knowledge of anatomy is needed to improve care-dependent older persons' physical conditions through support	Japan	23	(4.3)	270	(50.9)	211	(39.8)	26	(4.9)	10	540	0.342 n.s.
	Korea	34	(15.5)	67	(30.5)	100	(45.5)	19	(8.6)	0	220	
Knowledge of kinematics is needed to improve care-dependent older persons' physical conditions through support	Japan	3	(0.6)	81	(15.3)	396	(74.6)	51	(9.6)	9	540	0.000 ***
	Korea	2	(0.9)	22	(10.0)	136	(61.8)	60	(27.3)	0	220	

1. The values in parentheses indicate %. 2. Missing values were excluded on analysis.
3. Analysis (the Mann-Whitney's U-test): *** p<0.001, ** p<0.05, n.s.: No significant differences
4. The mean and median for each subscale were calculated.

4. Support needed to improve care-dependent older persons' physical conditions (Table 4)

In both countries, the statement with the highest positive answer rate was <Care simultaneously addressing hydration, diets, excretion, and exercise is important to improve care-dependent older persons' physical conditions>, at 97.4% in Japan and 97.2% in South Korea; the value was significantly high in both cases (p<0.05). However, the distribution of responses slightly varied between the 2 countries, as the rate of choosing <Strongly agree> was 44.0% in Japan, while it was 54.5% in South Korea, revealing a difference of 10.5%. In South Korea, the positive answer rates for hydration, nutrition, daily bowel care not using cathartics, and increasing the physical activity level were higher than 90%. In Japan, the rates for some of these approaches, such as daily bowel care not using cathartics and increasing the physical activity level, were relatively low, at 61.5 and 72.4%, respectively.

A Cronbach's coefficient alpha of 0.662 was calculated to determine the reliability of the 6 items related to "Support needed to improve care-dependent older persons' physical conditions".

<Table 4>Support Needed to Improve Care-dependent Older Persons' Physical Conditions in Japan and South Korea

		1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree	Missing value	Total	p-value
		Number (person) (rate)	Number (person) (rate)	Number (person) (rate)	Number (person) (rate)	Number (person)		
Sufficient hydration is important to improve care-dependent older persons' physical conditions	Japan	3 (0.6)	44 (8.2)	342 (63.8)	147 (27.4)	4	540	0.000 ***
	Korea	1 (0.5)	12 (5.5)	96 (43.6)	111 (50.5)	0	220	
Sufficient nutrition is important to improve care-dependent older persons' physical conditions	Japan	1 (0.2)	33 (6.1)	335 (62.3)	169 (31.4)	2	540	0.000 ***
	Korea	1 (0.5)	9 (4.1)	88 (40.0)	122 (55.5)	0	220	
Daily bowel care not using cathartics is important to improve care-dependent older persons' physical conditions	Japan	8 (1.5)	197 (37.0)	257 (48.3)	70 (13.2)	8	540	0.000 ***
	Korea	5 (2.3)	17 (7.7)	115 (52.3)	83 (37.7)	0	220	
Increasing the physical activity level is important to improve care-dependent older persons' physical conditions	Japan	2 (0.4)	145 (27.2)	336 (63.0)	50 (9.4)	7	540	0.000 ***
	Korea	0 (0.0)	20 (9.1)	132 (60.0)	68 (30.9)	0	220	
Care simultaneously addressing hydration, diet, excretion, and exercise is important to improve care-dependent older persons' physical conditions	Japan	1 (0.2)	13 (2.4)	286 (53.4)	236 (44.0)	4	540	0.012 **
	Korea	1 (0.5)	5 (2.3)	94 (42.7)	120 (54.5)	0	220	
Intervention by medical doctors is indispensable to improve care-dependent older persons' physical conditions	Japan	1 (0.2)	107 (19.9)	323 (59.9)	108 (20.0)	1	540	0.007 **
	Korea	3 (1.4)	35 (15.9)	113 (51.4)	69 (31.4)	0	220	

1. The values in parentheses indicate %. 2. Missing values were excluded on analysis.
3. Analysis (the Mann-Whitney's U-test): *** $p<0.001$, ** $p<0.05$, n.s.: No significant differences
4. The mean and median for each subscale were calculated.

<Table 5>Appropriate Types of Profession for Team Leaders to Improve Care-dependent Older Persons' Physical Conditions in Japan and South Korea

		1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree	Missing value	Total	p-value
		Number (person) (rate)	Number (person) (rate)	Number (person) (rate)	Number (person) (rate)	Number (person)		
Teams led by certified care workers*1) are needed to improve care-dependent older persons' physical conditions through support	Japan	7 (1.3)	202 (38.0)	272 (51.1)	51 (9.6)	8	540	0.000 ***
	Korea	5 (2.3)	21 (9.5)	128 (58.2)	66 (30.0)	0	220	
Teams led by medical doctors are needed to improve care-dependent older persons' physical conditions through support	Japan	35 (6.5)	316 (58.8)	167 (31.1)	19 (3.5)	3	540	0.000 ***
	Korea	1 (0.5)	27 (12.3)	145 (65.9)	47 (21.4)	0	220	
Teams led by nurses are needed to improve care-dependent older persons' physical conditions through support	Japan	17 (3.2)	280 (52.8)	216 (40.8)	17 (3.2)	10	540	0.000 ***
	Korea	6 (2.7)	42 (19.1)	127 (57.7)	45 (20.5)	0	220	
Teams led by physical therapists are needed to improve care-dependent older persons' physical conditions through support	Japan	15 (2.8)	231 (43.5)	240 (45.2)	45 (8.5)	9	540	0.000 ***
	Korea	4 (1.8)	26 (11.8)	108 (49.1)	82 (37.3)	0	220	
Teams led by occupational therapists are needed to improve care-dependent older persons' physical conditions through support	Japan	18 (3.4)	253 (48.1)	222 (42.2)	33 (6.3)	14	540	0.000 ***
	Korea	6 (2.7)	37 (16.8)	130 (59.1)	47 (21.4)	0	220	

1. The values in parentheses indicate %. 2. Missing values were excluded on analysis. 3. Analysis (the Mann-Whitney's U-test): *** $p<0.001$
4. The mean and median for each subscale were calculated.
*1) we defined certified long-term care workers in South Korea as a profession equivalent to certified care workers in Japan.

5. Appropriate types of profession for team leaders to improve care-dependent older persons' physical conditions (Table 5)

In both countries, certified care workers (certified long-term care workers in South Korea) were the most appropriate type of profession for team leaders to improve care-dependent older persons' physical conditions ($p<0.001$). The positive rates for all types of professions were higher in South Korea ($p<0.001$). Japan tended to show low positive answer rates for the necessity of teams led by medical professionals: medical doctors (34.6%), nurses (44.0%), occupational therapists (48.5%), and physical therapists (53.7%), whereas South Korea generally showed high rates: medical doctors (87.3%) and physical therapists (86.4%).

A Cronbach's coefficient alpha of 0.837 was calculated to determine the reliability of the 6 items related to the "Appropriate types of profession for team leaders to improve care-dependent older persons' physical conditions".

IV. Discussion

While there are concerns over certified care workers' lack of sufficient expertise in Japan, previous studies reported that certified long-term care workers' expertise is even more insufficient in South Korea (Seon, 2013; Mibu & Kim, 2014), possibly due to undeveloped training curricula, a high proportion of non-regular employees, and their old age. Such differences were also observed in the present study when focusing on the type of employment and age distribution among respondents, as regular employees accounted for 93.1% in Japan and 50.5% in South Korea with a clearly older mean age. Thus, there is a more marked tendency for Korean care workers to be non-regular and aged, compared with Japanese care workers. As a factor associated with this, insufficient time frames and systems for care worker training in South Korea should be noted. The duration of a standard care worker training program, which is 1,850 hours in Japan, is as short as 240 hours in South Korea, revealing a more than 7.7-fold difference (Lim, 2014). In South Korea, certified long-term care workers have been disseminated among housewives and the middle-aged/elderly, who desire to become nationally certified professionals within a short period, consequently increasing the mean age of this profession. Similarly, the high proportion of non-regular employees among care workers may have reflected housewives' intention to work more flexibly. However, the positive answer rates for <knowledge needed to improve care-dependent older persons' physical conditions> and <support needed to improve care-dependent older persons' physical conditions> were not lower in South Korea. Conversely, it showed higher rates for most statements, compared with Japan. During our repeated discussions on this result, our Korean collaborative researchers noted care workers' enhanced motivation to learn as a result of facing various challenges in daily practice. Concerning care worker training programs in South Korea, Lim (2014) proposed dividing certified care workers into 2 levels: standard: certified by conventional methods after learning at existing training schools; and advanced. We also support this proposal. Based on the results of the present study, it may be possible to improve care workers' insufficient expertise in South Korea by reviewing the current education curriculum and providing more opportunities for them to learn. To develop an effective education program for functional recovery care, knowledge of basic medicine, such as anatomy, physiology, and kinematics, is indispensable. In both countries, respondents' levels of interest in physiology and kinematics were high, but not many of them were aware of the importance of knowledge of anatomy, indicating the necessity of confirming the purpose of learning anatomy when reviewing the curriculum.

Furthermore, team approaches led by certified care workers (certified long-term care workers in South Korea) are crucial for the development of functional recovery care. In the present study, the positive answer rate for teams led by certified care workers was high in both countries, revealing positive attitudes toward team approaches to promote functional recovery care among the respondents. At the same time, South Korea also showed a significantly high positive answer rate for teams led by medical professionals, and this may have been associated with Korean care workers' insufficient expertise. In functional recovery care, specialized support should be provided through ADL, such as diet, exercise, and excretion. The results highlight the necessity of creating an education program that also enhances care workers', especially Korean care workers' leadership in functional recovery care, even if it is provided through team approaches with medical professionals.

In order to promote functional recovery care in Asian countries, it may be important for the Japan Society of Functional Recovery Care and Power Rehabilitation to develop an education program that is also useful for other countries, utilizing its extensive academic findings. The results of the present study support the feasibility of providing education for functional recovery care based on basic medicine at least in South Korea, although various challenges were simultaneously revealed. The necessity of reviewing its current long-term care worker training systems was also noted, as the duration of a standard care worker training program, which is 1,850 hours in Japan, is as short as 240 hours in South Korea. To provide students to learn basic medicine and team approaches, the duration of the program should be increased. The duration of Japan's program is also insufficient in some points, but it is difficult to extend it within the current 2-year training system. In Japan, the contents of the curriculum should be reviewed first. As a future perspective, we will continue to create a basis for the dissemination of functional recovery care through active collaboration with Korean researchers.

This study analyzed data from facilities located in limited areas of Japan and South Korea, and, therefore, responses may have been biased. Additionally, as there were differences in the volume of the data obtained and respondents' type of profession between the 2 countries, they could not be simply compared. It may be necessary to continuously examine the study topic, while addressing these challenges in future studies.

While the Cronbach's coefficient alpha values were not significant, this does not represent a significant problem as the self-administered questionnaire used in this survey was not intended for scale development. This is research analysing the trends in Japan and South Korea from the distributions in the answers to each of the questions. As preliminary research does not exist, the study examined whether it was possible to develop education programs for functional recovery care. The finding that such a program could be implemented at least in South Korea gives originality to this research.

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ORIGINAL ARTICLE

Development of a Draft Clinical Interpersonal Reactivity Index to Evaluate Empathy in Nurses

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ABSTRACT

Objective: The purpose of this study was to develop a draft Clinical Interpersonal Reactivity Index to evaluate empathy, sympathy and "perspective taking" in nurses. Creating a Clinical Interpersonal Reactivity Index is expected to contribute to improving the mental health of nurses. Participants were five nurses who were able to talk about empathy and who were recommended by a facility administrator. Research data were collected in semi-structured interviews. The rigor of the items was verified by comparing the items with two existing theories, a nursing theory by Travelbee and a psychological theory by Rogers.

Results: All participants were female and aged between 34 and 64 years (average 47.4 years). As a result of the interviews, 27 items were developed. The dependability of all items was confirmed since they conformed to Travelbee's and Rogers' theories, and the credibility was confirmed by discussion between eight nursing researchers, including the authors. Twenty-seven items were developed to evaluate the empathy, sympathy and "perspective taking" required for nurses providing patient care and were considered appropriate for the draft Clinical Interpersonal Reactivity Index. Statistical verification of the items is necessary for use of the Clinical Interpersonal Reactivity Index in the future.

＜Keywords＞
empathy, interpersonal relations, nurse-patient relations, mental health, nurses

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I. Introduction

Strong empathy among Japanese people has been regarded as an important matter, despite the concept being abstract and difficult to verbalize. Empathy in nursing practice is considered the most fundamental ability in constructing relationships between nurses and patients and is important for carrying out nursing care. However, empathizing with a patient's complicated emotions, such as pain and suffering that nurses may not have personally experienced, becomes emotional labor and leads to stress in nurses (Hochschild, 1983; Katayama, 2010; Katayama, Ogasawara & Tsuji, et al., 2005).

Travelbee (1963), who explored the interpersonal aspects of nursing, said that empathy was the process of being able to understand others, and sympathy was the phase in which nurses think about wanting to care for patients. Empathy and sympathy are necessary to build a relationship between a patient and nurse, and are often thought to be confusing (Travelbee, 1963). Rogers (1957), who showed the importance of empathy from a clinical psychology perspective, stated the following regarding effective counseling: "*To sense the client's private world as if it were your own, but without ever losing the "as if" quality-this is empathy, and this seems essential to therapy.*" Thus, a nurse's empathy for patients has been shown to be indispensable in the practice of mental care. The social psychologist, Davis (1996), stated that it is important for interpersonal donors to have the ability of "perspective taking," which is one of the cognitive aspects of empathy. "Perspective taking" is having the attitude of attempting to understand the feelings of others by imagining their viewpoint (Davis, 1983; 1996).

Evaluation of empathy in nursing studies in Japan has been conducted by using the Emotional Empathy Scale (Mehrabian & Epstein, 1972; Kato & Takagi, 1980), the Revised Empathic Experience Scale (Kakuta, 1994), and the Multi-dimensional Empathy Scale (Davis, 1983; Mochizuki, 2007; Tobari, 2003). These scales consist of items to evaluate empathy and include items such as agreement, involvement, and sympathy for a person, and items that evaluate "perspective taking" are rarely included. In addition, the Japanese version of the Interpersonal Reactivity Index (Davis, 1983; Himichi, Osanai & Goto, et al., 2017) was recently re-translated into Japanese for statistical verification in order to prove its validity. "Perspective taking" as included in the Japanese version of the Interpersonal Reactivity Index contains seven items that indicate general interpersonal relationships (Himichi, Osanai & Goto, et al., 2017). Therefore, the contents of these items show the interpersonal relationship between a nurse and a patient; however, it is necessary to develop a Clinical Interpersonal Reactivity Index specifically to evaluate empathy in nurses. Therefore, the purpose of this study was to develop a Clinical Interpersonal Reactivity Index to evaluate empathy in nurses, which is expected to contribute not only to improving the quality of mental care provided to patients, but also to improving the mental health of nurses.

II. Methods

1. Study setting and participants

This study was a temporary, point qualitative inductive study conducted from July 2017 to March 2018. Snowball sampling was used to select two facilities caring for hospitalized patients at the end-of-life or in a psychiatric ward. Such facilities are considered to be settings in which nurses must exercise empathy towards patients (Inagaki, Furuzawa & Murase, 2016; Murakami, Higa & Tanaka, et al., 2016; Noto, Mikami & Komatsu, 2002; Tanaka, Yoshino & Hasegawa, 2015). The first author spoke directly with the administrator of each facility to describe the study purpose and to request participation. The participants were five nurses who were recommended by the administrators as being able to talk about the experience of empathy in nursing care. The duration of nursing experience was not part of the inclusion criteria.

2. Interviews

The researchers gave the participants an explanation of the research, an explanation of "empathy required for nurses," and then conducted semi-structured interviews that lasted about 20 minutes. The interviews were conducted following an interview guide that consisted of the following three questions: "Do you think that agreeing with a patient is different than having empathy or sympathy for a patient?", "Do you have experiences in which it is difficult to empathize with patients?" and "What do you think about a nurse's empathy for patients?" Interviews were held at either one of the researchers' institutions or the participant's facility. Interview contents were recorded and then transcribed verbatim into text data.

3. Analysis

Using the transcribed text data from interviews with the five nurses, the meaningful parts were extracted as items for evaluating the empathy required for nurses and then summarized as codes. The codes were then abstracted and made into items. In addition, the dependability was confirmed by checking for consistency with Travelbee's four phases and Rogers' four conditions. The dependability and credibility of the items were confirmed in two separate meetings between eight nursing researchers, including the authors.

Travelbee (1971) stated that "*a human-to-human relationship is established after a nurse and the recipient of her care have progressed through four preceding interlocking phases. These phases are: (1) the original encounter, (2) emerging identities, (4) empathy and (5) sympathy"* (Travelbee, 1971). Travelbee (1971) said that *"all of these phases culminate in rapport and the establishment of the human-to-human relationship."*

Rogers (1957) listed six conditions as a process necessary for effective psychotherapy. These conditions are also common to the process of establishing interpersonal relationships between patients and nurses that include empathy. Of the six the conditions, condition 2 ("*The first, whom we shall term the client, is in a state of incongruence, being vulnerable or anxious*") and condition 6 ("*The communication to the client of the therapist's empathic understanding and unconditional positive regard is to a minimal degree achieved*") are conditions that the client should evaluate (Rogers, 1957). These two conditions were not thought to match the items extracted from the interviews with the participating nurses and were excluded from the analysis. Therefore, this study used the remaining four conditions, which were considered to be compatible with items extracted from the interview contents. The four conditions were as follows: condition 1, *"Two persons are in psychological contact*;" condition 3, "*The second person, whom we shall term the therapist, is congruent or integrated in the relationship*;" condition 4, "*The therapist experiences unconditional positive regard for client*;" and condition 5, "*The therapist experiences an empathic understanding of the client's internal frame of reference and endeavors to communicate this experience to the client*" (Rogers, 1957). These conditions are also considered necessary for nurses' empathy.

4. Ethical considerations

This study was approved by the ethics committee of the authors' institution (No. 17-080). The lead author gave a verbal and written explanation of the ethical considerations to all participants and obtained written, informed consent to participate from all participants.

III. Results

Five participants from two facilities cooperated in this study. The age of the participants ranged from 34 to 64 years (average 47.4 years) (Table 1).

Table 1. Participant characteristics

ID	Age (years)	Nursing experience (years)
A	48	18
B	51	31
C	40	18
D	34	13
E	64	43

All participants were female.

Audio data from the interviews totaled 85 minutes and 15 seconds. As a result of the analysis, 93 codes indicating empathy required for nurses were obtained and 27 items were extracted (Table 2-1, Table 2-2, Table 2-3, Table 2-4 and Table 2-5). Tables 2-1 to 2-5 show both the items and representative abstracted codes obtained from interviews with the five nurses.

Table 2-1. Clinical Interpersonal Reactivity Index items and abstracted codes (Items 1-6)

		Item	Abstracted code (Participant's ID)	Code number
1		The patients and I search for solutions to their problems together.	I do not tell a patient who is suffering that "Your SPO_2 is good" or "I do not see like you suffering." I think that it is important to tell patients that "I know you are suffering now" or ask them "Why are you suffering?" (C)	9
2		Although I cannot put myself in a patient's shoes, I try to imagine and understand their feelings as best I can.	I cannot become that patient. I do not understand the patient's suicidal ideation, but I'd like to understand the patient's suffering. I want to understand the patient's feelings. (B)	7
3	†	I feel irritated when patients use the nurse call repeatedly while I am busy.	I want to listen to the patient sufficiently, but I cannot secure time to listen. I cannot go to the patient's room because I can imagine what the patient wants to talk about. Sometimes I have negative feelings like, "I have been called again." (C)	6
4		I adjust my schedule and prepare myself emotionally so that I can listen to a patient's story.	I can listen to the patient's story when I have time, when I am interested in that patient's story and when I want to listen to the patient's story. Even if the patient talks about the same story forever, I can listen to them. (C)	5
5		I want to actively learn about my patients.	If nurses are interested in the patient, they will want to listen to various stories. When I want to listen to the patient's story, I will go to the patient's room for a while. Therefore, I think that it is important that nurses have interest in the patient's story and want to know about the patients. (C)	5
6		When interacting with patients, I try to imagine their feelings and tell them what I think.	For example, I may be sued because a patient says their hand hurts, but it is somatic symptom disorder without any injuries on the surface of the body. At that time, I will tell them that "I understand, you are suffering because you feel the pain will continue forever."(A)	5

†: reversal item, underline: item

Table 2-2. Clinical Interpersonal Reactivity Index items and abstracted codes (Items 7-12)

Item		Abstracted code (Participant's ID)	Code number
7	When I cannot understand a patient's feelings, I consider that the reason for this may be their disease and symptoms.	I like to eat, so I cannot understand the feelings of patients with feeding and eating disorders. However, I understand the patient's symptom. The patient thinks he or she doesn't want to gain weight and thinks only about meals. I understand these patient's symptoms and I try to provide nursing care to help. (B)	5
8	I try to create an environment where patients can relax and talk.	First of all, I think it is important to communicate with the patient himself. That is why I try to create a situation where patients can talk easily. (A)	4
9	I reflect on my attitude towards patients and try to improve it if necessary.	I was tired from the involvement with a patient and had other nurses perform her care. Later, I got a written letter from her. The letter said, "I was saved by your very kind response." Then, I thought that there is a my way to be involved with her without suffering. (C)	4
10	When I have no time, I tell the patient in a straightforward manner, "I do not have time to talk to you now."	If I say that "I do not have time now" frankly, the patient understands it. I think that nurses should frankly tell the patient that they do not have the time. (C)	4
11	I try to accept the experiences that the patient tells me about.	I think that empathy is accepting what the patient is saying. Even though the patient says something is "painful", I cannot fully understand their suffering by any means. I do not fully understand, but I think the patient is suffering. (C)	4
12	To understand the patient, I think it is important to grasp their experiences, behavior, expressions, and life rhythm as a whole.	I think that it is important to use a holistic outlook rather than just a part of the patient to understand them. The patient has their own world that we do not know, and even young people have various thoughts. I imagine the patient's life and talk to them so I can understand why the patient feels that way. (C)	4

† : reversal item, underline: item

Table 2-3. Clinical Interpersonal Reactivity Index items and abstracted codes (Items 13-18)

	Item	Abstracted code (Participant's ID)	Code number
13	I make an effort to actively talk to patients.	When I greet a patient, I am going to make casual conversation everyday and create a situation where people can talk to me naturally. For that reason, I try to speak to all patients even a little bit. (A)	3
14	I listen to patients unconditionally, without thinking something regardless of whether I can help them.	When I hear about a patient, I think "Because it's primary, it is primary." Anyway, I thought that I have to listen to the patient's story every day. But, sometimes I am not interested in patients at that time. (C)	3
15	Even when a patient refuses my involvement, I want to understand their feelings.	When the patient refuses me, if the patient calms down due to my absence, I will leave the patient's room. However, I think that it is necessary to obtain patient information from other nurses and to confirm the situation. I think that it is necessary to know the patient's feelings because the patient refused me. (C)	3
16	When I provide guidance to a patient, I try to show them that I understand their feelings.	When I am guiding a patient, I will tell the patient what he or she needs.　And I think about the patient and try to incorporate the patient's opinion. I understand the feelings of patients and giving guidance to the patient. (B)	3
17	I wait for patients to talk naturally, and I often visit them in their room.	I never ask the patient about every detail of something that he or she does not want to say. I wait for the patient to speak naturally and go to see them in person many times. (C)	2
18	I think it is necessary to let another nurse handle my patient when I feel negatively toward the patient and it is difficult for me to talk with them.	I want to escape from patients that are difficult to be involved with. I think that rather than escaping from patients, a good way is to stay a little bit far away at that time. (C)	2

† : reversal item, underline: item

Table 2-4. Clinical Interpersonal Reactivity Index items and abstracted codes (Items 19-24)

		Item	Abstracted code (Participant's ID)	Code number
19		<u>I can talk to my boss about patient relationships.</u>		
			When I feel troubled about a relationship with a patient, I consult with senior nurses. I say that "I have a problem with a patient like this, I am in trouble." (D)	2
20		<u>I want all patients to recover, even those who insulted me or were violent toward me.</u>		
			A patient hurt my arm previously. That time was when he was sick. He recovered, but he did not remember hurting me. I was glad that he recovered and was discharged from the hospital. (A)	2
21		<u>Although I may not know the exact amount of suffering that the patient is experiencing, I tell them that I understand their suffering.</u>		
			I think that the nurse's empathy is to understand the patient's feeling now. The nurse tells a patient who has pain from respiratory discomfort that, "I understand, it is painful." I do not understand all the suffering of the patient, but I think nurses should have the attitude that they understand that the patient is in pain. (C)	2
22	†	<u>I think that when a patient consults me, they are asking me for the answer to a problem.</u>		
			When the patient wants to talk, the patient puts his or her feelings into words and I think that I only need to say "You think so." Then I think that the patient will feel comforted. (B)	2
23	†	<u>I often doubt and cannot understand patients' stories.</u>		
			I think it is not good to doubt the patient. Even if the patient cannot understand, I think it is important to not involve doubt. (B)	2
24		<u>I think that there are reasons for abuse, violence, and refusals from patients.</u>		
			There was a patient who used violence towards nurses when their condition was bad. After the symptoms recovered, I asked if the patient remembered that time but he did not remember at all. I think that using violence towards nurses is a painful experience that contradicts their intentions. (A)	2

† : reversal item, <u>underline</u>: item

Table 2-5. Clinical Interpersonal Reactivity Index items and abstracted codes (Items 25-27)

Item			Abstracted code (Participant's ID)	Code number
25		I talk to patients in a kind tone and listen to their stories.	First, I will prepare a pleasant environment for patients. And I talk without using an angry or cold tone of voice as much as possible for my patient. I do not give my opinion, I take good care to be a listener. (B)	1
26	†	I think it is important to give advice to patients.	I had to listen to a story from a patient with schizophrenia who said "I am worried about my future" and "I want you to hear my story". I did not give advice, but I said something like that "This is it" about her future. Then she shouted "Don't sugarcoat it.". At that time, I thought that it would be okay to just listen to the patient's story. (B)	1
27	†	I cannot understand patients who make unreasonable demands or exhibit troublesome behavior.	When I was busy, I was told by the patient that "I want you to be nearby because I am lonely". I felt it was difficult to show empathy when the patient's request did not change even when I explained that I was busy. The patient tried to manipulate nurses and had dissociative symptoms that are hard to understand and are difficult to empathize with. (B)	1

† : reversal item, underline: item

The 27 extracted items conformed to Travelbee's phases and Rogers' conditions as described in Tables 3-1 and 3-2. Square brackets [ ] indicate an item.

Items 8, 13, 17 and 25 matched phase 1 and condition 1. These included [Item 8: I try to create an environment where patients can relax and talk].

Items 3, 4, 9, 10, 18 and 19 matched phase 2 and condition 3. These included [Item 3: I feel irritated when patients use the nurse call repeatedly while I am busy] (reversal item).

Items 2, 5, 14, 15 and 20 matched phase 3 and condition 4. These included [Item 2: Although I cannot put myself in a patient's shoes, I try to imagine and understand their feelings as best I can].

Items 1, 6, 7, 11, 12, 16, 21-24, 26 and 27 matched phase 4 and condition 5. These included [Item 1: The patients and I search for solutions to their problems together]. Items 22, 23, 26 and 27 were reversal items. The extracted items and codes, and the compatibility of the phases and conditions were ensured by rigorous discussion between eight nursing researchers, including the authors.

Table 3-1. Matching the Clinical Interpersonal Reactivity Index items with Travelbee's and Rogers' existing theories.

Travelbee's phases	Rogers' conditions	Item		Number of items
1	1	8	I try to create an environment where patients can relax and talk.	4
		13	I make an effort to actively talk to patients.	
		17	I wait for patients to talk naturally, and I often visit them in their room.	
		25	I talk to patients in a kind tone and listen to their stories.	
2	3	3 †	I feel irritated when patients use the nurse call repeatedly while I am busy.	6
		4	I adjust my schedule and prepare myself emotionally so that I can listen to a patient's story.	
		9	I reflect on my attitude towards patients and try to improve it if necessary.	
		10	When I have no time, I tell the patient in a straightforward manner, "I do not have time to talk to you now."	
		18	I think it is necessary to let another nurse handle my patient when I feel negatively toward the patient and it is difficult for me to talk with them.	
		19	I can talk to my boss about patient relationships.	
3	4	2	Although I cannot put myself in a patient's shoes, I try to imagine and understand their feelings as best I can.	5
		5	I want to actively learn about my patients.	
		14	I listen to patients unconditionally, without thinking something regardless of whether I can help them.	
		15	Even when a patient refuses my involvement, I want to understand their feelings.	
		20	I want all patients to recover, even those who insulted me or were violent toward me.	

† : reversal item

Travelbee's phases: Phase 1 is the original encounter, phase 2 is emerging identities and phase 3 is empathy. **Rogers' conditions**: Condition 1, "two persons are in psychological contact;" condition 3, "the second person, whom we shall term the therapist, is congruent or integrated in the relationship;" and condition 4, "the therapist experiences unconditional positive regard for the client."

Table 3-2. Matching the Clinical Interpersonal Reactivity Index items with Travelbee's and Rogers' existing theories.

Travelbee's phases	Rogers' conditions	Item			Number of items
4	5	1		The patients and I search for solutions to their problems together.	12
		6		When interacting with patients, I try to imagine their feelings and tell them what I think.	
		7		When I cannot understand a patient's feelings, I consider that the reason for this may be their disease and symptoms.	
		11		I try to accept the experiences that the patient tells me about.	
		12		To understand the patient, I think it is important to grasp their experiences, behavior, expressions, and life rhythm as a whole.	
		16		When I provide guidance to a patient, I try to show them that I understand their feelings.	
		21		Although I may not know the exact amount of suffering that the patient is experiencing, I tell them that I understand their suffering.	
		22	†	I think that when a patient consults me, they are asking me for the answer to a problem.	
		23	†	I often doubt and cannot understand patients' stories.	
		24		I think that there are reasons for abuse, violence, and refusals from patients.	
		26	†	I think it is important to give advice to patients.	
		27	†	I cannot understand patients who make unreasonable demands or exhibit troublesome behavior.	

† : reversal item

Travelbee's phases: Phase 4 is sympathy. **Rogers' conditions**: Condition 5, "the therapist experiences an empathic understanding of the client's internal frame of reference and endeavors to communicate this experience to the client."

IV. Discussion

1. Strictness of the items and availability

The items were extracted from the data obtained in interviews with the five participating nurses. The items were checked to see whether they conformed to the theories of Travelbee and Rogers, and all items fit. Through rigorous discussion between eight nursing researchers, including the authors, the rigor of the items was thought to be confirmed. The nursing researchers considered Travelbee's phases and Rogers' conditions as follows. Phase 1 and condition 1 indicate that it is necessary for the nurse to prepare to listen to the patient's story. Therefore, items that create situations that make it easy for the nurse and patient to communicate, such as improving the patient's environment and using a kind tone of voice, were included (items 8 and 25). Items related to nurses' efforts and attitudes towards listening to patients were also included (Items 13 and 17). Phase 2 is described as follows (Travelbee, 1963), "*The phase of emerging identities is characterized by the ability to appreciate the uniqueness of another person, as well as the ability to establish a bond with the other individual.*" In order to accept a patient's emerging identity, it is necessary for the nurse's own identity to be integrated. Condition 3 is described as follows (Rogers, 1957). "*The third condition is that the therapist should be within the confines of this relationship, a congruent, genuine, integrated person*." The nursing researchers thought phase 2 would be achieved by condition 3, so the same items were included. In addition, items related to how nurses' review and adjust their actions (items 4, 9, 18), items related to how nurses' act when adjustment is not possible (item 3), and items related to genuineness (items 10, 19) were included. Phases 3 and condition 4 indicate that patients need nurses to show interest in their wellbeing (Rogers, 1957; Travelbee, 1963). Therefore, even when a nurse is rejected by a patient or when a patient is violent towards a nurse, items related to nurses showing a positive interest in patients were included (Items 2, 5, 15, 20). In addition, one item indicating nurses' unconditional interest in patients was included (item 14). Phases 4 and 5 indicate that nurses understand their patients and help to find solutions for their care and comfort (Rogers, 1957; Travelbee, 1963). Therefore, items related to nurses trying to communicate what they understand about a patient (items 6, 16, 21), items showing ways of understanding (items 7, 11, 12, 21, 24), and one item related to helping find solutions to patients' problems (item 1) were included. In addition, one item indicating a lack of understanding on the part of the patient (item 27), items related to giving advice to the patient (items 22, 26), and one item related to misunderstanding patients (item 23) were included as reversal items.

Davis (1996) stated that "perspective taking," a cognitive aspect of empathy, is necessary for aid actions and affects patients. Of the 27 extracted items, five items (items 2, 6, 7, 15 and 21) were thought to be items that nurses are not able to experience in the same way as the patient, but nurses can show that they can imagine and understand the patient's feelings. These items are considered to be consistent with the concept of "perspective taking." Therefore, it is thought that the Clinical Interpersonal Reactivity Index is composed not only of items that can evaluate the emotional aspects of empathy, but also items that can be evaluated from "perspective taking," which is a cognitive aspect.

2. Empathy and Sympathy

Travelbee's (1963) phase 3, "empathy," is a process wherein an individual is able to comprehend the psychological state of another. Phase 4, "sympathy," on the other hand, implies a desire to aid the other individual in order to relieve his distress (Travelbee, 1963). These two concepts are easily confused. Travelbee (1963) indicated that a precondition of sympathy is that a nurse not over-identify or be emotionally involved with the patient. Rogers (1957), on the other hand, stated that condition 5, empathy, "*is that the therapist is experiencing an accurate, empathic understanding of the client's awareness of his own experience. To sense the client's private world as if it were your own, but without ever losing the "as if" quality.*" The "*as if*" quality is the same as over-identification with a patient. Therefore, it can be said that Travelbee's (1963) concept of "sympathy" and Rogers' theory of "empathy" may have the same meaning. Because of this, it is possible that the interpersonal response to the patient that is necessary for nurses is the nurse not over-identifying with the patient. Items 6, 7, 11 and 21 included in phase 4 and condition 5 were extracted from codes related to trying to understand the patient's feelings so that the patient and the nurse themselves are not identical. Therefore, it is thought that the items evaluating empathy or sympathy required for nurses as indicated by Travelbee and Rogers are included in the 27 items of the Clinical Interpersonal Reactivity Index developed in this study.

V. Conclusion

Based on interviews conducted with five participating nurses, 27 items were extracted to include in the Clinical Interpersonal Reactivity Index. These 27 items were considered to be appropriate to evaluate the empathy required for nurses. However, statistical verification of the items in the draft Clinical Interpersonal Reactivity Index developed in the present study is necessary in the future.

VI. Limitations

The present study had only five participants from two facilities. The interview duration was short at about 20 minutes per person. In addition, since we assessed the rigor of the items based only on the experiences of researchers, further verification is necessary. Therefore, it is necessary to evaluate the reliability and validity of the 27-item Clinical Interpersonal Reactivity Index developed in the present study by conducting statistical verification in the future.

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ORIGINAL ARTICLE

The Characteristics of Communication in Interprofessional Collaboration in Multidisciplinary Team

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ABSTRACT

The purpose of this study is to identify the characteristics of communication in interprofessional collaboration for team medical care. Analysis of interview data from 18 doctors, nurses, medical social workers, care managers, and visiting nurses revealed [[Speaking/Conveying]] characteristics such as [Speaking freely, speaking unilaterally] and [Overbearing and superior attitude and manner of speaking], [[Listening/Not Understanding]] characteristics such as [Does not listen to people] and [Not understood due to technical terms and lack of information], and [[Awareness in Interprofessional Collaboration]] characteristics such as [Assumptions and Misinterpretations] and [There is a hierarchy depending on profession], as well as [[Consultation & Information Sharing]] characteristics such as [Discussion, Consultation & Adjustments] and [[Information Sharing]]. There are also [[Negative Feelings in Interprofessional Collaboration]] such as [Feeling intimidated] and [Hurtful manner of speaking/interaction]. Perceptions of [[Interprofessional Collaboration]] include [Collaboration means each professional doing what he/she should do] and [Collaboration means making adjustments and providing support among professionals], perceptions of [[Professional Role]] include [Professional roles and division of roles is not clear] and [Respective professional roles are not understood], perceptions of [[Patients]] includes [Understanding of the patient differs because of different points of view] and [Patient attitudes differ between home and hospital], and perceptions of [[Discharge]] include [Interprofessional Discrepancy in Opinion] and [Objectives for discharge are different].

＜Key-words＞
team medical care, interprofessional collaboration, communication, communication gaps

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I. Introduction

The Ministry of Health, Labour and Welfare (2016) is promoting the establishment by 2025 of comprehensive systems to provide support and services that aid in the protection of dignity and independent living among the elderly (community comprehensive care system), and therefore, the practice of team medical care and nursing care by health, medical and welfare practitioners is becoming ever more important. Team medical care requires sharing common goals and collaborating and cooperating through respective areas of expertise to achieve certain tasks; the outcomes benefit not only patients and their families, but also the health, medical and welfare practitioners who experience a sense of satisfaction and self-efficacy from achievement and who are motivated to learn and perform even better at their work (Takase, Nakagawa, Sakaguchi, et al., 2009).

Yet nurses, pharmacists, radiologists and others who participated in team medical care training have expressed views on how it is “difficult to interact and collaborate with people in other fields” and how “communication is fundamental to multidisciplinary collaboration and cooperation, yet is the greatest challenge”. Previous studies have outlined how role stress is experienced in collaborative work with care managers or nurses at elderly homes (Kanehara, Okada & Shirasawa, 2012), and how interprofessional collaboration can be challenging due to diffidence in the face of other professions and an inability to share information between team members (Harada & Yamane, 2013). Despite the need for interprofessional communication in team medical care, the level of achievement is still far from sufficient in practice. In another study by Higuchi, Harada & Oki (2009), one of the difficulties experienced during collaborative work between various home care and medical service providers was “interpersonal relationships within the team” specifically in relation to consultation across professions: “finding it difficult to consult with doctors” and “not being able to communicate well between medical and nursing care staff”. Subjects thus understood both the indispensability and difficulty of communication in interprofessional collaboration for team medical care.

Sano (2014) discusses how confrontations, discord, disputes and other friction are encountered across professions and departments, and Shinoda (2010) explains how interprofessional conflicts often arise from differences in educational background, training method, and value systems. These conflicts include irreconcilable differences in beliefs, values, or objectives, or conscious conflicts surrounding different desires related to control, status, affection, etc. between two or more individuals in a mutually dependent relationship (Northouse & Northouse, 2010).

Conflicts and difficulties with communication in interprofessional collaboration are due in part to communication gaps. Such communication gaps refer to discrepancies stemming from different understandings or values, or a lack of information (Matsumura, 2012). They can be “information gaps” arising from failure to receive necessary information, or “understanding gaps” arising from differences in the cultural backgrounds, values, experiences or perceptions of the speaker and the receiver (Japan Contact Center Education and Certification Association, 2014). To even slightly alleviate difficulties communicating in interprofessional collaboration, these communication gaps need to be filled as much as possible.

II. Research Purpose

This study aims to identify the characteristics of communication in interprofessional collaboration for team medical care.

Team medical care is “the provision of precise, patient-suited medical care by various types of medical care staff who share objectives and information and collaborate to divide up work while complementing their respective fields of expertise” (Ministry of Health, Labour and Welfare, 2010).

III. Methodology

1. Research design

Content analysis of semi-structured interviews.

2. Participants

Total of 25 subjects: 5 hospital doctors, 5 discharge support nurses (nurses), 5 medical social workers (MSW), 5 care managers, and 5 visiting nurses with five or more years of experience. Selection was conducted through snowball sampling.

3. Research period

December 2016 to March 2017

4. Content

Topics were 1) manner of communication attempted in interprofessional collaboration, 2) nature of difficulties experienced with communication in interprofessional collaboration, and 3) awareness of interprofessional collaboration.

5. Data collection

Semi-structured interviews were conducted based on an interview guide. Research requests were submitted to facility directors. Participants were those people who agreed to cooperate in this study. Participants were interviewed for approximately 60 minutes upon agreeing to a written and oral explanation of the research. Each participant introduced the next participant until there were no more people to introduce.

6. Analysis

Verbatim transcripts were created based on IC recordings and analyzed for content. Transcripts included only data consented to by participants. Data was chunked while preserving meaning and then coded, divided into similar themes and then categorized per advice of the research director. Division of data was spread out over time to maintain validity and reliability and repeated until categories became fixed.

7. Ethical considerations

A letter of request was distributed to facility directors and study participants. The letter of request stated the purpose of research with a summary and explained that interview data would be used only for purposes of this study and destroyed after the later of 5 years following the conclusion of the study or 3 years from final presentation of research, and that, although results might be presented at symposiums or in academic journals, no individual information would be unidentifiable. The letter further explained that participation was voluntary, that there were no unfavorable consequences to not responding, and that participants were free to withdraw from interviews at any time even after granting consent. There are no conflicts of interest associated with this research, and this study has been approved by the International University of Health and Welfare IRB (Approval Number: 16-Ig-84).

IV. Results

1. Participants

There were a total of 18 participants: 3 doctors, 3 nurses, 4 MSWs, 5 care managers, and 3 visiting nurses (Table 1).

<Table 1> Basic attributes

Basic license		Age	Sex	Duty place		Length of service (years)
Doctor	A	40s	Male	University hospital	Physician	21
	B	60s	Male	hospital	Surgeon	41
	C	40s	Male	General hospital	Physician	21
Nurse	A	60s	Female	hospital	Discharge support room	30<
	B	40s	Female	hospital	Discharge support room	8
	C	40s	Female	hospital	Discharge adjustment	17
Medical social worker	A	40s	Female	hospital		15
	B	40s	Female	hospital		16
	C	40s	Female	hospital		17
	D	30s	Female	hospital		7
Care manager	A	40s	Female	Home care support establishment	Care job	9
	B	50s	Female	Visit care support	Counselor	17
	C	40s	Female	Home care support establishment	Medical social worker	5
	D	50s	Female	Home care support establishment	Welfare job	5<
	E	50s	Female	Home care support establishment	Care job	11
Health visitor	A	50s	Female	Home nursing station		18
	B	40s	Female	Home nursing station		20
	C	40s	Female	Home nursing station		5<

2. Communication in interprofessional collaboration

Extractions for communication in interprofessional collaboration consisted of 824 codes, 78 sub-categories, 25 categories, and the 5 core categories of [[Speaking/Conveying]], [[Listening/Not Understanding]], [[Consultation & Information Sharing]], [[Awareness in Interprofessional Collaboration]] and [[Negative Feelings in Interprofessional Collaboration]]. The number of codes and number of codes by profession are shown in Tables 2-1 and 2-2. Within this text, core categories are indicated with [[ ]] brackets, categories are indicated with [ ], and sub-categories are indicated with { } brackets. The number of sub-categories is indicated in ( ) parentheses after [ ] brackets.

1) [[Speaking/Conveying]]

[[Speaking/Conveying]] consists of six categories: [Speaking freely, speaking unilaterally] (5), [Overbearing and superior attitude and manner of speaking] (2), [Inquiries depending on profession] (2), [Creating an easy-to-work atmosphere and minding manner of speech] (3), [Being unable/unwilling to say certain things] (6), and [Being scolded or yelled at] (2). [Speaking freely, speaking unilaterally] and [Being unable/unwilling to say certain things] were extracted mainly from MSWs, care managers and visiting nurses.

2) [[Listening/Not Understanding]]

[[Listening/Not Understanding]] consists of three categories: [Does not listen to people] (2), [Not understood due to technical terms and lack of information] (5), and [Not understood or comprehended] (3). [Not understood due to technical terms and lack of information] was extracted from all professions.

3) [[Consultation & Information Sharing]]

[[Consultation & Information Sharing]] consists of four categories: [Discussion, Consultation & Adjustments] (5), [[Information Sharing]] (3), [Choosing trustworthy people] (2), and [Doctors and nurses lend a helping hand] (2). [Discussion, Consultation & Adjustments] was extracted frequently from all professions.

4) [[Awareness in Interprofessional Collaboration]]

[[Awareness in Interprofessional Collaboration]] consists of seven categories: [Assumptions and Misinterpretations] (3), [Easier to implement collaboration] (3), [Awareness for communication] (3), [Hierarchy depending on profession] (5), [Cannot oppose doctors] (2), [Desire to learn] (3), and [Confidence/Complexes] (2). Both {I have no issues with communication} and {I cannot oppose doctors because they have authority over treatment and employ me} were extracted from all professions.

5) [[Negative Feelings in Interprofessional Collaboration]]

[[Negative Feelings in Interprofessional Collaboration]] consists of five categories: [Feeling intimidated] (5), [Hurtful manner of speaking/interaction (3), [Stress] (2), [Aversion due to fear of failure] (3), and [Sharing Feelings] (2). This core category was extracted mainly from MSWs, care managers, and visiting nurses.

<Tabl 2-1>　Communication in interprofessional collaboration

Core Category	Categor	Sub-Category	Number Coded					
			Total	Doctor	Nurse	MSW	Care Manager	Visitn Nurse
Speaking / Conveying	Speaking freely, speaking unilaterally	I can say what I want to say	**5**	0	1	0	3	1
		It is easy to talk in face-to-face relationships	**21**	2	0	4	6	9
		Harsh expressions	**7**	0	1	1	2	3
		Opinions are unilaterally forced on people	**37**	1	4	0	18	14
		With multiple professions, there are conflicting opinions or the same opinions are repeated	**10**	1	0	8	0	1
	Overbearing and superior attitude and manner of speaking	Superior manner of speaking and acting	**18**	1	0	5	3	9
		Overbearing attitude and language	**14**	4	0	4	3	3
	Inquiries depending on profession	I select the content of my inquiries depending on the profession	**5**	2	0	0	2	1
		I change the way I speak to match the other person	**10**	0	0	6	4	0
	Creating an easy-to-work atmosphere and minding manner of speech	I hold back or refrain from saying things so as not to upset people	**13**	1	0	2	6	4
		It is important to respect and try to understand the other person	**12**	0	1	0	10	1
		I try to create an easy-to-speak atmosphere and ways of talking	**17**	1	2	5	2	7
	Being unable/unwilling to say certain things	Difficult to say things depending on profession	**22**	2	3	5	5	7
		I cannot express my opinion to or disagree with the hospital	**9**	1	0	2	1	5
		I cannot say things because of atmosphere or overbearing attitude	**39**	0	6	17	7	9
		I cannot say things because I do not want to be hurt by the other person's response or comment	**28**	0	1	9	15	3
		I do not know how to interact, and so it is difficult to talk	**10**	3	2	2	3	0
		Does not speak so that other people can understand	**10**	2	0	0	1	7
	Being scolded or yelled at	I was yelled at or scolded by the doctor	**7**	0	1	1	1	4
		Get angry when busy and asked about complex matters or things that can be answered by people other than doctors	**8**	6	2	0	0	0
Listening / Not Understanding	Does not listen to people	Does not accept the opinions of other people, does not listen	**5**	1	0	1	3	0
		Does not accept other opinions	**2**	0	0	2	0	0
	Not understood due to technical terms and lack of information	Summaries do not contain the information I need, therefore, not communicated	**31**	2	6	11	0	12
		Plans are not assessed, so no change whatsoever	**11**	1	0	5	1	4
		Not understood because it is only results without any explanation	**8**	0	0	0	1	7
		The same words are not accurately conveyed when the people hearing them have different values and experiences	**9**	1	1	2	2	3
		Not understood in terms of content, or becaues of abbreviations and technical terms	**22**	1	2	7	5	7
	Not understood or comprehended	Not conveyed even if speaker thinks it is	**15**	7	0	4	0	4
		Not conveyed unless conveyed	**7**	0	0	2	3	2
		Hard to get the point through	**9**	0	2	0	0	7
Consultation & Information Sharing	Discussion, Consultation & Adjustments	I participate in discharge conferences and engage in discussion	**21**	3	5	2	4	7
		Cannot discuss sufficiently	**23**	1	2	3	6	11
		Able to mutually confer	**28**	1	4	13	2	8
		I made adjustments with other professions and families	**4**	1	0	1	1	1
		Mutually able to verify	**7**	0	0	3	0	4
	Information Sharing	Information is shared and there is a shared understanding of how to resolve issues	**7**	1	2	2	1	1
		Need tools for sharing information	**12**	7	0	0	0	5
		Misunderstandings may arise depending on how information is shared	**21**	3	4	5	0	9
	Choosing trustworthy people	Choose responsive people who are easy to assist	**5**	0	0	1	0	4
		Choose people who have mutual knowledge of each other and are trustworthy	**8**	0	1	1	4	2
	Doctors and nurses lend a helping hand	Some doctors are kind and helpful	**2**	0	0	0	1	1
		Doctors and nurses tell patients that they are collaborating with care managers	**2**	0	0	0	2	0

<Tabl 2-2>　Communication in interprofessional collaboration

Core Category	Category	Sub-Category	Number Coded					
			Total	Doctor	Nurse	MSW	Care Manager	Visiti Nurs
Awareness in Interprofessional Collaboration	Assumptions and Misinterpretations	Disconnect because of discussion based on assumptions and biased interpretation of information	**29**	2	3	12	6	6
		Patients/families and medical practitioners have different opinions, but the medical opinion prevails	**6**	1	0	3	2	0
		Not understanding the other person's position	**3**	0	1	2	0	0
	Easier to implement collaboration	I am notified earlier now	**12**	3	1	1	4	3
		Systemization contributed to awareness, and it is clear now where to go with questions	**15**	0	1	8	3	3
		Changes in awareness, manner of speaking and attitudes about collaboration	**25**	3	0	6	10	6
	Awareness for communication	I have no issues with communication	**18**	6	5	1	5	1
		Easy to speak because of no aversions or seniority relationships	**4**	1	1	0	2	0
		It is more difficult to communicate within the same profession	**3**	0	2	1	0	0
	Hierarchy depending on profession	I believe medical care and doctors at the hospital are the best	**11**	7	0	0	3	1
		I was ranked by my professions	**9**	2	0	0	2	5
		They have their position and freely rank people	**8**	2	0	0	4	2
		Easy to work with no seniority relationships	**7**	2	1	0	3	1
		Some professions are to be revered and are difficult to approach	**10**	4	1	1	4	0
	Cannot oppose doctors	Hospitals are places for treatment, so by default doctors must take the initiative	**4**	4	0	0	0	0
		I cannot oppose doctors because they have authority over treatment and employ me	**3**	0	0	1	0	2
	Desire to learn	Study to increase knowledge or mutually learn about others	**12**	2	0	0	9	1
		Depends on differences in desire to learn	**8**	1	1	4	2	0
		I do not know what to study	**6**	6	0	0	0	0
	Confidence / Complexes	I am proud or confident	**5**	0	0	1	4	0
		I have flaws or complexes	**6**	0	0	2	1	3
Negative Feelings in Interprofessional Collaboration	Feeling Intimidated	I feel intimidated depending on profession	**5**	0	0	2	1	2
		I am intimidated by yelling or scolding	**3**	1	0	0	0	2
		Atmosphere and manner of speaking is intimidating	**3**	0	0	1	2	0
		I feel intimidated not having met before or not knowing the person	**2**	1	0	1	0	0
		I have less fear or stress related to doctors	**3**	1	0	1	0	1
	Hurtful manner of speaking/ interaction	I was hurt by callous manner of speaking or response	**4**	0	1	3	0	0
		I was hurt when someone took out their anger on me when things did not go as planned	**2**	0	0	2	0	0
		I feel a lack of respect and consideration of others	**3**	1	0	1	1	0
	Stress	I feel stress over things I cannot say	**3**	0	0	0	1	2
		Stress is being alleviated	**6**	0	2	2	1	1
	Aversion due to fear of failure	I am afraid of failure and find it difficult to speak with others	**5**	2	1	0	2	0
		People who are not good at communication think that other people will not be cooperative	**7**	1	0	0	6	0
		I am increasing opportunities to improve communication and taking steps not to be nervous	**7**	0	0	1	5	1
	Sharing Feelings	I can share when I am uncertain about things or feeling hurt	**5**	0	0	4	1	0
		People do not understand me because they are in the same profession	**1**	0	0	0	1	0

2. Understanding of interprofessional collaboration by profession

Extractions for understanding of interprofessional collaboration consisted of 279 codes, 33 sub-categories, 14 categories, and the 4 core categories of [[Interprofessional Collaboration]], [[Professional Role]], [[Patients]], and [[Discharge]]. The number of codes and number of codes by profession are shown in Table 3. Within this text, core categories are indicated with [[ ]] brackets, categories are indicated with [　], and sub-categories are indicated with {　} brackets. The number of sub-categories is indicated in (　) parentheses after [　] brackets.

1) [[Interprofessional Collaboration]]

[[Interprofessional Collaboration]] consists of four categories: [Collaboration means each professional doing what he/she should do] (2), [Collaboration means making adjustments and providing support among professionals] (3), [Collaboration is not effectively implemented due to different understandings] (2), and [The need for collaboration and the meaning of collaboration is not understood] (2).

{Collaboration means connecting with other specialists}, etc. was extracted from doctors, nurses, and MSWs and {Collaboration means making adjustments and providing support where professions overlap} etc. was extracted from MSWs, care managers, and visiting nurses.

2) [[Professional Role]]

[[Professional Role]] consists of four categories: [Professional roles and division of roles is clear] (2), [Respective professional roles are not understood] (2), [Professional roles and division of roles is not clear] (2), and [Professional role and nature of work is not understood] (3).

{Professional roles and division of roles are defined} was extracted from MSWs, care managers, and visiting nurses. {Professional roles and division of roles is not clear} was extracted from nurses, MSWs, and care managers.

3) [[Patients]]

[[Patients]] consists of two categories: [Understanding of the patient differs because of different points of view] (2), and [Patient attitudes differ between home and hospital] (2).

{Patient attitudes differ between familiar home and hospital} was extracted from all professions, {Interprofessional viewpoints differ} was extracted from all professions other than doctors, and {I do not know the patient’s actual condition beyond the scope of what I see myself} was extracted from MSWs, care managers, and visiting nurses.

4) [[Discharge]]

[[Discharge]] consists of four categories: [Interprofessional Discrepancy in Opinion] (3), [Hospital rules and systems are not understood] (2), [Preparation of environment for discharge without anxiety] (3), and [Objectives for discharge are different] (3).

{The hospital side has certain rules and systems that do not allow for changes} was extracted from all professions, {Patients are discharged when treatment is completed, without consideration of the family’s ability to provide care or other daily life issues} was extracted from MSWs, care managers, and visiting nurses, {Objectives different across fields because the objective is what determines the treatment program} and {interprofessional opinions are divided due to vague indices for discharge} were extracted from nurses and MSWs, and {support is delayed due to unclear treatment program} was extracted from nurses.

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<Table 3> Understanding of interprofessional collaboration by profession

Core Category	Category	Sub-Category	Number Coded					
			Total	Doctor	Nurse	MSW	Care Manager	Visiting Nurse
Interprofessinal Collaboration	Collaboration means each professional doing what he/she should do	Collaboration means sharing information and then doing what should be done	**6**	0	0	4	1	1
		Collaboration mean connecting with other specialists	**11**	3	3	5	0	0
	Collaboration means making adjustments and providing support among professionals	Collaboration means making adjustments and providing support where professions overlap	**8**	0	0	4	2	2
		Collaboration means mutually exchanging information and being able to discuss and confer with each other	**12**	1	1	4	2	4
		Collaboration is working with mutual respoect without seniority relationships	**5**	4	0	0	1	0
	Collaboration is not effectively implemented due to different understandings	I want to collaborate efficiently	**6**	2	0	0	1	2
		I want to be able to collaborate, but I am unable to	**12**	2	0	1	3	6
	The need for collaboration and the meaning of collaboration is not understood	I do not see the need for collaboration, or I think it is unnessecary	**9**	1	0	5	0	3
		I say collaboration but we do not really understand it	**4**	0	0	2	2	0
Professional Role	Professional roles and division of roles is clear	Professional roles and division of roles are defined	**21**	3	0	8	3	7
		I only do what I am assigned	**6**	1	0	3	2	0
	Respective professional roles are not understood	There are differences in understanding of the nature and effect of professional work	**10**	1	0	1	4	4
		Patient families and medical practitioners have different opinions, but the medical opinion prevails	**8**	0	0	0	1	7
	Professional roles and division of roles is unclear	Acting beyond the role of one's profession	**17**	2	1	6	8	0
		Vague roles and division of roles	**17**	0	1	2	14	0
	Professional role and nature of work is not understood	Different perceptions of profession and nature of work	**10**	0	0	6	4	0
		No knowledge of place of work or daily schedule	**6**	2	0	3	1	0
		Not understanding the other person's position	**3**	0	1	2	0	0
Patients	Understanding of the patient differs because of different points of view	Interprofessional viewpoints differ	**8**	0	2	2	1	3
		I do not know the patient's actual condition beyond the scope of what I see myself	**8**	0	0	1	3	4
	Patient attitudes differ between home and hospital	Patient attitudes differ between familiar home and hospital	**11**	2	1	4	1	2
		Different impressions of patients who live at home	**8**	1	0	1	2	4
Discharge	Interprofessional Discrepancy in Opinion	Patients are discharged when treatment is completed, without consideration of the family's ability to provide care or other daily life issues	**9**	0	0	3	2	4
		Difference in opinion due to specialty	**7**	4	0	2	1	0
		Different ways of thinking and approaches to work	**6**	0	2	1	2	1
	Hospital rules and systems are not understood	The hospital side has certain rules and systems that do not allow for changes	**13**	3	2	3	1	4
		Hospital functions and characteristics are not understood	**3**	1	0	2	0	0
	Preparation of environment for discharge without anxiety	Hospitals are shifting towards support for at-home care	**3**	0	0	0	0	1
		I want patients to be discharged after symptoms are under control and material preparations are made	**5**	1	0	0	2	2
		I value whether the patient and family feel they can comfortably cope with the illness	**9**	0	5	0	3	1
	Objectives for discharge are different	Objectives are different across fields because the objective is what determines the treatment program	**7**	0	4	3	0	0
		interprofessional opinions are divided due to vague indices for discharge	**7**	0	1	6	0	0
		support is delayed due to unclear treatment program	**4**	0	4	0	0	0

V. Discussion

1. Characteristics of communication in interprofessional collaboration

1) How information is conveyed and received

[Speaking freely, speaking unilaterally] and [Overbearing and superior attitude and manner of speaking] were two characteristics of communication in interprofessional collaboration. As Arita & Mizumoto (2011) note, psychological power relationships tend to be formed between patients and medical practitioners as non-professionals and professionals, healee and healer. This results in a tendency toward one-way communication in which the practitioner instructs and guides the patient. This tendency is not limited to patient and practitioner; it also occurs in interprofessional collaboration when communication flows in one direction from specialist to non-specialist and from the person giving orders to the person receiving them. Efforts were made in communicating: [Being unable/unwilling to say certain things], [Inquiries depending on profession], and [Creating an easy-to-work atmosphere and minding manner of speech]. This may reflect a desire to preserve teamwork and not disrupt relationships; as Higuchi (2015) argues, Japanese people tend to avoid confrontation in interpersonal relationships and strive to keep things smooth on the surface despite their actual feelings.

Past experience with [Overbearing and superior attitude and manner of speaking] or [Being scolded or yelled at] may influence [Feeling intimidated] [Hurtful manner of speaking/interaction]. Perceptions such as [Hierarchy depending on profession], [Cannot oppose doctors], and [Confidence/Complexes] may also tie into [Being unable/unwilling to say certain things]. As Shinoda (2011) explains, this may be related to a hierarchy in the medical and health and welfare fields in which doctors stand at the top of the pyramid and monopolize work; certain acts are clearly to be performed only by doctors, and comedicals cannot engage in anything except under the instruction of a doctor. Lack of confidence and complexes may also be due to differences by profession in difficulty levels and time spent on training, as well as basic education systems and certifications required. [Aversion due to fear of failure] may also be tied to [Being unable/unwilling to say certain things].

Regarding [Not understood or comprehended], although we use words and letters to communicate with others, these words and letters can convey only abstract, condensed information. Likewise, Drucker (2000) argues how no matter how well we explain something, it will not be understood if we speak only in one direction. [Assumptions and Misinterpretations] may also be a factor. Fukuda (1998) writes that the receiver relies on various personal factors such as past experience, knowledge, ability, desire, and emotion, and that the same word can be interpreted in a myriad of ways depending on the receiver. Images associated with certain words will also vary by individual and by occupation, and this leads to assumptions and misinterpretations that then tie into [Not understood or comprehended].

[Not understood due to technical terms and lack of information] is another factor to consider. In the medical setting, highly specialized professions co-exist, each with a unique language of technical terms and jargon (Fukuda, 1998). Arita & Mizumoto (2011) point out that because medical practitioners prioritize speed and urgency, dialogues between practitioners tend to contain subjective instructions that lack a clear subject, and the receiver's interpretation may be different from what the speaker intended. Knowledge may not be fully comprehended even when the speaker believes that something has been communicated, and vague expressions and vague understandings may contribute to [Not understood or comprehended].

2) Discussion and adjustments in interprofessional collaboration

Under [Discussion, Consultation & Adjustments], participants indicated {Able to mutually confer} and {Cannot discuss sufficiently}. As Hotaka, Uchida & Takahashi (2017) explain, nurses are extremely busy providing daily support and constantly responding to patient needs. It is difficult to secure blocks of time to participate in conferences or rounds without adjusting schedules and work content. Of course, it can be presumed that it is difficult for other professions as well to make time for conferences and discussions.

{Cannot discuss sufficiently} includes cases in which the opinions of others are not accepted, as well as cases in which people do not express their own opinions. Shinoda (2011) remarks how teams can freeze up particularly when specialists over-assert their own specialty. Conceptually, Shinoda explains how specialists are like the wheels on a car and are capable of collaborating together. That said, Japanese tend to misunderstand team harmony or “*wa*” and, to avoid conflicts of opinion, simply comply with organizational decisions and refrain from expressing their opinions. In this sense, the greater issue may be how specialists express themselves and conduct conferences and meetings rather than the “place” itself.

Under [[Information Sharing]], there is a perception that {Information is shared and there is a shared understanding of how to resolve issues} and at the same time that {Misunderstandings may arise depending on how information is shared}. Thus the means for [[Information Sharing]] are affected not only by place, but also method.

Despite increasing centralization of information through digital media, Arita & Mizumoto (2011) comment that modes of information sharing still largely rely on medical charts, image films, test reports, documents and other analog media in addition to audio media such as telephones and PHS, as well as written media such as email and facsimiles. Paper media makes it difficult to share information in real time, and it is both costly and difficult to manage across professions.

2. Perceptions of each profession in interprofessional collaboration

[[Interprofessional collaboration]] was viewed as “cooperation”, as in [Collaboration means each professional doing what he/she should do], and as “collaboration”, as in [Collaboration means making adjustments and providing support among professionals]. This difference in understanding of interprofessional collaboration may be a reflection of the medical system in Japan. According to Hosoda (2012), there were no professional medical titles defined by law other than doctor, nurse, and pharmacist prior to World War II. Following post-war Occupation reforms, the establishment of “hospitals” caused the role of medicine to shift from simple treatment by a doctor to recuperation and overall care of the patient. As the duties of medical practitioners expanded to include diagnosis and treatment, nursing, preparation of meals and beds, tests and training, as well as hospital management, it became necessary to create full-time positions to cover specific tasks. Perceptions of “collaboration” and “cooperation” may be informed by this historical streamlining and specialization in the medical field.

Another perception of [[Interprofessional collaboration]] was: [Collaboration is not effectively implemented due to different understandings]. This may be affected by [The need for collaboration and the meaning of collaboration is not understood].

Perceptions of [[Professional Role]] were: [There are differences in understanding of the nature and effect of professional work] and [Professional roles and division of roles are defined]. In the case of medical care teams, Shinoda (2011) notes that each individual member is highly specialized, and there is a division of labor among respective departments such that nothing is self-contained. When attempting to provide comprehensive care, overlap in services will inevitably occur. On the other hand, a strict division of roles may lead to vertically split services that cause important matters to be lost between specialties. Thus, it is important not to limit each profession to certain roles or tasks, and to instead mutually recognize that work involves multiple overlapping fields and respond flexibly to patient conditions and the situation at hand.

On this point, Northouse and Northouse (2010) draw attention to the fact that medical practitioners are still confused about the specializations of their colleagues, despite some progress in understanding. The main cause of this is that professional education is substantially divided by field of speciality. Furthermore, there is extremely little interaction in general between practitioners. Although interprofessional collaboration is becoming more common, uncertain understandings of professional roles may cause some practitioners to be called upon to take on roles they would not normally play or to have their normal roles taken over by other practitioners, ultimately tying into [Professional roles and division of roles are defined].

Arita & Mizumoto (2011) further posit that because medical professions are so highly specialized, interest in and understanding of the work of other practitioners tends to wane. A poor understanding of professional roles and the historical context of medical specialization thus contribute to differences extracted under [[Professional Role]].

Perceptions of [[Patient]] were [Patient attitudes differ between familiar home and hospital] and [I do not know the patient’s actual condition beyond the scope of what I see myself]. As Arita & Mizumoto (2011) note, in most hospitals, for any one patient, there are multiple directly and indirectly involved personnel who hail from multiple specialties and multiple positions. Interactions with the patient differ for each profession, and acquired information is limited and changes over time. Differences in perceptions for [[Patient]] may be related to differences in the quality and quantity of information that can be obtained by each profession depending on the patient’s condition and response.

Additional perceptions were [Interprofessional viewpoints differ] and [Different impressions of patients who live at home]. Hosoda (2012) points out how one factor contributing to the difficulty of collaboration is how separate training produces differing values and philosophies among specialties. As opposed to the medical profession's medical (pathological) model, which focuses on the individual facing challenges, health and welfare relies on an ecological model, which approaches problems by emphasizing transactions between people and their environment. By intervening in the interface between people and the environment, the aim is to improve the individual's ability to adapt, tolerate, and respond and to enhance the quality of transactions with his or her environment (Japanese Association of Schools of Certified Social Worker, 2015). Further, where the medical profession's approach is to uncover what problems a person has and what the causes might be, health and welfare looks less at the client's weaknesses or disadvantages and more at the client's (individuals as well as groups and communities) abilities and motivation, tastes, accessible social resources, and other strengths (Japanese Association of Schools of Certified Social Worker, 2015). These differences in approach to assessment may tie in to perceptions for [[Patient]] as well.

Perceptions for [[Discharge]] were: [Patients are discharged when treatment is completed, without consideration of the family's ability to provide care or other daily life issues], [Difference in opinion due to specialty], [Objectives for discharge are different], and [interprofessional opinions are divided due to vague indices for discharge]. Varying professional values, experiences and approaches to problems are reflected in these different perceptions for [[Discharge]]. Although a medical model is employed in the initial phase of hospitalization with the aim being to recover as soon as possible, it becomes insufficient as the patient begins to recover, rehabilitation is begun in earnest, and life after discharge enters the picture. There is a need to shift from a medical model to biological, psychological and social models (Shinoda, 2011), and consequently a need to change perceptions of [[Patient]] and [[Discharge]] when individuals are prepared to move from hospital back to home.

Communication in interprofessional collaboration for team medical care is characterized by [Speaking freely, speaking unilaterally] and other elements of verbal / non-verbal communication, perceptions such as [Hierarchy depending on profession], and negative emotions such as [Feeling intimidated]. There are also clear differences by profession in perceptions of [[Interprofessional Collaboration]], [[Professional Role]], [[Patients]] and [[Discharge]]. Communication in interprofessional collaboration is further characterized by "information gaps", in which information is not communicated well, and "understanding gaps", in which there are differences between the speaker and receiver in cultural background, values, experience, and approaches to problem-solving. The negative emotions extracted from interviews also suggest that there are also "emotional gaps" involved in communication in interprofessional collaboration.

That said, this study was limited by a small number of interviewees, and coding may have been biased due to a semi-structured interview format. In considering how to fill in communication gaps in interprofessional collaboration, future studies will need to make a wider survey of the specific nature of communication gaps, specifically, information gaps and understanding gaps, and their particular characteristics by profession.

VI. Conclusion

Communication in interprofessional collaboration had the following characteristics.

1. [[Speaking/Conveying]]: [Speaking freely, speaking unilaterally] and [Overbearing and superior attitude and manner of speaking]; [[Listening/Not Understanding]]: [Does not listen to people] and [Not understood due to technical terms and lack of information]; and [[Awareness in Interprofessional Collaboration]]: [Assumptions and Misinterpretations] and [There is a hierarchy depending on profession]; [[Consultation & Information Sharing]]: [Discussion, Consultation & Adjustments] and [Information Sharing]; [[Negative Feelings in Interprofessional Collaboration]]: [Feeling intimidated] and [Hurtful manner of speaking/interaction].

2. [[Interprofessional Collaboration]]: [Collaboration means each professional doing what he/she should do] and [Collaboration means making adjustments and providing support among professionals]; [[Professional Role]]: [Professional roles and division of roles is not clear][Respective professional roles are not understood]; [[Patients]]: [Understanding of the patient differs because of different points of view] and [Patient attitudes differ between home and hospital], [[Discharge]]: [Interprofessional Discrepancy in Opinion] and [Objectives for discharge are different].

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ORIGINAL ARTICLE

Interprofessional Cooperation ICT Program Development Aimed at "Nutrition Improvement"

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ABSTRACT

To promote care planning that prevents the progression of care dependency among care service users by improving their nutritional conditions, we examined the status of ICT use for such planning and contents of care plans, involving 714 care managers throughout Japan. Based on the results, we propose an ICT program to prevent the progression of care dependency among care service users by improving their nutritional conditions through interprofessional collaboration, adopting the following approaches: 1) standardizing assessment to create care plans that facilitate nutrition improvement, and organically reflecting challenges of such improvement on care plans, actively and effectively using ICT; 2) encouraging communities to share their care planning systems to promote the sharing of care plans for nutritional improvement with service providers; and 3) promoting interprofessional collaboration by sharing the systems.

＜Key-words＞
interprofessional collaboration, ICT program, nutrition improvement, prevention of the progression of care dependency

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I. Introduction

Malnutrition is the factor for older people to require care. The revision of the Long-Term Care Insurance Act in 2006 included care prevention and preventing the level of care need from becoming higher, and nutrition management was introduced as the mainstay of the revision. However, according to the "Research on Comprehensive Evaluation and Analysis regarding the Effects of Care Prevention Programs" in 2008, among particular older people or those requiring support who may continue requiring care after the initiation of care prevention programs, individuals requiring nutrition improvement account for approximately 30% of the older people. (Tsuji, Ueda, Okubo, et al., 2009) In addition, according to the "Survey Report about Understanding the Eating Condition and Nutritional conditions of Patients Receiving Home-Based Care" in 2012, approximately 30% of the older people receiving home-based care suffer malnutrition based on the MNA-SF (Mini Nutritional Assessment-Short Form) and BMI values (Body Mass Index) [National Center for Geriatrics and Gerontology, 2012]. Thus, as issues regarding: 1) older people starting to require care and 2) the level of care need becoming higher, malnutrition has yet to be resolved.

This may be attributable to the absence of systems whereby identifying the risk of malnutrition among care service users (analysis) leads to care approaches that facilitate nutrition improvement (problem-solving). Regarding the identification of such a risk, in 2014, researchers conducted an awareness survey concerning the nutritional conditions of older people requiring care involving nursing care insurance service workers, and revealed that both home-based and facility workers were hardly aware of the BMI values and Alb levels, which are indices of nutritional conditions. (Fujio & Kodaira, 2014) These results suggested that information-gathering and -sharing for identifying the risk of malnutrition were not standardized. In 2015, a survey was conducted to assess the nutritional conditions and mental/physical function of facility service users and at-home older people requiring care who utilized nursing care insurance services. As a result, correlations were noted between Alb levels and the following 4 factors: the BMI values, dietary habits, dietary intake, and locomotion ability. This indicated that these 4 factors may be predictors of Alb levels. (Fujio, Ogawa, Inoue, et al., 2016) In 2016, a survey was conducted to assess the nutritional conditions and mental/physical function of older housing facility service users, which were not covered by nursing care insurance. In another survey conducted in the same year, we focused on the contents of information collected when creating care plans for nutrition improvement in long-term care insurance services. Alb levels were the least frequently collected content of information, followed by BMI and nutritional index values. The frequency of collecting nutritional index values was correlated with the number of service users, type of service, type of profession (basic qualifications), and experience of receiving nutrition education. The results indicated the necessity of considering the type of service, type of profession, and experience of receiving nutrition education as a challenge in creating care plans to improve older people's nutritional conditions (Fujio, Kurokawa, Furukawa, et al., 2018).

Under these circumstances, the present study examined the link between assessment and care planning and the use of information and communication technology (ICT) to share information, with the aim of promoting care planning that facilitates systematized nutrition improvement beyond the types of service and profession. Concerning ICT-based systems, Japan's Ministry of Health, Labour, and Welfare promotes the active and effective use of this technology as a tool to address health, medical, and care issues. However, according to a report published by it in 2014, entitled: [Promotion of the Use of ICT in Health, Medical, and Care Services], many ICT-based systems are not being effectively operated to disseminate and promote information-sharing networks (Ministry of Health, Labour, and Welfare, 2014). The objective of the present study was to provide useful insights for active and effective ICT use by examining care managers' status of using this technology for care planning and contents of care plans created by them, in order to promote care planning that prevents the progression of care dependency among care service users by improving their nutritional conditions.

II. Subjects and Methods

1. Study and Procedures

1) Study Design

A quantitative, descriptive study (anonymous self-completed questionnaire survey)

2) Study Period

Between November 1, 2016 and December 1, 2016. (2 months)

3) Subjects

Care managers providing nursing-care insurance services

4) Study Items

Basic attributes: type of service, Care Grade, type of profession (medical profession or welfare profession), years of experience, number of charges.

Care planning: using/not using ICT, linked/not linked with assessment, shared/not shared with service providers.

Contents of care plans: meeting/not meeting nutrition-related needs, addressing/not addressing challenges identified through assessment, exchange of nutrition-related information with other types of profession, improvements in service users' levels of independence, satisfaction with care planning systems

Free descriptions: points of improvement of care planning systems

5) Ethical Considerations

This study was conducted with the approval of the Ethics Committee of the Faculty of Health Science and Nursing, Juntendo University (approval number: 28-06). The following were explained to the subjects: Participation in the questionnaire survey must be based on their own free will. As the survey was anonymous, individuals could not be identified. Obtained data would be coded, analyzed, and used only for the present study. Only people who had consented to the study participated in it, and the completion of the questionnaire form was regarded as the consent.

2. Date Collection

Concerning data collection, 2,000 facilities were randomly extracted from the Welfare and Medical Service Network System (WAM NET) of all 47 prefectures in Japan.

3. Statistics Analysis

After simple tabulation for each item, we conducted the Mann-Whitney U-test and chi-square test. We examined significant differences by analyzing adjusted, standardized residuals, setting the significance level at $p< .05$ and calculating phi- and Cramer's V coefficients. For all statistical processes, we used SPSS Statistics Ver. 23.0. We also categorized free descriptions regarding points of improvement of care planning systems based on similarities, and analyzed their contents.

III. Results

A total number of 780 (response rate: 38.0%) completed questionnaires were collected, and 714 (effective response rate: 35.7%) subjects provided effective answers.

1. Basic Attributes (Table.1)

Regarding the type of service, 263 (36.8%) of facility and 451 (63.2%) at-home care managers, respectively. The average Care Grade was 2.80±2.02. The most common fundamental qualification was certified care worker (n=478 [66.9%]), followed by nurse (n=78 [10.9%]). The average duration of experience was 7.35±4.68 (Min: 0.2, Max: 21.0) years, and the average number of people of whom each subject was in charge was 38.13±23.40 (Min: 1, Max: 150).

<Table.1> Basic attributes (%) n=714

Type of service	Facilities	263(36.8)
	In-home	451(63.2)
Care Grade		2.80±2.02
Basic qualification	Doctor	0(0.0)
	Nurse	78(10.9)
	Physical therapist	1(0.1)
	Occupational therapist	3(0.4)
	Nutritionist	52(7.3)
	Dental hygienist	10(1.4)
	Care worker	478(66.9)
	Social worker	48(6.7)
	Other	44(6.2)
Years of experience		7.35±4.68
Number of service users		38.13±23.40

2. Care planning (Table.2)

For care planning, 559 (78.3%) care managers used ICT, whereas 155 (21.7%) did not. The link between assessment and care planning was as follows: entirely linked: 336 (47.1%), partially linked: 307 (43.0%), and not linked at all: 71 (9.9%). Care planning was shared with service providers entirely (497; 69.6%) or partially (195; 27.3%), or it was not shared at all (22; 3.1%).

<Table.2> Care planning (n=714)

		Frequency (%)
ICT use	Using	559(78.3)
	Not using	155(21.7)
Link with assessment	Entirely linked	336(47.1)
	Partially linked	307(43.0)
	Not linked at all	71(9.9)
Sharing with service providers	Entirely shared	497(69.6)
	Partially shared	195(27.3)
	Not shared at all	22(3.1)

3. Contents of care plans (Table.3)

Care plans fully (94; 13.2%), partially (525; 73.5%), or rarely (87; 12.2%) met nutrition-related needs, or they did not meet such needs at all (8; 1.1%). They addressed all (228; 31.9%), some (468; 65.5%), or few (16; 2.2%) challenges identified through assessment, or they did not address such challenges at all (2; 0.3%). Nutrition-related information was exchanged with other types of profession in all cases (151; 21.1%), only when necessary (502; 70.3%), rarely (41; 5.7%), or never (20; 2.8%). Service users' levels of independence markedly (64; 9.0%), partially (566; 79.3%), hardly (81; 11.3%) improved, or there had been no improvements (3; 0.4%). The care planning system was satisfactory (51; 7.1%), relatively satisfactory (458; 64.1%), relatively unsatisfactory (157; 22.0%), or unsatisfactory (48; 6.7%).

<Table 3> Contents of care plans (n=714)

		Frequency (%)
Meeting/not meeting nutrition-related needs	Fully meeting	94(13.2)
	Partially meeting	525(73.5)
	Rarely meeting	87(12.2)
	Not meeting at all	8(1.1)
Addressing/not addressing challenges identified through assessment	Addressing all challenges	228(31.9)
	Addressing some challenges	468(65.5)
	Addressing few challenges	16(2.2)
	Not addressing at all	2(0.3)
Exchange of nutrition-related information with other types of profession	Exchanged in all cases	151(21.1)
	Exchanged only when necessary	502(70.3)
	Rarely exchanged	41(5.7)
	Never exchanged	20(2.8)
Improvements in service users' levels of independence	Markedly improved	64(9.0)
	Partially improved	566(79.3)
	Hardly improved	81(11.3)
	No improvements	3(0.4)
Satisfaction with care planning systems	Satisfactory	51(7.1)
	Relatively satisfactory	458(64.1)
	Relatively unsatisfactory	157(22.0)
	Unsatisfactory	48(6.7)

4. Correlations among ICT use for care planning, the type of service, link with assessment, and sharing with service providers (Table.4)

On comparing various types of service, the ICT use rate was significantly higher in home care compared with facility services (p< .05). When ICT was not used, the rates of linking assessment and care planning and sharing the latter with service providers were significantly lower (p< .05 in both cases).

<Table.4> Correlations among ICT use for care planning, the type of service, link with assessment, and sharing with service providers (n=714)

		ICT use		X^2	df	p value
		Using (%)	Not using (%)			
Type of service	Facility(n=263)	183(69.6)	80(30.4)	18.583	1	.000***
	Adjusted residual	-4.3	4.3			
	Home care(n=451)	376(83.4)	75(16.6)			
	Adjusted residual	4.3	-4.3			
Link with assessment	Entirely linked	271(80.7)	65(19.3)	19.583	2	.000***
	Adjusted residual	1.4	-1.4			
	Partially linked	247(80.5)	60(19.5)			
	Adjusted residual	1.2	-1.2			
	Not linked at all	41(57.7)	30(42.3)			
	Adjusted residual	-4.4	4.4			
Sharing with service providers	Entirely shared	395(79.5)	102(20.5)	7.723	2	.021*
	Adjusted residual	1.2	-1.2			
	Partially shared	152(77.9)	43(22.1)			
	Adjusted residual	-0.1	0.1			
	Not shared at all	12(54.5)	10(45.5)			
	Adjusted residual	-2.7	2.7			

Pearson's chi-square test ***p<.001, *p<.05

5. Correlations among ICT use for care planning, the number of service users, mean Care Grade, and years of experience (Table.5)

Service users' mean Care Grade was 2.80 (median: 2.5) when ICT was used, and 2.82 (3) when it was not used for care planning; the level of care dependency was significantly lower in the former (p< .05). Neither the number of service users nor years of experience showed significant differences (p> .05).

<Table.5> Correlations among ICT use for care planning, the number of service users, mean Care Grade, and years of experience (n=714)

		Frequency	Mean	Median	p value
Number of service users	Using ICT	559	67.59	50	.083
	Not using ICT	155	71.78	57	
Mean Care Grade	Using ICT	504	2.80	2.5	.037*
	Not using ICT	139	2.82	3	
Years of experience	Using ICT	551	7.36	7	.458
	Not using ICT	154	7.35	7	

Mann-Whitney's U-test *p < .05

6. Correlation between ICT use for care planning and the contents of care plans

On examining the contents of care plans (meeting/not meeting nutrition-related needs, addressing/not addressing challenges identified through assessment, exchange of nutrition-related information with other types of profession, improvements in service users' levels of independence, and satisfaction with care planning systems) to clarify their correlations with ICT use for care planning, no significant differences were observed in any case (p> .05).

7. Correlation between the care planning-assessment link and contents of care plans (Table.6)

When the care planning process was entirely linked with assessment, the contents of care plans fully met nutrition-related needs (61; 64.9%), and when it was not, such needs were not met at all (3; 37.5%), revealing significant differences (p< .05) in both cases. When the planning process was entirely linked with assessment, the contents of care plans addressed all challenges identified through assessment (131; 57.5%), but when it was linked only partially, they addressed only some (222; 47.4%) or few (11; 68.8%) challenges, revealing significant differences in all cases (p< .05). Furthermore, when the care planning process was entirely linked with assessment, the care planning system was relatively satisfactory (238; 52.0%), when it was linked only partially, the system was relatively unsatisfactory (84; 53.5%), and when it was not linked at all, the system was unsatisfactory (11; 22.9%), revealing significant differences in all cases (p< .05). On examining the correlations among the care planning-assessment link, exchange of nutrition-related information with other types of profession, and improvements in service users' levels of independence, no significant differences were observed in any case (p> .05).

<Table.6> Correlation between the care planning-assessment link and contents of care plans (n=714)

		Link with assessment (%)					
		Entirely linked	Partially linked	Not linked at all	χ^2	df	p value
Meeting/not meeting nutrition-related needs	Fully meeting	61(64.9)	25(26.6)	8(8.5)	23.924	6	.001**
	Adjusted residual	3.7	-3.4	-0.5			
	Partially meeting	240(45.7)	237(45.1)	48(9.1)			
	Adjusted residual	-1.2	1.9	-1.2			
	Rarely meeting	33(37.9)	42(48.3)	12(13.8)			
	Adjusted residual	-1.8	1.1	1.3			
	Not meeting at all	2(25.0)	3(37.5)	3(37.5)			
	Adjusted residual	-1.3	-0.3	2.6			
Addressing/not addressing challenges identified through assessment	Addressing all challenges	131(57.5)	73(32.0)	24(10.5)	24.989	6	.000***
	Adjusted residual	3.8	-4.1	0.4			
	Addressing some challenges	202(43.2)	222(47.4)	44(9.4)			
	Adjusted residual	-2.9	3.3	-0.7			
	Addressing few challenges	3(18.8)	11(68.8)	2(12.5)			
	Adjusted residual	-2.3	2.1	0.3			
	Not addressing at all	0(0.0)	1(50.0)	1(50.0)			
	Adjusted residual	-1.3	0.2	1.9			
Satisfaction with care planning systems	Satisfactory	30(58.8)	19(37.3)	2(3.9)	30.097	6	.000***
	Adjusted residual	1.7	-0.9	-1.5			
	Relatively satisfactory	238(52.0)	181(39.5)	39(8.5)			
	Adjusted residual	3.5	-2.5	-1.7			
	Relatively unsatisfactory	54(34.4)	84(53.5)	19(12.1)			
	Adjusted residual	-3.5	3.0	1.0			
	Unsatisfactory	14(29.2)	23(47.9)	11(22.9)			
	Adjusted residual	-2.6	0.7	3.1			

Pearson's chi-square test ***p< .001, **p< .01

8. Correlation between the sharing of care planning with service providers and contents of care plans (Table 7)

When the care planning process was entirely shared with service providers, the contents of care plans fully met nutrition-related needs (74; 78.7%), and when it was shared only partially, they rarely met such needs (38; 43.7%), revealing significant differences in both cases (p< .05). When the care planning process was entirely shared with service providers, the contents of care plans addressed all (182; 79.8%) challenges, when it was shared only partially, they addressed some (147; 31.4%) or few (8; 50.0%) challenges, and when it was not shared at all, they addressed few (2; 12.5%) challenges identified through assessment, revealing significant differences in all cases (p< .05). Furthermore, when care planning was entirely shared with service providers, the care planning system was satisfactory (43; 84.3%) or relatively satisfactory (332; 72.5%), when it was partially shared, the system was relatively unsatisfactory (54; 34.4%), and when it was not shared at all, the system was relatively unsatisfactory (9; 5.7%), revealing significant differences in all cases (p< .05). On examining the correlations among the sharing of care planning with service providers, exchange of nutrition-related information with other types of profession, and improvements in service users' levels of independence, no significant differences were observed in any case (p> .05).

<Table.7> Correlation between the sharing of care planning with service providers and contents of care plans (n=714)

		Sharing with service providers (%)					
		Entirely shared	Partially shared	Not shared at all	χ^2	df	p value
Meeting/not meeting nutrition-related needs	Fully meeting	74(78.7)	19(20.2)	1(1.1)	19.366	6	.004**
	Adjusted residual	2.1	-1.7	-1.2			
	Partially meeting	370(70.5)	137(26.1)	18(3.4)			
	Adjusted residual	0.8	-1.2	0.9			
	Rarely meeting	47(54.0)	38(43.7)	2(2.3)			
	Adjusted residual	-3.4	3.7	-0.5			
	Not meeting at all	6(75.0)	1(12.5)	1(12.5)			
	Adjusted residual	0.3	-0.9	1.6			
Addressing/not addressing challenges identified through assessment	Addressing all challenges	182(79.8)	40(17.5)	6(2.6)	26.371	6	.000***
	Adjusted residual	4.1	-4.0	-0.5			
	Addressing some challenges	307(65.6)	147(31.4)	14(3.0)			
	Adjusted residual	-3.2	3.4	-0.2			
	Addressing few challenges	6(37.5)	8(50.0)	2(12.5)			
	Adjusted residual	-2.8	2.1	2.2			
	Not addressing at all	2(100.0)	0(0.0)	0(0.0)			
	Adjusted residual	0.9	-0.9	-0.3			
Satisfaction with care planning systems	Satisfactory	43(84.3)	8(15.7)	0(0.0)	20.283	6	.002**
	Adjusted residual	2.4	-1.9	-1.3			
	Relatively satisfactory	332(72.5)	116(25.3)	10(2.2)			
	Adjusted residual	2.2	-1.6	-1.9			
	Relatively unsatisfactory	94(59.9)	54(34.4)	9(5.7)			
	Adjusted residual	-3.0	2.3	2.2			
	Unsatisfactory	28(58.3)	17(35.4)	3(6.3)			
	Adjusted residual	-1.8	1.3	1.3			

Pearson's chi-square test ***$p < .001$, **$p < .01$

9. Points of improvement of care planning systems (Table.8)

Through analysis of the care managers' free descriptions, we created 130 codes, 18 subcategories (< >), and 7 categories ([ ]), explaining points of improvement of care planning systems as follows: <The necessity of reviewing the current care planning system> and <its poor usability> indicated the necessity of [enhancing the usability of the system]. To resolve <difficulty in clarifying nutritional conditions through assessment> and <difficulty in identifying challenges through assessment> due to <an insufficient connection between assessment results and care plans> and <no link between assessment and care planning>, [linking care planning] and [improving assessment to accurately identify challenges] may be essential. Furthermore, <insufficient information-sharing> and <insufficient collaboration among different types of profession and service> revealed the demand for [systems that facilitate

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information-sharing], while <insufficient consideration of individuality when planning> revealed the demand for [systems that allow care planning with sufficient consideration of individuality]. [The necessity of digitization] was also suggested to improve the current <not yet digitalized> system.

<Table.8> Points of improvement of care planning systems (n=130)

Categories	Subcategories	Number of codes
Enhancing the usability of the system	Burdensome data entry	6
	Poor usability of the current care planning system	19
	Necessity of reviewing the current care planning system	8
	Need for systems with higher usability	4
	Poor environments to use the care planning system	6
	Limited time frames to use the care planning system due to heavy workloads	14
	Variations in skills to use the system among persons	6
Improving assessment to accurately identify challenges	Difficulty in clarifying nutritional conditions through assessment	6
	Difficulty in identifying challenges through assessment	8
	Poor usability of the current assessment system	8
	Care managers' lack of knowledge	3
Linking care planning	Insufficient connection between assessment results and care plans	11
	No link between assessment and care planning	7
	Not systematically linked	5
Systems that facilitate information-sharing	Insufficient information-sharing	4
	Insufficient collaboration among different types of profession and service	3
Systems that allow care planning with sufficient consideration of individuality	Insufficient consideration of individuality when planning	6
Necessity of digitization	Not yet digitized	6

IV. Discussion

On examining the care managers' basic attributes, the most frequent basic qualification was care worker, accounting for approximately 60%, followed by nurse, accounting for approximately 10%. These values are similar to those reported in the [Survey Report on the Quality of Long-Term Home Care Support Service Providers and Care Managers' Work] (Mitsubishi Research Institute, Inc., 2014), as care worker was the most frequent qualification among care managers, at 63.4%, followed by nurse, at 11.5%. Based on this, the results of the present study may accurately represent national tendencies.

In the present study, although nearly 80% of the care managers used ICU for care planning, the rate of entirely linking such planning with assessment was limited to 50%, and that of entirely sharing it with service providers was approximately 70%. ICT was used for care planning more actively in home care than facility services. When it was used, service users' mean Care Grade was lower. When it was not used, care planning tended to be neither linked with assessment nor shared with service providers. As home care services are provided by independent offices, and they need to collaborate with service providers, ICT use may have been promoted among them. At the same time, despite their active ICT use, the link between assessment and care planning and the sharing of the former with service providers remained insufficient in some cases, revealing their challenge. An association between ICT use and service users' Care Grade was also suggested, but this should be further examined, considering that such use was not significantly correlated with improvements in their levels of independence.

Concerning care plans, 80 to 90% of the care managers answered that care plans met nutrition-related needs, addressed challenges identified through assessment, nutrition-related information was exchanged with other types of profession, and there had been improvements in service users' levels of independence. On the other hand, 30% of them found their care planning systems unsatisfactory, suggesting that importance is given to individual care managers' skills, rather than systems, when creating care plans at present. The absence of any correlation between ICT use for care planning and the contents of care plans also suggests such a situation.

As for the correlations of linking and sharing care planning, when care planning was entirely linked with assessment, care plans met all nutrition-related needs, and they addressed all challenges identified through assessment. Based on this, a link between assessment and care planning may be indispensable for the creation of care plans that facilitate nutrition improvement. Care plans also met all nutrition-related needs, and they addressed all challenges identified through assessment, when care planning was entirely shared with service providers. Therefore, the sharing of care planning with service providers may be another requirement for such creation. In contrast, when care planning was not linked with assessment, or it was not shared with service providers, the care planning system was relatively unsatisfactory/unsatisfactory in 40 to 70% of all cases. Thus, the rate of ICT use for care planning was high, but care plans were neither sufficiently linked with assessment nor sufficiently shared with service providers. This result is similar to that reported by the Ministry of Health, Labour, and Welfare (Ministry of Health, Labour, and Welfare, 2014). According to this report, many ICT-based systems are not being effectively operated. Nutrition improvement may be one of the challenges faced in the current situation.

As points of improvement of care planning systems, the care managers mainly noted the importance of enhancing the usability of the system, improving assessment to accurately identify challenges, linking assessment and care planning, sharing information, considering service users' individuality when planning, and promoting ICT use. These points are similar to those reported in a previous study, examining measures to establish care systems (Yamamoto, 2001). Thus, they suggest the necessity of promoting the sharing of related information, adopting IT (information technology)-based support information network systems, and actively and effectively using them.

Based on these findings, we propose an ICT program to prevent the progression of care dependency among care service users by improving their nutritional conditions through interprofessional collaboration, adopting the following approaches: 1) incorporating the Alb level, BMI value, food types, food intake, and walking ability into assessment as required items, as their importance was shown in our previous studies (Fujio & Kodaira, 2014; and Fujio, Ogawa, Inoue, et al., 2016). The standardization of assessment will facilitate the identification of challenges to nutrition improvement, and these challenges should be organically reflected on care plans, actively and effectively using ICT; 2) encouraging communities to share their care planning systems to promote the sharing of care plans for nutritional improvement with service providers; and 3) promoting interprofessional collaboration by sharing these care planning systems. These approaches are based on the standardization, IT use, sharing, open, and collaboration promotion policies advocated by Yamamoto toward the systematization of community-based comprehensive health care (Yamamoto, Yokoyama & Yamada, 2010). Regarding such systematization, some researchers defined systems as collaboration (Yokoyama & Yamamoto, 2004), and collaboration signifies cooperation among equal partners to fulfill their common purpose/purposes based on individual members' resources, functions, roles, and abilities. As a future perspective, it is expected that interprofessional collaboration will be further promoted with the development of care planning systems that facilitate nutrition improvement to prevent the progression of care dependency among care service users. Case studies may also be needed to put the proposed ICT program into practice.

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ORIGINAL ARTICLE

Construct of “Individuality” Perceived by Nursing Care Workers:

A Qualitative Interview Study

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ABSTRACT

The research objective is to clarify the awareness of nursing care workers how they perceive “Individuality” of users and what they actually do to respect “individuality” when providing cares. We had semi-structured interview among 20 nursing care workers who worked at care welfare facilities over three years. We prepared verbatim and qualitatively analyzed data using inductive approach. As a result, we had 52 codes, 13 sub-categories and 6 categories, and found that nursing care workers provide essential care “now” and “here” for individual users. The word, “individuality” includes the consistency sought when providing cares and the uniqueness of individual nursing care workers with a certain balance, and this shows unique relationship of users and nursing care workers.

＜Key-words＞
individuality, nursing care job, elderly, users

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I. Introduction

Japanese elderly is rated at 27.7% in 2017 and the average life expectancy records the highest in history, 81.09 and 87.26 for male and female, respectively. Elderlies are increasing every year. Social security spending such as pension, medical, nursing care is increasing in direct proportion with an increase in elderlies. Furthermore, with the economical growth after World War II, the changes in lifestyle and value create various issue for the elderly society in Japan (General Incorporated Foundation, Edited by Health, Labor, and Welfare Statistics Association, 2018).

Becoming elderlies, it is a critical issue for our society how we spend the long elderly period. In general, elderlies suffer chronic disease disturbing their daily lives and wish to spend their rest of time at their long living home, therefore welfare for elderlies are now a significant issue. Welfare for elderlies are fundamentally consisted of welfare service at facility and nursing home, and they provide services based on nursing insurance program launched in 2000. Concrete nursing service is developed by nursing support specialists to provide cares by care workers and visiting helpers (Shigeyo OKUNO & Kazuko ONISHI, 2017).

Nursing care workers seem to provide cares using the word, “individuality” such as valuing “individuality” to respect individual users. Users have different needs at each time and occasion. Sometimes, they don’t even understand their own needs. We may seem to provide cares respecting “individuality” by assuming it’s a gender or historical life specific needs (e.g., “one is good at xxx due to one’s past job” or “one has interests in xx, so likes xx,”). But we may not have been provided what users really need. While “Individual care” is raised as one of essential capabilities of a nursing care worker, the individual care may not have provided in reality (Nursing Care Worker Basic Training Text Preparation Committee, 2018). Nursing care workers use the expression “value individuality” when respecting individual users. However, there is no clear terminology or process to capture “individuality” from the past research.

The research objective is to clarify the awareness of nursing care workers how they perceive “Individuality” of users and what they actually do to respect “individuality” when providing cares.

By clarifying the awareness of “individuality” captured vaguely, we can see what part of users the nursing care workers see and value in regard to nursing care.

The research result will indicate the first step for nursing care workers to provide a concreate care that “respects individuality” without stereotyped view by created through using a specific word, “individuality.”

II. Study Method

1. Research Method

Semi-structured interview using one-on-one interview

2. Research Sample

20 nursing care workers fulfill the below criteria:

1) Obtains experience or currently working at a nursing care facility in Kanto area
2) Has nursing care certification and three years or more of experience of nursing care
3) No special training/education on “individuality,” which is the research subject

3. Research Period

April – June, 2014

4. Interview Method

Interviewed in an individual room for 60 – 80 minutes

5. Research Item for Interview

The research askes about the “individuality” itself, therefore did not intentionally explain its definition, but asked to openly comment respondents’ own view of “individuality”

Research Item:

1) Basic character (gender, age, occupation, years of experience)
2) Spontaneous image when hearing “Individuality”
3) Importance of “Individuality”
4) Why respondents feel/think it is important
5) Free talk what they feel/think of “Individuality”

The whole interview was recorded.

6. Analytic Method

We use the following process for the qualitative inductive analysis to understand “individuality”:

Developed verbatim from recording interviews, coded by grouping their wording by avoiding to include multiple elements and sub-categorized with relevant codes by looking overall. Furthermore, developed groups by sorting sub-category group from relevant content.

To enhance reliability and validity of analysis, we repeatedly discussed until we come to consensus under the supervision by the specialists of nursing care education and study.

7. Ethical Consideration

We conducted the research with the approval of the ethical committee at International University of Health and Welfare. We briefed respondents the objective and method in writing/verbal and got agreement. The explanation included that the participation to the research is on a voluntary basis, disagreeing will not be the detriment to respondents, respondents can quit participation during the research even after the agreement, interview data will be encoded to be anonymous and will be exclusively used for this research, data will be discarded upon completion, and the result will be published accordingly.

III Result

1. Respondent Outline

1) Respondent attribute (Table 1)

20 certified nursing care workers, 10 males (average age: 40.9, average experience: 11.9 years) and 10 females (average age: 44.9, average experience: 13.5 years).

Their occupations were at home nursing care, elderly nursing care facility, special elderly nursing home, regional comprehensive support center, intellectual disability center, day care, short stay care, group home facility, and paid elderly nursing home.

Table 1 Respondent's Basic Attributes

Respondents	Gender		Age	Experience (years)	Job Experience
A	Male		50	4	Visiting nursing
B	Male		39	17	Ellery nursing care facility
C	Female		30	5	Ellery nursing care facility
D	Female		48	10	Day care, Special elderly nursing home, Community support center
E	Female		57	12	Intellectual disability center, Elderly nursing care facility
F	Female		33	13	Day care
G	Female		46	12	Visiting matching, Special elderly nursing home, Day care
H	Male		36	16	Special elderly nursing home, Day care
I	Male		34	11	Visiting bathing, Special elderly nursing home, Nursing care home, Day care
J	Female		33	7	Special elderly nursing home, Nursing home with dementia care, Day care
K	Female		55	20	Special elderly nursing home Ellery nursing care facility
L	Male		34	12	Day care, Special elderly nursing home, Short stay care, Group home facility
M	Male		45	14	Special elderly nursing home, Paid elderly nursing home, Day care
N	Male		30	11	Home nursing care, Special elderly nursing home
O	Male		34	6	Group home facility, Home nursing care
P	Female		50	27	Special elderly nursing home, Elderly nursing care facility
Q	Female		53	15	Short stay care, Special elderly nursing home, Elderly nursing care facility
R	Male		57	14	Special elderly nursing home, Day care
S	Male		50	14	Special elderly nursing home, Elderly nursing care facility, Day care
T	Female		44	14	Special elderly nursing home, Elderly nursing care facility

2. Screened Category Result

1) Category Outline

After the data analysis, there were 52 codes, 13 sub-categories, and 6 categories. We indicated the category as 【 】, the sub category as < >, and code as [ ].

6 categories were named【Accepting a user's own style】,【Life with user being oneself】【Desire the support to be independent】【vague individuality】【individuality to be noticed by family】【Basic of nursing care】(Table 2).

Table 2 "Individuality" perceived by nursing care worker

	Category	Sub-category	Code
1	【Accepting a user's own style】	<Care accepting user's own style>	[Understanding a user leads to acceptance] [Accepting an individual just the way one is] [Looking at the reality of a user there] [Observing a daily behavior] [Need to learn from a user]
		<Care that a user can spend time by being oneself>	[What a user want, how a user want to be] [Living an ordinary life comfortably] [Even with dementia, a user can spend time the way one is] [Generating user's motivation]
2	【Life with user being oneself】	<Providing desired lifestyle>	[Relaxed place] [Lifestyle a user desires] [Respect an individual] [Supporting a user to be able to live at home] [Humane lifestyle till the end] [Living at home is true to oneself]
		<Being express one's value>	[Desire to live at home as much as possible] [User can express what one wants] [User can show one's real character] [To bring out a desire]
3	【Desire the support to be independent】	<Desire to respect>	[Things a user strongly wants and values] [Wanting to value what one still has]
		<Support to be independent>	[The environment a user can choose but provide support if necessary] [Us to find what's one is feasible and what's not] [Can bring out one's capability]
4	【Vague individuality】	<Vague individuality〉	[Difficulty of individuality due to various views] [Vagueness toward the value (one's own character)] [Individuality sought to answer although there is no answer] [Welfare community using an individual and individuality differently]
		<Individuality learnt from user>	[Able to see from user personality or atmosphere that one belongs] [Dialogue with a user] [To listen a user with one's memory] [Effort to understand a user] [Learn from users] [To explore from the wording a user speaks]
		<Individuality found from user's life history>	[Individuality is significantly influenced by user's growing environment] [Every user has background] [To understand user's job, friends, and life before marriage] [To explore life story] [Origin of user]
		<Individuality assumed from user's life history＞	[To hear past lifestyle] [Life environment, environment of times of life, family environment]
		<Individuality to be developed>	[Something to make together] [To portray the picture a user envisions]
		＜Individuality not to be stereotyped＞	[Not to be determined] [Not to conclude] [No stereotype of becoming elderly]
5	【Individuality to be noticed by family】	< Individuality to make family notice >	[Not to be captured by the past] [To make family notice]
6	【Basic of nursing care】	<Basic of nursing care>	[To understand a user oneself] [To make a user happy] [To spend time with care, the mean to get to know others] [To find the needs user seeks] [Fundamental of user care]

2) Relation of Categories

When we analyzed the correlation of sub-category and code that construct each category, the concept of "individuality" perceived by nursing care workers is as follows. In addition, Chart 1 addresses the correlation diagram of individuality concept and care perceived by nursing care workers.

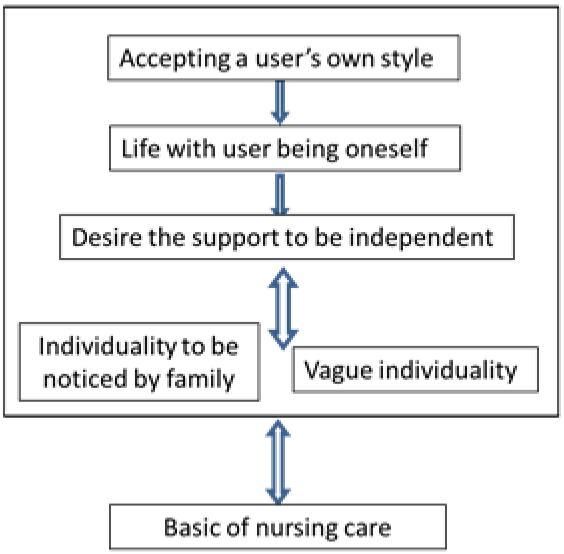

Diagram 2 Correlation diagram of individuality concept perceived by nursing care workers

Nursing care workers consider that respecting/valuing "individuality" is to understand 【Accepting a user's own style】, and that is to understand users, accept an individual just the way one is, and observe one's daily behavior. Furthermore, it is needed to be able to live the way one is, and that is to provide cares bringing out what a user wants, making comfortable life, and spending time with one's own style.

To live with one's own style, we consider it is necessary to support a user to stay at comfortable space and provide humane lifestyle till the end for one's desired life so that one can realize 【Life with user being oneself】. In addition, we feel it is essential to provide the care that a user can say one's desire to express one's own style. For a user to spend one's life at home and live humane lifestyle, we think we need to understand user's 【Desire the support to be independent】, and that is that a user can choose what one wants and explore what's feasible and what's not. As the individuality of users is diversified and difficult to understand its various aspects, it is understood as 【Vague individuality】, therefore we should not to be stereotyped but understand it through each user, explore and imagine from one's life history. We also felt we can create an individuality together with users as it was understood from the past life history, however, they are not living the past any more but living now changing every day, therefore one should be different from the past. On the other hand, many of their family have been stuck in the past, so that we felt 【individuality to be noticed by family】 is also important.

The word, "Individuality" is key to actually provide the individual care sought as【basic of nursing care】

IV. Findings

1. Concept of "individuality" from nursing care worker's view

The word "Individuality" is a general term but no specific definition and understood differently by people. However, "Individuality" sounds good with warmth, therefore used a lot in nursing cares. Difficulty of the word, "Individuality" is similar to understanding ourselves. There is a proverb "Know thyself." Is there anyone who can accurately explain about "being oneself"? Life is a journey to find what is "being oneself" till the end.

In regard to the difficulty to know oneself, Shinfuku (2001) states "Thyself (One) is not something tangible, therefore elusive. When you look at a mirror, your face appears, but face is outside, surface of yourself, not thyself." "You are broad, complex and ever-changing. You can capture a part of it in a situation, but cannot capture everything. What can be captured is just a part of you, one side, and one area" "You start out something you don't know (unknown), and you get to know, understand, and manage better as you grow, but there always remains something you don't know forever (unknowable)."

In this way, while it is difficult to know yourself having unknowable yourself and being ever-changing, you always feel the consciousness of being yourself due to underlying coherence and continuity together.

The word, "individuality" is also broad, complex and ever-changing. You can capture a part of it in a situation, but cannot capture the whole thing. What can be captured is just a part of it, one side, and one area. In this way, it has similar sense.

One difference is that "Individuality" is used for others, not to yourself. "Individuality" of users in nursing care is utilized by nursing care works, on the other hand, "being oneself" is utilized by users. "Individuality" can be perceived as "user's being oneself."

In the interview, there was a respondent saying 'individuality is portraying what we envision. When we work, we imprint the image through (the thinking process of) my mother used to be this way, but she is now that way, so she is probably this way. Therefore, when I am asked about "Individuality," it is very difficult.' Can family or a nursing care worker truly understand users' "Individuality"? In other words, it gives a question if the "Individuality" nursing care worker sees matches with "being oneself" users perceives.

"Individuality" and "being oneself" cannot be determined by nursing care workers. "Individuality" is an image others see. Given that, nursing care workers use an abstract word, "Individuality" in their daily practice and it can lead to misunderstanding that it supports respectful, ideal cares to users. Using the word, "Individuality" does not accurately express a user oneself. If we cannot provide cares that meet individual needs, it is just a self-satisfaction of nursing care workers by using the word "Individuality."

From our interview, many nursing care workers commented that "Individuality" is vague and elusive, but it is a significant word. To value user's individuality, nursing care workers provide daily cares by accepting user's own style, understanding life history, and willing to support one's desired life. Since their care is based on the vague, elusive "Individuality" word, cares among nursing care workers are not possibly consistent. If the care is effective to users, "Individuality" is considered to be effective, however, if the care is not effective, "Individuality" will be questioned. One respondent commented that "I don't know the past (of a user), but we have now based on the past experience and we build together from here. Being together, something has changed, something unique to oneself can be developed is what I think the most. New individuality to be created." We think that nursing care workers feel the cares looking now and future of users living now including their past without focusing on the word "Individuality" and value the attitude to discover a new part of users together with users.

In the conclusion, as mentioned earlier, nursing care workers using the word, "individuality" leads to understand uniqueness, personality, value, persistency, and psychological aspect such as pride that comes from emotions/feelings. This can be considered that nursing care workers have an attitude of respecting each user.

While we need to have consistent nursing care policy, individual users' reactions and expressions are different to each nursing care worker. Therefore, it is critical for team care to provide effective cares appropriate for each situation based on an individual relationship of a user and a nursing care worker. However, a nursing care worker should not only focus on an individual user's care, but good balance of consistent care policy and individual care.

2. Care toward "Individuality" perceived by nursing care worker

We found that nursing care workers provide essential care by judging what the user want "now" and "here." It means nursing care workers commonly value a facing user.

From the interview result, nursing care workers said the word, "Individuality" was important and it was classified into six categories, the word was seen abstract, vague and elusive. In general, "Individuality" is to respect lifestyle and value developed from one's long life experience, however, the value of users were diversified and uncertain in the interview.

In the interview, we found nursing care workers value is what Carl Ransom Roger states as a basic of personal support, "now" and "here" that were accumulated knowledge and technological experience in their care practice (Hiroshi ITOH, 1982). While nursing care workers unconsciously do this, many of them said they need to know the past to understand the current user.

In other words, nursing care worker do not only focus on the word, “Individuality,” but consider the attitude of discovering a new user together by providing a care looking into the user’s past, today, and future.

Carl Ransom Rogers states that personal support is the sensitivity of instant moment within here and now and immediate presence, and it is critical to be sensitive to the client’s being properly. 6)

As shown to the comment of nursing care workers, 【Accepting a user’s own style】, 【Life with user being oneself】, 【Desire the support to be independent】, 【Vague individuality】, 【Individuality to be noticed by family】 and 【Basic of nursing care】, they provide cares needed by users and family at instant moment of now and here.

V. Conclusion

While there are various research approach on “Individuality,” respondents commented that “Individuality” was vague in the interview of nursing care workers, and we found that they provided a different nursing care based on the perception accordingly. We have a risk of providing consistent team care when providing the care based on elusive “Individuality.”

Nursing care workers always provide cares by respecting user’s life history and value, always trying to understand a facing user, and looking at what’s happening “now” and “here” regardless if they are elderly suffering dementia.

The word “Individuality” include consistency sought for cares and uniqueness of individual nursing care workers, and this shows unique relationship of a user and a nursing care worker.

VI. Limitation and challenge of the research

This study was done among 20 nursing care workers, therefore it is difficult to generalize the understanding of “Individuality” among nursing care workers. We would like to continue and conduct research with bigger samples in the future.

VII. Acknowledgement

We deeply appreciate to all of nursing care workers providing invaluable data to us through response and cooperation during your busy practices. This paper is re-edited with data used for the paper of University of Health and Welfare Graduate School in 2014.

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Original Article

The Development and Relevant Factors of a Self-Care Scale for Young Females with Dysmenorrhea

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ABSTRACT

The number of females who complain of dysmenorrhea has increased compared to 30 years ago; however, they are not good at performing self-care. Hence, we attempted to create a self-care scale for dysmenorrhea, and examine related factors.

We investigated the factors which affect self-care for dysmenorrhea using qualitative surveys, and created 10 constituent concepts based on a revised Pender's health promotion model. Then, we conducted preliminary and main surveys, and a survey for the related factors.

We obtained 23 items in 6 elements for a self-care scale for young females with dysmenorrhea, and confirmed the validity and reliability in the main survey and the survey on its related factors.

In the survey for related factors, people with more serious dysmenorrhea were less willing to try to improve their symptoms and self-care. It became clear that their short weight loss plan was related to self-care. People who often eat many snacks or sweets had they felt it would be more difficult to improve their dysmenorrhea.

We obtained 23 items in 6 elements for a self-care scale for young females with dysmenorrhea, and its reliability and validity were confirmed. As relevant factors, it was implied that the degree of their dysmenorrhea, their eating habits, sleeping habits were all co-related.

＜Key-words＞
dysmenorrhea, young females, self-care, scale, relevant factors

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I. Introduction

The background of this research suggests that there has been a change in the life cycle of contemporary women in Japan. Due to women marrying later, giving birth later in life, and the declining birthrate, the range of time in a woman's life from menarche to giving birth has widened. Before World War 2, women typically experienced menarche at the age of 15, got married around the age of 20 and gave birth until about 40; so, the number of menstrual discharges a woman experienced in her lifetime was smaller (Tanebe, 2016).

However, currently they experience menarche at the age of 12 on average, they give birth for the first time at 30 years old on average, and the birth rate has declined; thus, the number of menstrual discharges a woman experiences in her lifetime has increased ten times compared to women in previous generations. As the number of menstrual discharges has increased, the number of women who experience dysmenorrhea has also increased. According to a survey of high school and university students conducted by Shibaki in 1983, about 30% of them reported such symptoms during menstruation (Shibaki, 1983). However, in a more recent survey by Okugawa, 94.7% of women felt menstrual pain (Okugawa, 2015). The number of women who complain of menstrual pain has more than tripled over the last 30 years.

We investigated the status of dysmenorrhea not only in Japan but also in other countries. As a result of an investigation involving 240 university students in Hong Kong, the prevalence of dysmenorrhea was revealed to be 80% (Chia, Lai, Cheung, et al., 2013). Cheng and Lin investigated 616 young females in Taiwan, and found that 570 females experienced menstrual pain at some point over a one year period, and 180 females had dysmenorrhea (Cheng & Lin, 2011). According to other research, the significant risk factors were as follows: the onset of dysmenorrhea in women in a wider range of ages, longer menstrual cycles, epimenorrhagia, and increased severity of dysmenorrhea (Sanctis, Soliman, Bernasconi, et al., 2015). This information shows that the number of cases of dysmenorrhea has increased in other countries as well.

Those with no causative disease are referred to as having "functional dysmenorrhea", and those with causative diseases such as uterine fibroids and endometriosis are referred to as having "organic dysmenorrhea" Furthermore, their menstrual pain is related to the action of prostaglandin. Its yield increases when hormone balance is disrupted due to stress or factors caused by environmental changes, causing symptoms to worsen. Since women do not experience ovulation in their menstrual cycles for the first few years after menarche, there are no hormonal fluctuations, and so prostaglandin is not produced (Tanebe, 2016). Therefore, women are more likely to experience functional dysmenorrhea in their later teens to early 20's. In this study, we focused on the age group that is most susceptible to functional dysmenorrhea.

The number of females who complain of dysmenorrhea has increased; however, at the same time, they are not performing good self-care. According to a survey on high school students, 45% of them "tolerate the pain", 37% of them "massage the painful area", and 33% of them "sleep" (Nagatsu, Nagatomo, Yoshida et al., 2012). Also, according to a survey on college students, 59% of them "take pain medication", 35.9% of them "sleep or take a rest", and 34.3% of them "keep themselves warm" (Okugawa, 2015). Although some of them took internal medicine, they used commercially available drugs only after pain had already developed intensely, which reduced its effectiveness by half.

Nearly 100% of schools have finished providing menstrual education by high school. However, it was found that the information the schools provided was not sufficient in arming students with knowledge on self-care, or that information on practical self-care has not been adequately provided (Hamada, Take, Fujita et al., 2015).Therefore, I thought that if a young woman with menstrual pain can measure her own ability to self-care, it would be useful for the self-development of her improving her menstrual pain.

However, menstruation occurs monthly, and it differs depending on the individual. It is therefore important for individuals to be able to perform self-care. Thus, I thought that if young women had a self-care tool for assessing menstrual pain, it would be useful in helping them monitor themselves to improve their menstrual pain condition.

The menstrual distress questionnaire (MDQ) by Moos is a well-known tool for measuring menstruation, but although it can measure symptoms during menstruation, it is not a scale that can evaluate the ability of self-care for menstrual pain. The adolescent dysmenorrhea self-care scale (ADSCS) was developed; however, it focuses on females aged 13 to 18 years old, and the age group in which functional dysmenorrhea is the most intense is not focused on. It mainly uses a psychological approach (Ching, Meei, Hsin et al., 2004). The premenstrual symptoms screening tool (PSST) was developed; however, it is a screening tool for severe PMS and PMDD (Steiner, Macdougall & Brown, 2003). Yamauchi and Takama created the "Nursing student's self-care measuring scale for menstruation" (Yamauchi & Takama, 2011); however, it is not a self-care scale for women with menstrual pain, and it is intended to be used by nursing students. Since the number of young women with menstrual pain is increasing, we aimed to develop a self-care scale which helps general women perform self-care for their menstrual pain, and then we examined its related factors.

II. Definition of terms

1. Menstrual pain: Lower abdominal pain and back pain which occurs just before menstruation and during menstruation.
2. Young female: Women in their late teens to early twenties who have an ovulation cycle and are prone to having menstrual pain.
3. Self-care: The selection of measures to cope with the condition of menstrual pain, and the performing of those measures so that daily life will not be interrupted by the pain.

III. Subjects and Methods

1. We set the conceptual framework of the scale to be developed

Based on Pender's Revised Health Promotion Model, we modified our conceptual framework. The new elements we obtained were as follows:

1.Experiences of past self-care treatment, 2. Their menstrual situation and how they view menstruation, 3.Benefits of improving menstrual pain and its expected burden, 4. Perception of self-efficacy, 5. Feelings on self-care treatment, 6. Influence received from people in their life, 7.Influence from the internet, 8.Concrete self-care methods, 9.Intention to improve menstrual pain, and 10. Interruption or derailment from their planned self-care treatment (Pender, 2002).

2. The creation of question items for the scale

1) Preparing the draft of the scale with qualitative surveys

We conducted semi-structured interviews with 15 college students who had menstrual pain and who were between 18-22 years old. After analyzing the results, we obtained three categories, which were [Self-care Problems], [Lifestyle Problems], and [Menstrual related problems].

2) Creating a questionnaire sheet

Based on the 10 elements created from Pender's Revised Health Promotion Model, we created a scale draft of 65 items with reference to data obtained from the qualitative survey.

We used the 5-step Likert scale for our evaluations.

The terms for describing their level of agreement to the questions were "It is very true", "It is mostly true", "It is slightly true", "It is not very true" and "It is not true at all".

3. Consideration of the validity of results

1) Meeting with experts in the field

A professor who was involved in reproductive health studies in nursing and four doctoral students in the same field repeatedly engaged in the selection and correction of the question items for the scale.

We asked for advice and for confirmation of the contents from a professor of maternity nursing at another university, a doctor in a puberty outpatient department, and three teachers of epidemiology and statistics, and then revised the sentences.

2) Pre-test

Six female college students volunteered to answer the 65 items in the scale draft to check if there were any sentences in which the meaning was unclear, and then we adjusted the sentences.

3) Preliminary survey

We conducted a questionnaire survey with 296 female college students who were in their first or second year in departments related to social sciences. The survey was a scale with 65 items and attributes related to menstruation (age when menarche occurred, menstrual cycle, duration of menstruation, amount of bleeding, presence or absence of menstrual pain), and then about thirty items were obtained through exploratory factor analysis.

4. Main survey

Menstruation periods are over in about a week, and the physical changes are remarkable around that period. Hence, it is necessary that the investigation window was as short as possible. Furthermore, the age group that we focused on in this study is from an internet-savvy generation, and we also considered that the answers would involve private subjects because the subject was menstruation; thus, we chose to perform internet surveys so that the respondents could comfortably answer these questions.

There were 30 scale items in the preliminary survey's exploratory factor analysis. However, we added nine items which were deleted during the analysis because we regarded them as important; thus, we conducted the main survey using these 39 items.

We conducted the internet surveys with women who had menstrual pain and were between 18 and 22 years old. Exclusion conditions were set as follows: women who do not have menstrual pain, pregnant women, women who take birth control pills, and women who are receiving treatment for gynecologic diseases at a clinic.

We distributed the screening survey earlier, and sent this survey to those who did not fit the exclusion conditions. After one week, the same main survey sheet was sent again to the same subjects and we carried out a retest. We collected all of this data in July 2017.

5. Investigation of related factors

Due to our wish that this scale would be used by young women as much as possible, we used subjects who were women between 16 and 24 years old. The exclusion conditions were the same as the main survey.

From the results of the confirmatory factor analysis of this survey, the scale had 23 items with 6 factors. Based on these 23 items and the qualitative survey for preparing the scale draft, we investigated items related to menstruation and lifestyle through the internet. We conducted a screening study earlier, and sent this related factor survey to those who do not fit the exclusion conditions. We collected all of this data in March 2018.

6. Method of analysis

We used SPSS ver.24.0J for Windows and Amos 25.0J to conduct our analysis with the following method:

1) Analysis of items

For the ceiling and floor effects, when the average value ± standard deviation was greater than or equal to 5 or less than or equal to 1, they were set as a deletion criterion. For the IT correlation analysis, a value of less than 0.3 was set as the deletion criterion. For the GP analysis, we made sure that the average scores in the upper group were always higher for each item.

2) Factor analysis

In the exploratory factor analysis, some items were excluded based on the item analysis, and then we performed the factor analysis using the maximum likelihood method and a promax rotation. Items whose factor loading amount indicated 0.4 or more for plural questions and items whose factor loading amount for the same factor indicated less than 0.4 were deleted.

For the confirmatory factor analysis, we performed an analysis on model adaptation using a covariance structure analysis.

A model is considered acceptable,when two or more fit indices are met including RMSEA and CFI(Nakayama,2018). For adequately fitting models,these fit indices should meet the following criteria:GFI>0.9,AGFI>0.85(Nakayama,2018),GFI≧AGFI(Oshio,2016), CFI>0.9(Nakayama,2018)and RMSEA<0.1(Oshio,2016;Nakayama,2018).

In this research, maximum likelihood estimation was used for the parameter estimation.

3) Multiple regression analysis

In the related factors survey, we set items related to menstruation and lifestyle, which were categories obtained in the qualitative surveys, as independent variables. We then set average scores from the first to sixth subscale of the scale as dependent variables, and then performed a multiple regression analysis using the stepwise method.

7. Consideration of reliability

For both the main survey and the related factors survey, we obtained the Cronbach's α coefficient of the whole scale and each factor to confirm internal consistency.

In this survey, we conducted a retest after one week to confirm its stability, and calculated the intra-class correlation coefficient of each factor and the whole scale.

8. Consideration of validity

1) Criterion-related validity

In order to consider criterion-related validity, in this survey we referred to the "Menstruation self-care scale for nursing students" (Yamauchi & Takama) which we thought was partially related to our "Self-care scale for dysmenorrhea in young females", and then we calculated the Spearman's rank correlation coefficient between them.

2) Validity of structural concept

We conducted a confirmatory factor analysis of the main survey and of the related factors survey to confirm whether it constitutes the same structural concept or not.

IV. Ethical considerations

For the semi-structured interview surveys and preliminary surveys, we explained our research to the participants, we mentioned the purpose, summary, significance, anonymity, freedom of discontinuation, how we were going to use the data, our report on the research results, and contact information, and then we obtained consent forms from them before conducting the research.

The internet survey was consigned to a research company; however, we created the agreement screen by ourselves and had them use it, and the questionnaire sheet was sent only to those who gave us consent. Prior to the survey, we explained the following matters to them on the computer form: the purpose, outline and significance of our research, that there was no conflict of interest with the consigned company, their retention of anonymity, that the main survey and retest are linked by a symbol, but passwords were set for access to the codes, and the passwords are changed periodically, as well as our contact addresses.

This research was carried out after obtaining consent from the Ethics Review Committee of the university (Approval number: 14-Io-63, 15-Io-139, 17-Io-7).

V. Results

1.The results of the main survey

1) Attributes of the subjects

The screening survey sheet was distributed to 67,996 women, and 2,000 women responded to it. 1,893 of them met our age requirements, the main survey sheet was sent to 1,404 women who did not fall under the exclusion conditions, and who had menstrual pain. Subsequently we obtained 1,000 effective responses (the effective response rate was 71.2%). A retest was conducted one week later, and effective responses were obtained from 705 women (the effective response rate was 70.5%).

2) Analysis of items

Of the 39 scale items, there were no items which showed ceiling and floor effects. Two items with r = 0.3 or less in the IT correlation analysis were deleted. There were no deleted items due to the GP analysis.

3) Factor analysis

After deleting the two items from the IT analysis, we performed an exploratory factor analysis using the Maximum Likelihood Method and Promax rotation. There was a fall in the scree plot and the cumulative contribution rate exceeded 50%; thus, it was determined to be a six factor structure. There were 13 items in which factor loading was 0.4 or less and three items in which intra-class correlation coefficients was 0.6 or less, so these items were deleted, which resulted in 23 items with 6 factors (see Table 1).

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<Table 1> Exploratory factor analysis of the main survey
Maximum likelihood method and Promax rotation Overall　α =0.864

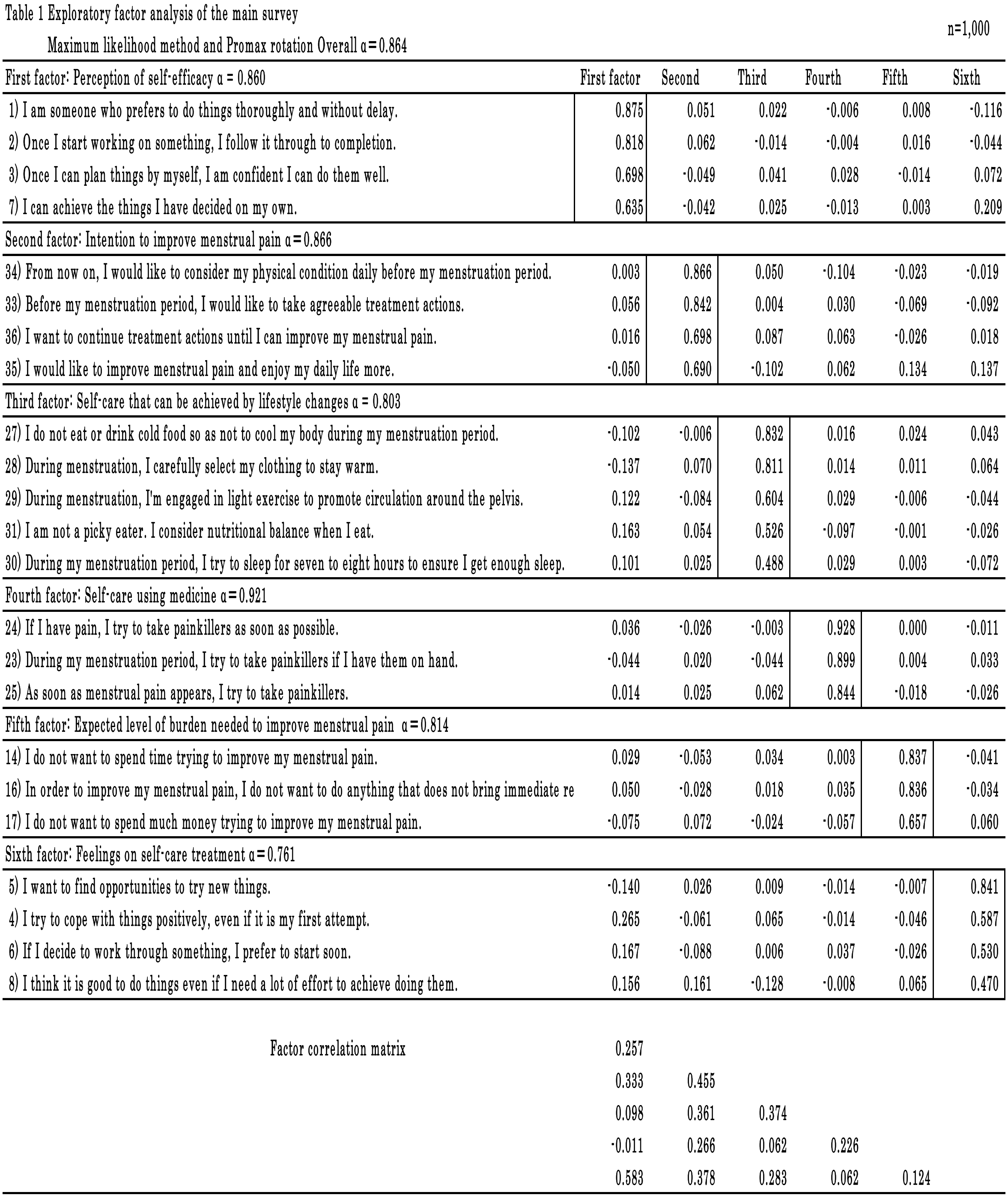
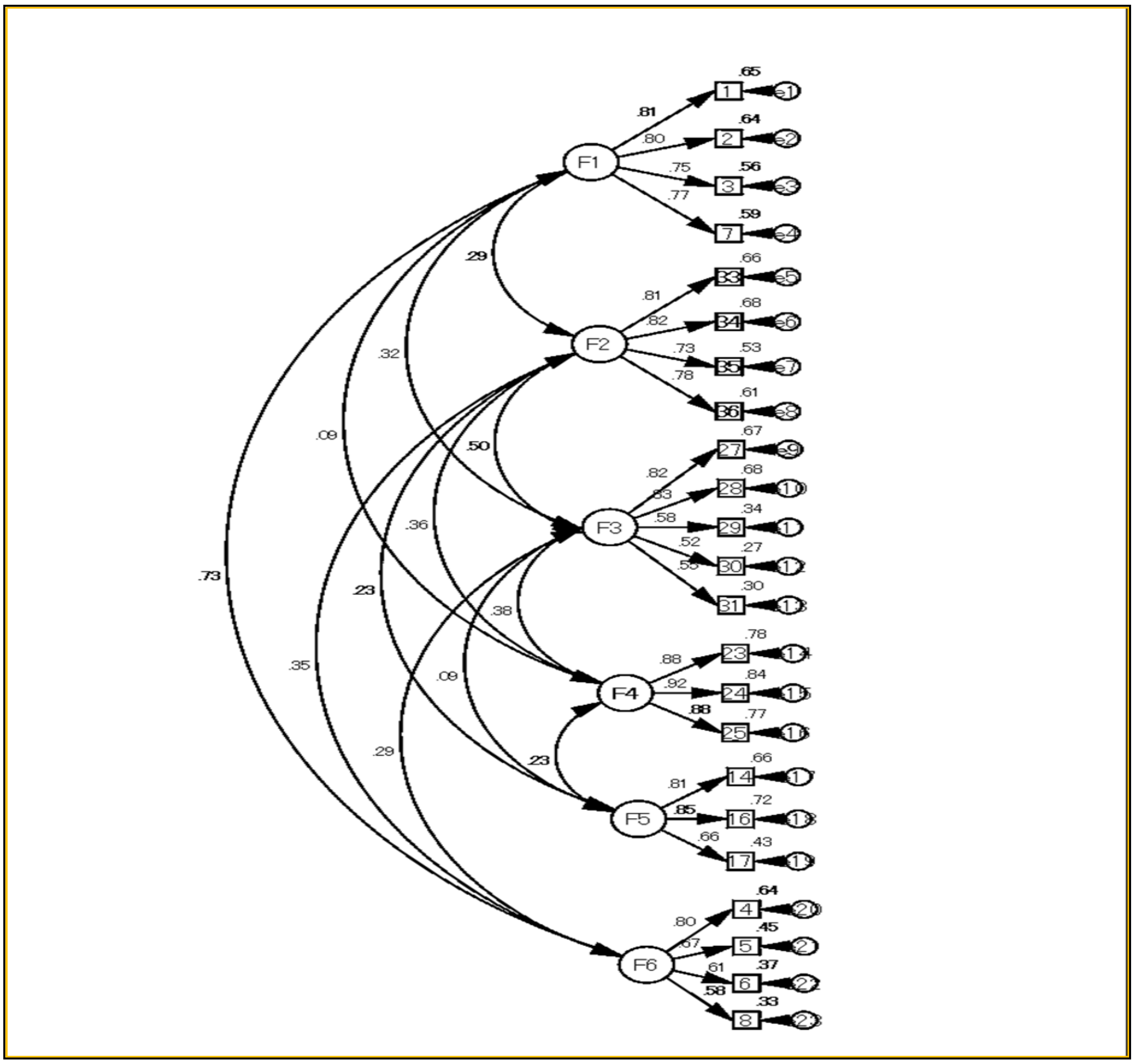


Table 1 Exploratory factor analysis of the main survey
Maximum likelihood method and Promax rotation Overall α=0.864

n=1,000

First factor: Perception of self-efficacy α = 0.860	First factor	Second	Third	Fourth	Fifth	Sixth
1) I am someone who prefers to do things thoroughly and without delay.	0.875	0.051	0.022	-0.006	0.008	-0.116
2) Once I start working on something, I follow it through to completion.	0.818	0.062	-0.014	-0.004	0.016	-0.044
3) Once I can plan things by myself, I am confident I can do them well.	0.698	-0.049	0.041	0.028	-0.014	0.072
7) I can achieve the things I have decided on my own.	0.635	-0.042	0.025	-0.013	0.003	0.209
Second factor: Intention to improve menstrual pain α=0.866						
34) From now on, I would like to consider my physical condition daily before my menstruation period.	0.003	0.866	0.050	-0.104	-0.023	-0.019
33) Before my menstruation period, I would like to take agreeable treatment actions.	0.056	0.842	0.004	0.030	-0.069	-0.092
36) I want to continue treatment actions until I can improve my menstrual pain.	0.016	0.698	0.087	0.063	-0.026	0.018
35) I would like to improve menstrual pain and enjoy my daily life more.	-0.050	0.690	-0.102	0.062	0.134	0.137
Third factor: Self-care that can be achieved by lifestyle changes α = 0.803						
27) I do not eat or drink cold food so as not to cool my body during my menstruation period.	-0.102	-0.006	0.832	0.016	0.024	0.043
28) During menstruation, I carefully select my clothing to stay warm.	-0.137	0.070	0.811	0.014	0.011	0.064
29) During menstruation, I'm engaged in light exercise to promote circulation around the pelvis.	0.122	-0.084	0.604	0.029	-0.006	-0.044
31) I am not a picky eater. I consider nutritional balance when I eat.	0.163	0.054	0.526	-0.097	-0.001	-0.026
30) During my menstruation period, I try to sleep for seven to eight hours to ensure I get enough sleep.	0.101	0.025	0.488	0.029	0.003	-0.072
Fourth factor: Self-care using medicine α=0.921						
24) If I have pain, I try to take painkillers as soon as possible.	0.036	-0.026	-0.003	0.928	0.000	-0.011
23) During my menstruation period, I try to take painkillers if I have them on hand.	-0.044	0.020	-0.044	0.899	0.004	0.033
25) As soon as menstrual pain appears, I try to take painkillers.	0.014	0.025	0.062	0.844	-0.018	-0.026
Fifth factor: Expected level of burden needed to improve menstrual pain α=0.814						
14) I do not want to spend time trying to improve my menstrual pain.	0.029	-0.053	0.034	0.003	0.837	-0.041
16) In order to improve my menstrual pain, I do not want to do anything that does not bring immediate re	0.050	-0.028	0.018	0.035	0.836	-0.034
17) I do not want to spend much money trying to improve my menstrual pain.	-0.075	0.072	-0.024	-0.057	0.657	0.060
Sixth factor: Feelings on self-care treatment α=0.761						
5) I want to find opportunities to try new things.	-0.140	0.026	0.009	-0.014	-0.007	0.841
4) I try to cope with things positively, even if it is my first attempt.	0.265	-0.061	0.065	-0.014	-0.046	0.587
6) If I decide to work through something, I prefer to start soon.	0.167	-0.088	0.006	0.037	-0.026	0.530
8) I think it is good to do things even if I need a lot of effort to achieve doing them.	0.156	0.161	-0.128	-0.008	0.065	0.470
Factor correlation matrix	0.257					
	0.333	0.455				
	0.098	0.361	0.374			
	-0.011	0.266	0.062	0.226		
	0.583	0.378	0.283	0.062	0.124	

As a result of using the covariance structure analysis, the model adaptation in the 23 items with 6 factors was as follows: GFI = 0.912, AGFI = 0.889, CFI = 0.929, and RMSEA = 0.060　(See Figure 1).



＜Figure 1＞Main survey Confirmatory factor analysis n=1,000

4) Consideration of validity

(1) Validity of our structural concept

In the exploratory factor analysis and the confirmatory factor analysis, 23 items with 6 factors were obtained. We named these factors as follows: the first factor was "perception of self-efficacy", the second factor was "intention to improve menstrual pain", the third factor was "self-care that can be achieved by lifestyle changes", the 4th factor was "self-care using medicine", the 5th factor was "expected level of burden needed to improve menstrual pain", and the 6th factor was "feelings on self-care treatment".

(2) Criterion-related validity

The scale created by Yamauchi and Takama is not a scale for women who have menstrual pain. In contrary, this scale is for women with menstrual pain. This scale is unique, but we predicted there would be similarities with the scale created by Yamauchi and Takama, so we used their scale to check criterion-related validity (see Table 2).

Table2 Correlation between a self-care scale for young females with dysmenorrhea and scale of Yamauchi / Takama

n=1,000

		Yamauchi/ Takama First factor	Yamauchi/ Takama Second factor	Yamauchi/ Takama Third factor	Yamauchi/ Takama Fourth factor
First factor Perception of self-efficacy	Correlation coefficient	0.267**	0.221**	0.186**	0.203**
	Significance probability(both sides)	0.000	0.000	0.000	0.000
Second factor Intention to improve menstrual pain	Correlation coefficient	0.442**	0.398**	0.186**	0.474**
	Significance probability(both sides)	0.000	0.000	0.000	0.000
Third factor Self-care that can be achieved by lifestyle changes	Correlation coefficient	0.406**	0.481**	0.475**	0.403**
	Significance probability(both sides)	0.000	0.000	0.000	0.000
Fourth factor Self-care using medicine	Correlation coefficient	0.206**	0.302**	0.227**	0.295**
	Significance probability(both sides)	0.000	0.000	0.000	0.000
Fifth factor Expected level of burden needed to improve menstrual pain	Correlation coefficient	0.152**	0.117**	−0.090**	0.105**
	Significance probability(both sides)	0.000	0.000	0.004	0.001
Sixth factor Feelings on self-care treatment	Correlation coefficient	0.259**	0.165**	0.102**	0.197**
	Significance probability(both sides)	0.000	0.000	0.001	0.000

** P<0.001

Spearman's rank correlation coefficient

There were moderate correlations in the second factor "intention to improve menstrual pain" and the third factor "self-care that can be achieved by lifestyle changes", and weak correlations were observed in other factors.

5) Consideration of reliability

As for its internal consistency, Cronbach's α = 0.864 for the whole scale, and the value of each factor was 0.860, 0.866, 0.803, 0.921, 0.814 and 0.761 in order from the first factor.

As for its stability, the intra-class correlation coefficient was 0.799 for the whole scale based on the results of the retest one week later, and the value of each factor was 0.833, 0.725, 0.725, 0.887, 0.720 and 0.785 in order from the first factor.

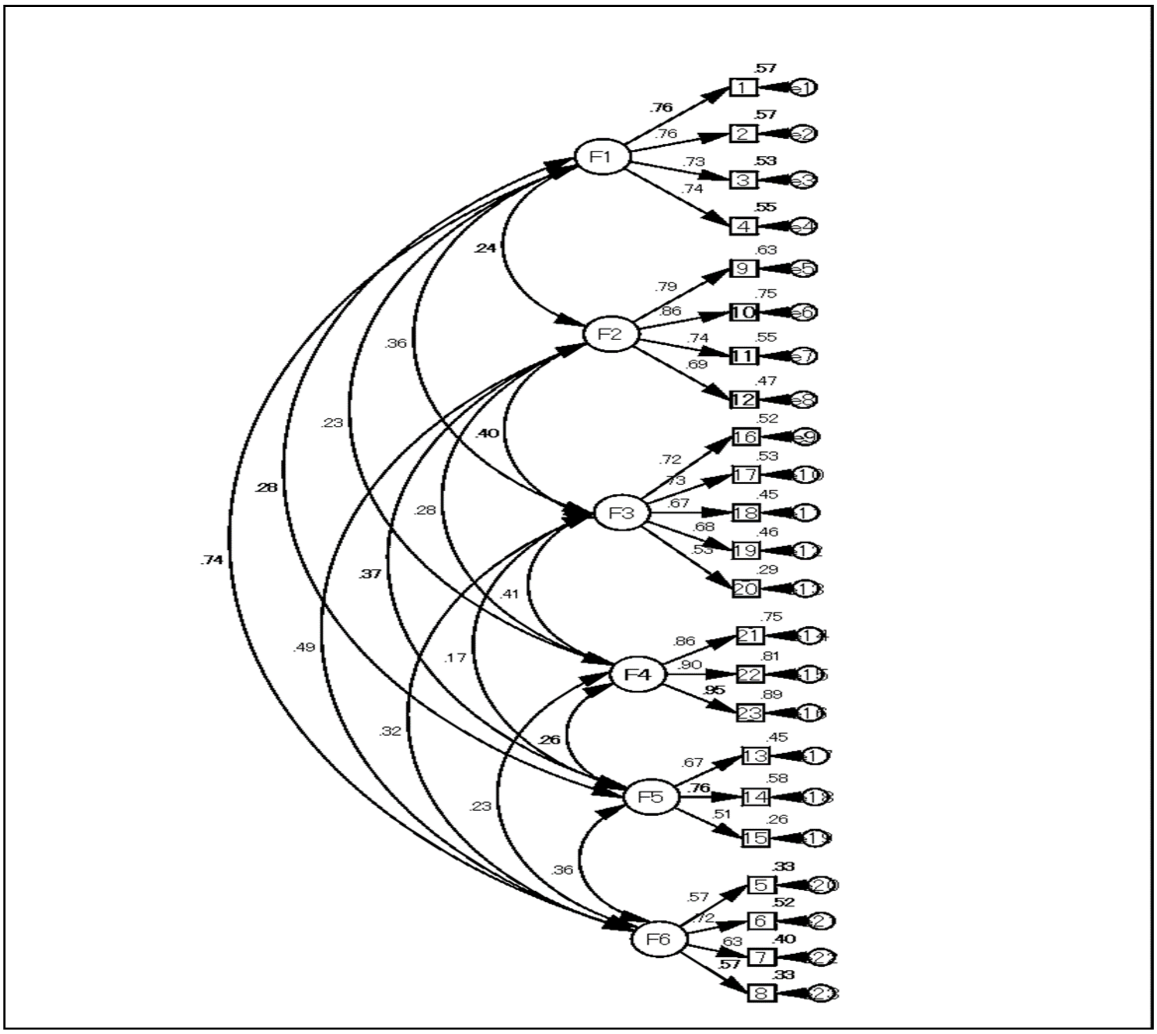
2. Results of the investigation on related factors

1) Attributes of the subjects

The screening survey sheet was distributed to 10,000 women, and 799 women responded to it. 783 of them met our age requirements. The related factor survey sheet was sent to 400 women who had menstrual pain and did not fall under our exclusion conditions. Subsequently, we obtained 300 effective responses (the effective response rate was 75.0%).

2) Factor analysis

As a result of the confirmatory factor analysis using the covariance structure analysis, the model adaptation was as follows: GFI = 0.873, AGFI = 0.837, CFI = 0.920, RMSEA = 0.061 in the 23 items with 6 factors (See Figure 2).



＜Figure 2＞Related factor investigation Confirmatory factor analysis n=300

3) Consideration of validity

Validity of the structural concept

As in the main survey, there were 23 items with 6 factors, and with the model adaptation, the GFI and AGFI dropped slightly; however, the CFI and RMSEA were almost identical; thus, the structural concept was confirmed.

4) Confirmation of reliability

For internal consistency, Cronbach's α= 0.869 for the whole scale, and the value of each factor was 0.834, 0.854, 0.799, 0.930, 0.683 and 0.718 in order from the first factor.

5) The results of the multiple regression analysis (stepwise method) (See Table 3)

Table3 Relationship between factors 1 to 6 and menstruation and lifestyle(multiple regression analysis : stepwise) n=300

Dependent variable	Independent variable	R^2	AR^2	B	SE	β	p-value
First factor Perception of self-efficacy	Sleeping habits	0.079	0.07	0.146	0.045	0.184	0.001
	There are many snacks			-0.120	0.040	-0.168	0.003
	You are on a diet			0.086	0.035	0.136	0.016
Second factor Intention to improve menstrual pain	Degree of menstrual pain	0.117	0.105	-0.180	0.047	0.207	0.000
	Meel time is irregular every day			0.150	0.042	0.207	0.000
	You are on a diet			0.107	0.039	0.151	0.007
	Sleeping habits			0.126	0.052	0.141	0.016
Third factor Self-care that can be achieved by lifestyle changes	Degree of menstrual pain	0.097	0.088	-0.157	0.047	-0.185	0.001
	You are on a diet			0.151	0.039	0.215	0.000
	Bathing habits			0.069	0.031	0.125	0.025
Fourth factor Self-care using medicine	Degree of menstrual pain	0.306	0.301	-0.712	0.066	-0.526	0.000
	You are on a diet			0.159	0.054	0.142	0.004
Fifth factor Expected level of burden needed to improve menstrual pain	There are many snacks	0.019	0.016	0.100	0.042	0.137	0.017
Sixth factor Feelings on self-care treatment	You are on a diet	0.059	0.053	0.124	0.034	0.205	0.000
	Sleeping habits			0.113	0.043	0.149	0.009

R^2,Coefficient of determination R-squared;AR^2,Adjusted R-squared;B,Regression coefficients; SE,Standard error;ß,Standardized regression coefficients

(1) The relationship between the scores of the first factor "Perception of self-efficacy" and the lifestyle factor

The variables that were significantly related to the scores of the first factor "Perception of self-efficacy" were the lifestyle factors of sleeping habits, trying to lose weight and eating lots of snacks. The coefficient of determination R-squared was 0.079, and the adjusted R-squared was 0.070.

(2) The relationship between the scores of the second factor "Intention to improve menstrual pain" and the menstruation and lifestyle factors

The variables that were significantly related to the scores of the second factor "Intention to improve menstrual pain" were the menstrual pain level in the menstruation factor, and the 3 lifestyle factors of irregular meal time, trying to lose weight and sleeping habits. The coefficient of determination R-squared was 0.117, and the adjusted R-squared was 0.105.

(3) The relationship between the scores of the third factor "Self-care that can be achieved by lifestyle changes" and the menstruation and lifestyle factors

The variables that were significantly related to the scores of the third factor "Self-care that can be achieved by lifestyle changes" were the menstrual pain level in the menstruation factor, and the two lifestyle factors of trying to lose weight and bathing habits. The coefficient of determination R-squared was 0.097, and the adjusted R-squared was 0.088.

(4) The relationship between the scores of the fourth factor "Self-care using medicine" and the menstruation and lifestyle factors

The variables that were significantly related to the scores of the fourth factor "Self-care using medicine" were the menstrual pain level in the menstruation factor, and the lifestyle factor of trying to lose weight. The coefficient of determination R-squared was 0.306, and the adjusted R-squared was 0.301.

(5) The relationship between the scores of fifth factor "Expected level of burden needed to improve menstrual pain" and the lifestyle factor

The variable that was significantly related to the scores of the fifth factor "Expected level of burden needed to improve menstrual pain" was the lifestyle factor of eating lots of snacks. The coefficient of determination R-squared was 0.019, and the adjusted R-squared was 0.016.

(6) The relationship between the scores of the sixth factor "Feelings on self-care treatment" and the lifestyle factor

The variables that were significantly related to the scores of the sixth factor "Feelings on self-care treatment" were the two lifestyle factors of trying to lose weight and sleeping habits. The coefficient of determination R-squared was 0.059, and the adjusted R-squared was 0.053.

IV. Discussion

1. Consideration of the validity of the developed scale

Based on the confirmatory factor analysis of the main survey and the related factors survey, it was confirmed that the validity of the structural concept had a six factor structure. From the covariance structure analysis, we obtained an overall good degree of conformity twice; thus, we were able to confirm the validity of the structural concept.

Based on the Pender's Health Promotion Model, Mori et al. suggested the following: to motivate women by having them pay attention to the benefits of actions, to teach them how to overcome the burden related to actions, and to enhance their self-efficacy and facilitate them to have positive feelings for actions through their experiences of carrying out said actions, as well as positive feedback (Mori, Takahashi, Kudo et al., 2017). We think that these points were included in the six factors.

As for content validity, we conducted semistructured interviews with 15 university students who had menstrual pain and performed a qualitative analysis. Furthermore, we created our structural concept using Pender's Revised Health Promotion Model since the subjects were young woman, which helped to promote consciousness of young people's health.

As for criterion-related validity, we found that there was a moderate correlation between Yamauchi and Takama's "dysmenorrhea self-care scale for nursing students" and the 2nd and 3rd factors of this scale. The reason is because there are some things in common with feelings on menstruation and actions to deal with the pain.

This scale is for women who have menstrual pain; however, the scale created by Yamauchi and Takama is not for women who have menstrual pain. Due to the differences in the features of the two scales, there were only mild correlations outside of the 2nd and 3rd factors.

This scale referred to Pender's Revised Health Promotion Model (for 10 factors) for the conceptual framework; however, Yamauchi and Takama referred to prior literature for their six factors. Thus, the question items were also different, so there were only weak correlations in other factors.

The first factor "perception of self-efficacy", the fifth factor "expected level of burden needed to improve menstrual pain" and the sixth factor "feelings on self-care treatment" are the characteristics based on Pender's Revised Health Promotion Model. Although not important for women who do not have menstrual pain, these are important items to help improve menstrual pain for those who have it.

It is unnecessary for those without menstrual pain to take medication, so the fourth factor "self-care using medicine" is a distinctive feature of this scale which was created for women with menstrual pain.

2. Reliability and stability of the developed scale

Cronbach's α = 0.864 for the whole scale of this study (n = 1,000), and the Cronbach's α coefficient for each factor was between 0.761 and 0.921, which showed internal consistency. The intraclass correlation coefficient of the whole scale of the retest (n = 705) was 0.799, and the intraclass correlation coefficient for each factor was between 0.720 to 0.887, thus, stability was maintained.

Since menstruation repeats for every ovulation period and the process of menstruation lasts for two weeks, we set the period of time for the retest to be one week, which was important to maintain stability.

Cronbach's α = 0.869 for the scale of the related factors survey (n = 300). The Cronbach's α coefficient for each factor was between 0.683 and 0.930, and only the fifth factor was 0.7 or less, but the overall internal consistency is considered to be high.

Only the fifth factor was a little lower in the results. There were quite a few women with weak menstrual pain in the related factors survey, 30.0% of them answered they had a little pain, but the pain was not serious enouch to need medicine, and 35.0% of them answered that if they took medicine for it they could live their daily life without problems. Totally 65.0% of them thought it was not a serious problem, so the fifth factor "expected level of burden needed to improve menstrual pain" decreased.

3. Examination of the developed scale and related factors

1) Relevant factors with menstrual attributes

Women with higher degrees of menstrual pain had lower scores in the 2nd, 3rd and 4th factors, which suggested that they did not perform self-care well. Those who had severe menstrual pain were likely to have "disastrous thinking" because of their experiences of failing to cope with it, and it was difficult for them to imagine overcoming their menstrual pain. (Uemura , Sakae & Matsumura, 2013). It is speculated that women who have stronger menstrual pain feel that it is more difficult to deal with the pain. Furthermore, in the accompanying symptoms of menstruation, the scores in the items regarding the "pain" area were high and there were many women who had problems with pain, so it is necessary to promote knowledge about pain management (Morishita, Asano, Ueda et al., 2015).

This scale has 23 items, so people can easily check their situation, and it also includes the fourth factor "Self-care using medicine" for pain management; thus, we believe it is a useful scale for women with menstrual pain.

2) Factors related to attributes of lifestyle habits

"Trying to lose weight" was relevant in all of the factors outside the 5th factor. "Trying to lose weight" and "irregular meals" were thought to be causes of stress associated with menstruation symptoms (Akamatsu, Shiinomiya & Yoshimoto, 2005). Women who were trying to lose weight are likely to have accompanying symptoms of menstruation, and since they were sensitive to changes in their bodies, they had a stronger desire to "improve their menstrual pain (the 2nd factor)". Thus they performed "self-care that can be achieved by lifestyle changes (the 3rd factor)" and "self-care using medicine (the 4th factor)". They performed self-care on a daily basis, so their "feelings on self-care treatment (the 6th factor)" was also significantly related. They continued to routinely perform self-care; thus, we believe that "Perception of self-efficacy (the 1st factor)" was significantly related.

In a paper focusing on college students, the influence that trying to lose weight had on menstruation was measured. About 85% of the subjects had ordinary body types; however, more than 80% of them "hoped to have skinnier bodies" (Hososaka, Nukita & Kayashima , 2010). Many women in this age rage are trying to lose weight. However, it is necessary to make them understand that by eating less, they will feel stressed and worsen their menstrual pain.

The results showed that women who frequently eat snacks had a slightly lower self-efficacy and they felt it would be more difficult to improve their dysmenorrhea. The reverse phenomenon was observed in women who were trying to lose weight. In the background, there is that tendency that "they want to be skinny", so they felt guilty when eating snacks, thus I believe that is a reason for a decrease in their self-efficacy. In addition, women who frequently eat snacks have the characteristic of being impatient on a regular basis. Thus, it is speculated that they felt more of a burden for self-care because it is required until they can improve their menstrual pain.

Regarding sleeping habits, women who stay up until 2:00 or 3:00 am were more likely to feel self-efficacy, have more intention to improve their menstrual pain, and have more feelings on self-care treatment compared to those who go to sleep at around 11:00 pm. This is because since they were staying up late, their sleep rhythm was disturbed, and their menstrual pain became stronger. Thus, they wanted to improve their pain and thought more about self-care treatment. It was observed that such feelings were co-related.

Furthermore, because they come from an internet-savvy generation, self-efficacy may have been higher because women who stayed awake until late at night and were involved in SNS such as twitter and blogs were more likely to have higher senses of self-satisfaction.

Bathing habits were only related to "self-care that can be achieved by lifestyle changes". This suggests that women who did not have good bathing habits had worse circulation and their bodies were colder, so their menstrual pain became stronger. Thus, they strived to perform self-care while paying attention to keeping themselves warm on a daily basis.

4. Practicality of the scale we developed

This scale has only 23 items, and allows women to confirm the state of their self-care for menstrual pain. Thus, if it is kept in healthcare rooms in schools or working places, it can be used by women with menstrual pain.

It can also be distributed to women when they have group medical checkups at places, including schools and companies, and it can be used to check their conditions.

5. Limits of this research and future issues

Certain levels of reliability and validity were confirmed in the "self-care scale for dysmenorrhea in young females" created through this study. In the future, its practical use should be utilized in many groups, and modified accordingly.

In order to increase the sophistication of this scale, it is important to investigate further issues while also expanding the age-range of the subjects and checking whether or not similar results can be obtained; doing so can increase the accuracy of the scale.

The age range that we covered in this study in the related factors survey was 16 to 24 years old. Seven women aged 16 to 17 years old in the screening stage fell under the exclusion conditions due to their absence of menstrual pain, and they did not become subjects of this study. As a future issue, it will be necessary to conduct follow-up surveys with this age group, and confirm their trends.

The level of their menstrual pain, intention to lose weight, eating snacks, sleeping habits, and bathing habits are thought to be related to this scale; thus, it will be necessary to further investigate these details and discuss their relationship in the future.

VI. Conclusion

1. It was verified that this self-care scale for young women with menstrual pain contains 23 items with 6 factors based on the confirmatory factor analysis of the main study and the related factors survey.
2. Women with higher degrees of menstrual pain had lower intention to improve their pain, which suggested that they did not perform self-care well.
3. Women who tried to lose weight performed self-care because they had menstrual pain; however, it was shown that eating less causes stress and had negative effects on menstrual pain.
4. Women who frequently ate snacks had a lower self-efficacy, suggesting that they felt it would be more difficult to improve their menstrual pain.
5. It was shown that women who did not have good sleeping and bathing habits performed self-care because they had menstrual pain.

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We declare that there are no conflicts of interest associated with this manuscript.

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ORIGINAL ARTICLE

Investigating the Mediating Effect of Switching Barriers in the Relationship Between Social Service Quality and Switching Intention

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ABSTRACT

The present study investigated the mediating effect of switching barriers in the relationship between social service quality and switching intention for social service users. The purpose of this study is to provide baseline data on lowering switching intention by increasing social service quality, in order to promote policies and stable organizational management of service provider agencies. To this end, social service users in Busan were surveyed; 719 survey responses were used in the final analysis. The main results are as follows. First, social service users showed lower switching intention with higher perceived service quality. Second, higher switching barriers resulted in lower switching intention. Third, switching barriers in social services were found to mediate the effect of service quality on switching intention. Based on these results, implications regarding the reduction of switching intention that contributes to the success of social services are provided.

＜Key-words＞
social service, service quality, switching barriers, switching intention

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I. Introduction

Social services in South Korea have expanded since the 2000s with the introduction of the user-centered electronic voucher system, as universal services were pursued in preparation against new social risks across the society. From 2012, social service provider licenses became attainable under a registration system, allowing various agencies to provide social services. While this change to a user-centered method of provision led to a quantitative expansion of provider agencies through market competition, it has also brought endless controversy over service quality—including the content and price difference of social services and the qualification of provider agency professionals (Kim, 2009).

Service agencies also acknowledge user-perceived service quality as a major determinant in securing their competitiveness (Oh, 2006). That is, improving service quality is being emphasized as an essential factor in the survival of such organizations (Grasso, 1994). The importance of service quality has incentivized various literature regarding service quality since the advent of social services. In addition to research regarding the factors constituting service quality, numerous studies are being conducted in relation to the success of social services, such as those on the relationship between service quality and satisfaction as well as service quality and loyalty, and the cause-and-effect relationship among service quality, satisfaction, and loyalty (Kim, 2017; Kim & Jung, 2012).

While users who use and are satisfied with a service opt to reuse it or maintain a favorable attitude towards it, there are cases where users who are dissatisfied due to their needs and wants, despite excellent service quality, choose to defect. Additionally, there are cases where they switch as they become dissatisfied despite their initial satisfaction (Cho & Kim, 2015). Such phenomena reflect the fact that user satisfaction of service quality does not increase retention rate. Therefore, one needs to focus on the fact that switching barriers, which refer to the effort required to switch, can be used to increase retention rate when aiming to directly hinder users defecting.

Switching barriers refer to the complication of switching to a new provider, thereby ensuring that users continue to stay with their current provider even if they are dissatisfied with it (Poter, 1980). Thus, managers of provider agencies need to consider the switching barriers established between the user and the provider agency with respect to the causes of switching behavior, in addition to user dissatisfaction. The efficient management of such reality can be regarded as an important strategy in operating a social service agency in the midst of fierce quality competition due to the increasing number of provider agencies. Accordingly, agencies need to secure their user base by raising satisfaction in service quality to maintain loyalty, as well as creating switching barriers to deter users' intention to switch to other agencies. From the agency's perspective, the user base is more than simply securing stable users; instead, it becomes a fundamental asset in ensuring continuous growth and development, as well as a competitive edge, by reducing costs, increasing relation efficiency, and acquiring new users by word-of-mouth.

Based on the above discussion, service quality and switching barriers can be deduced to be important factors in lowering switching intention even in the field of social services where users have the right of choice. Therefore, within the field of social services, investigation of the mediating effect among the interest in switching barriers, service quality, and switching intention is highly significant both theoretically and practically. This study is conducted on social service users with respect to the effect of the quality of service provided by agencies on switching intention, in order to provide practical implications in efficient organization management by understanding the relational structure among the variables caused by the mediating effect of switching barriers. This is because an action plan to improve service quality, raise switching barriers, and lower switching intention must be devised beforehand if policy efforts to improve service quality and manage social service performance are to be effective.

II. Theoretical Background

1. Social Service Quality

Social service quality can be defined as “user behavior after subjectively perceiving the process and result of service provision” (Jeon, 2006). Gronroos (1984) claimed that service quality is the result of the interaction between the service provider and the user, and is created by a type of user perception of an agency’s services or its image-building (Maeng & Shim, 2011). In other words, compared to the general quality of service that indicates the user’s subjective attitude or judgment of the excellence of service, interaction between users and the quality of service during service provision is more emphasized in the social service area.

Service quality in various fields of human service mainly use an application of the process-centric SERVQUAL model developed by Parasuraman, Zeithaml and Berry (PZB). This has also been used in recent studies on social service quality, arranged into assurance, responsiveness, empathy, reliability, and tangibles, depending on the focus of the researcher (Kim & Jung, 2009). Reflecting the nature of social services, Kim & Jung (2009) used six dimensions by adding sociality, which emphasizes the protection of users’ rights. Therefore, social service quality is defined as the subjective evaluation of service content and its competent delivery, and is examined from the dimensions of sociality, assurance, responsiveness, empathy, reliability, and tangibles after including the extra dimension of sociality.

2. Association among Relationship between Social Service Quality, Switching Barriers, and Switching Intention

Social service agencies regard service quality as an important determinant (Cho, 2012) of stable organizational management as it determines the users' decision to reuse a service without defecting to other agencies. Furthermore, in the context of social services, where the users' right of choice is emphasized, it is important for provider agencies to improve the user-perceived switching barriers and switching intention. This is because in terms of performance, strategic responses are needed to retain their current users. Fornell (1992) proposed switching barriers as a defensive strategy for retaining current users. Switching barriers suggest that there are cases where users with low satisfaction or dissatisfaction tend to stay with their current provider and provider agency rather than switching to other providers or agencies (Jones & Sasser, 1995).

Switching barriers are defined as all factors that hinder users or incur costs, such as effort and time, when switching their provider agency (Jones, Mothersbaugh & Beatty, 2000). Thus, switching barriers refer to all obstacles that are present when users switch their provider agency. The deterrents in switching barriers can be divided into switching costs, attractiveness of alternatives, and interpersonal relationships (Kim, 2017; Han, Back & Barrett, 2009). Ping (1993) claimed that higher switching barriers lead to higher retention and loyalty from users. Weiss & Anderson (1992) found that if switching requires high costs and difficult processes, the decision to switch becomes extremely slow even if one is dissatisfied, and in some cases, may lead to the continuation of the relationship (Jackson, 1985). The role of switching barriers is to deter users from switching provider agencies by influencing their switching intention through high costs of time and effort when switching, or by having unattractive alternatives for competition. Switching barriers are defined in this study as all deterrents in defecting or switching from the current service agency, comprised of the objective situational variables of switching costs and lack of alternatives (a concept contrary to the attractiveness of alternatives).

Switching intention is a concept contrary to the retention of existing users and reuse intentions, and refers to the user's intention of switching from one service from another (Jones, Mothersbaugh & Beatty, 2002). Furthermore, switching intention leads to a reduction in the number of existing users due to users switching services, and such switches are made based on the users' desire for something new due to their dissatisfaction with provided services (Jeon, Bang & Ko, 2017; Keaveney, 1995). Service switches, switching intention, service loyalty, user retention, and reuse intention are all related (Han, Back & Barrett, 2009). Loyalty, retention, and reuse intention are favorable outcomes for the provider, whereas service switches and switching intention are not. Stronger switching intention heightens the possibility that one carries out the switch, and conversely, that possibility is reduced with weaker switching intention (Bintner, Booms & Tetreault, 1990). This study defines switching intention as the desire to defect from the current provider or provider agency and examines its relationship with service quality and switching barriers.

Reviewing the effect of service quality on switching intention based on the above discussion, Kim (2008) suggests that higher quality of educational service lowers the intention to switch schools. Lee & Murphy (2005) brainstormed the causes of switches and discovered that service quality had the highest effect on switching behavior. Jones, Reynolds, Mothersbaugh, et al. (2007) found that the quality of educational services had a negative effect on switching intention. Such results can be interpreted as high-quality services provided by current agencies lowering user intention to switch to other agencies.

Literature on the relationship between switching barriers and switching intention shows that switching costs influence user behavior and behavioral intention. The literature proposed that switching barriers have a negative effect on switching intention (Liu, Park & Kim, 2017; Cho & Kim, 2015; Jones,Retnolds, Mothersbaugh, et al, 2007; Burnham, Frels & Mahajan, 2003). This implies that provider agencies should raise switching barriers to make users reuse their services without switching. In a social service study on the moderating role of switching barriers in the relationship between relational quality and loyalty, Kim (2017) claimed that higher switching costs and fewer competitive alternatives raise switching barriers and thereby increase loyalty.

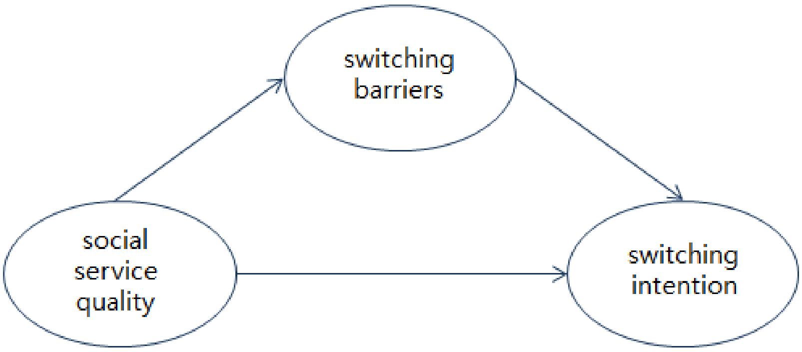
Finally, regarding previous studies on the mediating effect of switching barriers between service quality and switching intention, Jones, Mothersbaugh & Beatty (2002) found that service quality is deeply related with switching costs upon empirical analysis. Cha (2007) verified that service quality has a strong influence on switching barriers. Moreover, by examining service quality in the categories of functional quality and technical quality, Byeon (2009) found that switching barriers mediate the relationship between service quality (functional and technical) and switching intention. That is, users perceive switching barriers (the high cost of switching and the lack of competitive alternatives) to be higher with increased quality of service, which leads to lower switching intention and ultimately their decision to remain with their current agency.

The relationship between major variables used in this study were examined in various service areas throughout the literature. It can be seen that switching barriers, which make user switches to other service agencies more difficult, are affected by service quality and related to switching intention. Therefore, this study examines indirect paths in the relational structure among service quality, switching barriers, and switching intention, in order to determine the cause-and-effect therein. This is because it is significant to investigate the role of switching barriers in the above relationship to improve the performance of agencies, even in the context of social services which are provided in a user-centric manner.

III. Research Method

1. Research Model and Hypotheses

The research model was set as seen in <Figure 1> in accordance with the purpose of this study of examining the effect of social service quality on switching intention with switching barriers as its mediator.



<Figure 1> Research Model

The hypotheses derived from the research model are as follows.

Hypothesis 1. Social service quality will affect switching intention.

Hypothesis 2. Switching barriers will affect switching intention.

Hypothesis 3. Social service quality will affect switching intention, mediated by switching barriers.

2. Research Subjects and Data Collection

The subjects of the present study consisted of Busan residents who use the Long-term Care Service for the Elderly, Personal Assistance Service for the Disabled, and Psychological Support Service for Children and Youth, all of which are implemented nationwide, use a standardized manual for delivery and business content, and are provided to a distinct group of users. The Long-term Care Service for the Elderly and the Psychological Support Service for Children and Youth were stratified according to region and significantly allocated based on the method of provision. Personal Assistance Service for the Disabled, managed only by nonprofit organizations, was proportionally allocated according to region and selected through random sampling. Trained researchers, as well as managers and providers at service provider agencies, delivered the questionnaires and asked for participation. The questionnaire was approved by the Research Ethics Committee and was administered after a research participation consent form was submitted by the respondent. Data collection took place from November 2015 to February 2016, during which 756 questionnaires from the 1,050 delivered to research subjects were collected. In total, 719 questionnaires were used in the actual analysis after excluding those that were filled in dishonestly.

3. Variables and Measures

The latent variables of this study consist of social service quality, switching barriers, and switching intention. The scale used by Kim & Jong (2012) was used to measure service quality, and the scale used by Whang & Chang (2007) was used to measure switching barriers (switching costs and lack of alternatives) after it was modified and supplemented. For switching intention, the scale used by Oh & Lee (2014) for public library visitors was modified to conform to social services, and was used to survey "the possibility of not using the current center" and "collecting information on new centers to transfer to." All items were measured via a 5-point Likert scale (strongly disagree = 1 point, strongly agree = 5 points). Therefore, higher quality of service leads to a higher perception of switching barriers (higher switching costs and fewer competitive alternatives), thereby lowering switching intention. The levels of confidence among the variables measured in this study were found to be appropriate at a=.896 for social service quality, a=.835 for switching barriers, and a=.882 for switching intention.

4. Analysing Methods

SPSS 22.0 and Amos 22.0 were used to analyze the cause-and-effect relationship and mediating effect of the research model and to examine their statistical significance. GFI and RMSEA were used for χ^2 statistics and absolute index of fit, and CFI and TLI were comprehensively considered for the normed fit index. Smaller RMSEA values indicate a better fit, and a value of .05 or below is deemed to be of good fit. A value of .09 or above is deemed a good fit for CFI, TLI, and GFI. Structural equation modeling was conducted to verify the research hypotheses, and bootstrapping was conducted to examine the significance of the indirect effect of switching barriers used as the mediating variable.

IV. Results

1. Sociodemographic Characteristics among Research Subjects

The sociodemographic characteristics of the subjects of this study are shown in <Table 1>. Respondents evenly varied in age from children to the elderly and handicapped. For the duration of service usage under the current agency, most respondents were included in the category of 1 to 3 years at 38.9%, followed by under 1 year at 29.1%. There was an even distribution of for-profit (46.9%) and non-profit (61.1%) organizations. The characteristics of social service recipients were well reflected among the respondents.

<Table 1> Characteristics of the Participants

	Characteristic	n (%)
Respondent	Self	443 (61.6)
	Guardian	276 (38.4)
Sex	Male	398 (55.4)
	Female	321 (44.6)
Age	Under 8	118 (16.4)
	8-13	97 (13.5)
	14-20	20 (2.8)
	21-49	107 (14.9)
	50-65	98 (13.6)
	Over 66	279 (38.9)
Duration of usage under current agency	Under 1 year	209 (29.1)
	1 to 3 years	274 (38.1)
	3 to 5 years	165 (22.9)
	5 years or more	79 (11.0)
Type of organization	For-profit	337 (46.9)
	Non-profit	439 (61.1)

The following <Table 2> shows the descriptive statistics of the measured variables. Considering the conditions of normal distribution (skewness <2, kurtosis <4) in the structural equation modeling used in this study, all necessary conditions are met.

<Table 2> Descriptive Statistics of Variables

Latent variable		Mean	SD	Skewness	Kurtosis
Social service quality	Sociality	3.921	.534	-.770	.147
	Assurance	4.002	.602	-.620	-.060
	Empathy	3.979	.802	-.849	.057
	Responsiveness	4.078	.459	-1.001	.187
	Reliability	4.122	.761	-.861	.157
	Tangibles	3.123	.534	-.509	-.638
Switching barriers	Switching costs	3.849	.973	-.881	.128
	Lack of alternatives	2.924	.852	.529	-.181
Switching intention	Switching intention 1	3.235	.742	-1.290	1.005
	Switching intention 2	3.216	.746	-.993	.792

2. Correlations Among Major Variables

Correlation among the variables used to verify the cause-and-effect structure set for this study are displayed in <Table 3>. Results show that the social service quality dimension has a statistically significant negative correlation to switching intention (r=-.306~-.598, p<.01), and a statistically significant positive correlation to switching barriers (r=.239~.455, p<.01). Switching intention shows a statistically significant negative correlation to switching barriers (r=.413~.437, p<.01). Therefore, this indicates that positive social service quality leads to a higher perception of switching barriers, and that higher switching barriers lead to decreased switching intention.

<Table 3> Correlations Among Major Variables

	1	2	3	4	5	6	7	8	9	10
1. Sociality	1									
2. Assurance	.467**	1								
3. Empathy	.490**	.671**	1							
4. Responsiveness	.335**	.529**	.541**	1						
5. Reliability	.461**	.668**	.576**	.672**	1					
6. Tangibles	.240**	.263**	.260**	.216**	.347**	1				
7. Switching costs	.314**	.445**	.419**	.412**	.455**	.239**	1			
8. Lack of alternatives	.335**	.429**	.411**	.401**	.422**	.316**	.535**	1		
9. Switching intention 1	-.439**	-.598**	-.517**	-.503**	-.557**	-.306**	-.421**	-.423**	1	
10. Switching intention 2	-.419**	-.593**	-.527**	-.457**	-.566**	-.376**	-.413**	-.437**	-.692**	1

*p<.05, **p<.01

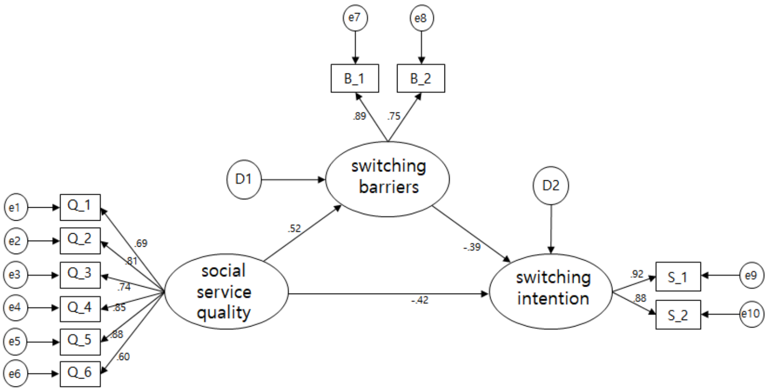
3. Measurement Model Analysis

The present study hypothesized that higher social service quality will lead to higher satisfaction in the agency and provider, and that higher perception of switching barriers will lead to decreased switching intention to defect to other agencies. The hypotheses were verified through structural equation modelling. Goodness of fit was found to be appropriate at a satisfactory level as shown in <Table 4>.

<Table 4> Goodness of Fit

	χ^2	df	GFI	CFI	TLI	RMSEA
Model	121.097	51	.911	.963	.959	.047

With goodness of fit verified, the hypotheses of this study were examined through their path coefficients. The path from social service quality to switching intention was found to be statistically significant from the parameter estimates shown in <Figure 2> and <Table 5>, showing higher quality of service leading to lower switching intention.



<Figure 2> Structural Model

Q_1: Sociality, Q_2: Assurance, Q_3: Empathy, Q_4: Responsiveness, Q_5: Reliability, Q_6: Tangibles, B_1: Switching costs, B_2: Lack of alternatives

Furthermore, the path from service quality to switching barriers was found to be statistically significant. This indicates that higher service quality raises switching barriers. In other words, if users form a relationship of trust with the provider in the process of service provision and engages in more positive interactions, they feel uncomfortable with the costs of switching to a different agency and searching for alternatives, thereby increasing the switching barriers. The path from switching barriers to switching intention was also found to be statistically significant, and higher perception of switching barriers led to a decreased intention to switch or defect. Thus, both Hypothesis 1 and Hypothesis 2 were supported by the results.

<Table 5> Path Coefficients of the Structural Model

Path	B	β
Social service quality --> Switching barriers	.613	.524***
Social service quality --> Switching intention	-.439	-.415**
Switching barriers --> Switching intention	-.499	-.387**

*p<.05, **p<.01, ***p<.001

4. Decomposition and Mediating Effect Analysis

Results indicated that switching barriers mediate the connection between social service quality and switching intention. Bootstrapping was conducted to analyze the mediating effect and examine the influencing relationship among variables decomposed into direct and indirect effects. Decomposition results indicated that the total effect of social service quality on switching intention is -.618, consisting of both direct (-.415) and indirect (-.203) effects, as shown in <Table 6>.

<Table 6> Decomposition of Structural Model Variable

Path	Total effect	Direct effect	Indirect effect	Confidence interval
Social service quality --> Switching intention	-.618	-.415	-.203	-.072~-.229**

*p<.05, **p<.01

Bootstrapping the mediating effect of switching barriers resulted in a confidence interval of -.072 ~ -.229, which shows that the mediating effect is statistically significant at a significance level of p<.01, as a “0” is not included in its range. Therefore, switching barriers in social services were found to partially mediate the effect of service quality on switching intention.

V. Discussion

The present study aimed to examine the relationship between social service users' switching intention and service quality, and to verify the mediating effect of switching barriers. To this end, 719 Busan residents using universal services in South Korea, the Long-term Care Service for the Elderly, Personal Assistance Service for the Disabled, and Psychological Support for Children and Youth, were selected for analysis. Analysis results using Amos 22.0 to study the research model and hypotheses are as follows.

First, social service quality was found to have a direct effect on switching intention. That is, improved quality of service from social service provider agencies and user optimism for service quality leads to a decrease in switching intention. Second, the switching intention of social service users was weakened with higher switching barriers. This indicates that the switching intention of service users is lowered with higher switching costs of effort, time, and money, and fewer competitive agencies that provide better quality alternatives than the current one. Third, social service quality was found to influence switching intention mediated by switching barriers. In other words, while service quality indeed has a direct effect on switching intention, higher service quality led to higher switching barriers, which in turn decreased switching intention. This result is in line with the literature (Byeon, 2009) that claims switching barriers are important in relation to service quality.

For agencies to perform well in the field of social services, where financial support is given on the basis of expanding users' right of choice, improvement of service quality by competition between agencies is important. To prevent user defects and switches, provider agencies must protect the rights of their users while increasing job and supplement training to better equip providers with professional knowledge, skills, and accountability to provide services in a safe environment.

Verification of the importance of switching barriers that affect service quality and switching intention is highly significant in relation to the performance of social service provider agencies. Success in social services was found to be mediated by switching barriers rather than being directly achieved through social service quality. Therefore, service quality and switching barriers were confirmed to be important influencing factors on switching intention. The switching barrier variable should be considered since the defection of users satisfied with service quality becomes more frequent especially for social service provider agencies that lack differentiation and are locked in fierce competition. As such, social service policies must recognize switching barriers, such as the psychological effort of switching, cost of finding alternatives, inconvenience, and lack of good alternatives, as an important factor at the stage of their design.

In addition to professional quality, providers and provider agencies must improve their service quality from a relational aspect with individual users as well if they are to enhance their switching barriers, the importance of which has been demonstrated in the area of social services. Providers must be trained for relational sensitivity to positively maintain the interaction between users and providers, which is a critical aspect in social service quality. If agencies are to provide services and relational benefits of higher value than their competitors, users will find costs in the time and psychological effort to switch to different agencies burdensome, perceive the current agency to be more attractive than competing ones, and weaken their switching intention. Thus, to minimize user defection, it is suggested that agencies strategically increase their switching barriers by enhancing relational quality and utilize switching barriers from all dimensions.

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SHORT PAPER

Global Trends in Developmental Disorders Education and Japan's Current Status and New Initiatives

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ABSTRACT

In Japan, the number of students with developmental disorders has been increasing every year since 2007, so developmental disorders are now prevalent in Japanese classrooms. In this paper, the definitions of "developmental disorders" are summarized for each of seven countries. Results showed that among the seven, only Japan and South Korea have established definitions for developmental disorders. Educational inclusivity for children with disabilities is currently increasing around the world. The United Kingdom, one of the most advanced countries in terms of educational inclusion, provides education "to enable people to take into account not only disability but also all other factors." As a way to make this possible in Japan, new initiatives are being developed. One such initiative is the concept of "IN-Child" and "IN-Child Record" proposed by Han, Ota, and Kwon (2016). Research that enables educational evaluation and continuous support tailored to individual needs. This research will enable Japan to achieve inclusion without lagging behind the world. We hope that this will halt the "developmental disorders bubble" in Japan.

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I. Introduction

Although the number of pupils at all stages of compulsory education is decreasing due to the declining birthrate, the number of pupils who are subject to special needs education is increasing. According to the National Special Needs Education Institute, the number of students enrolled in the autism spectrum disorder and emotional disorders special needs classes have increased by approximately 6,000 every year since 2007. In addition, the number of pupils with developmental disorders who are instructed through commuting courses has been increasing every year since 2007. As a result, development disorders are becoming commonplace in Japanese classrooms. In today's world, where inclusive education is essential, how are "developmental disorders" defined around the world? There are two primary diagnostic tools used to identify developmental disorders. The first is the International Classification of Diseases (ICD), proposed by the World Health Organization (WHO), which is primarily used in medical practice. The second is the Diagnostic and Statistical Manual of Mental Disorders (DSM), developed by the American Psychiatric Association, which is also used as a global diagnostic criterion. The DSM has been used in developmental disorders diagnostics in Japan, and both the ICD and DSM have recently revised content related to developmental disorders.

First, a summary of definitions of developmental disorders from major countries in Europe, Asia, and other parts of the world will be presented. Next, the historic evolution of the ICD and DSM used in medical practice as tools for diagnosing developmental disorders in Japan and around the world is summarized. Finally, we will clarify the challenges of education in developmental disorders in Japan in recent years, and examine the most recent studies that serve as a clue to the resolution of these issues.

II. Descriptions of Developmental Disorders by Country

1. National definitions of "developmental disorders" or similar content

Definitions and descriptions of "developmental disorders" by country are summarized in Table 1 below. The descriptions for "developmental disorders" or a similar concept is cited for each of seven countries: Japan, the United States, the United Kingdom, Italy, Australia, the Republic of Korea, and China.

<Table 1> Definitions of Developmental Disorders or Similar Concepts in Seven Major Countries

Country name	Definition or similar content
Japan ※ Defined	Autism spectrum disorder, other disorders of pervasive developmental disorders, Asperger syndrome, learning disability, attention-deficit hyperactivity disorder, and other similar brain functions, which are specified by Cabinet Order as manifestations of such disorders at an early age. Developmental disorders of supporters (Article 2, paragraph (1) of the Support Act). Disabilities prescribed by the Ordinance of the Ministry of Health, Labour and Welfare set forth in Article 1 of the Order for Enforcement of the Developmental Disorders Persons Support Act shall be psychological developmental disorders and behavioral and emotional disorders (excluding autism spectrum disorder, Asperger syndrome and other pervasive developmental disorders, learning disability, attention-deficit hyperactivity disorder, linguistic and coordination disorders). (International and Support Center for Persons with Development Disorders. http://www.rehab.go.jp/)
United States ※ No definition	The term "developmental disorders" was first coined in the United States, but since the advent of DSM-5 there has been no definition of "developmental disorders," and the term "neural developmental disorders" has emerged. Neural developmental disorders classifies six disorders, including intellectual disabilities, communication disorders, autism spectrum disorder, attention-deficit/hyperactivity disorder, specific learning disorder, and motor disorders. The DSM-5 changed names of disorders to intellectual disability, autism spectrum disorder, special learning disability, and motor disorder, which were previously known in the DSM-4 as mental retardation, pervasive developmental disorders, learning disorder, and motor skills disorder. In addition to name changes, subclassification (unit disorders and unit diseases) have been outlined and unified, and major changes have been added to the subclassification, addition, and diagnostic criteria. Thus, major revisions have been made on the whole (Miyakawa, 2014).

United Kingdom ※ No definition	The U.K. has no definition for developmental disorders. The Autism Spectrum Disorder Law 2009 (Autism Act 2009) provides for the inclusion of "adults with autism spectrum disorder" in order to enable an adult with ASD to receive appropriate services. Although the scope of autism spectrum disorder here is primarily based on the ICD-10 `pervasive developmental disorders` disease classifications, other criteria may be used for actual diagnoses. Children under 18 years of age can receive support and services on the basis of the Children's Law (Children's Act, 1989). During school age, a "Special Educational provision" is available if there is learning difficulty or disability to the extent that "Special Educational Needs: SEN" is required. Definitions of pupils who require special educational support are set out in Education Law 1996 (Education Act 1996) and definitions of disability are set out in the Equality Act 2010. The Children and Families Act 2014 was enacted, and the Ministry of Education and the Ministry of Health have jointly issued the SEND code of practice: 0 to 25 years. The law raised the target age to 25 years old. (International and Support Center for Persons with Development Disorders. http://www.rehab.go.jp/)
Italy ※ No definition	Italy has no definitions for developmental disorders because of its inclusion policies. Learning disabilities are described in the Learning Disability Children's Education Law, which identifies four disabilities, including reading, literacy, correctness, and computational. Individual definitions for each disability are provided, but not a general definition for learning disability itself (Hagiwara, 2011).
Australia ※ No definition	Australia does not have laws or systems that use the word "developmental disorders", and there is no agreement on the designation of learning disability. South Australian states use learning disabilities, which are defined as dyslexia, dyscalculia, dysgraphia, dysphasia, and nonverbal learning disorder. The Australian government's employment services also uses specific learning disabilities, which defines a broad range of disabilities, "where learning difficulties are evident in certain areas, such as attention, comprehension, sophistication, arithmetic, inference, reading, speaking, and writing, as compared to overall competence."

	(International and Support Center for Persons with Development Disorders. http://www.rehab.go.jp/)
South Korea ※ Defined	In South Korea, the Developmental Disorders Rights Guarantee and Support Act was enacted in 2014, and "developmental disorders" are defined as the following: "Mentally retarded persons: persons whose mental development is permanently retarded, whose intellectual development is inadequate or incomplete, and whose activities of daily living and adaptation to social life are extremely difficult", "Autism Spectrum Disorder: persons who are in need of support from others due to language, physical expression, self-adjustment, social adaptation function and disability associated with atypical Autism Spectrum Disorder and who need support from others in their daily life or social life", "persons who do not demonstrate normal development or who are greatly delayed and are subject to significant constraints on their daily life or social life as determined by the Presidential Decree". (International and Support Center for Persons with Development Disorders. http://www.rehab.go.jp/)
China ※ No definition	Autism spectrum disorder, attention-deficient hyperactivity disorder, and learning disability are translated into Western literature (ICD, DSM, etc.), and there are no legal definitions at present. The official terms for autism spectrum disorder are also referred to as "solitude," Autism Spectrum Disorder spectrum disorder as "solitary lineage," "autism spectrum disorder lineage," attention-deficient hyperactivity disorder as "hyperactivity," and learning disability as "learning disability." There is also the term \`developmental disorders\`, but it is not clear what kind of obstacle it is referring to. In 2006, the Compulsory Education Law of the People's Republic of China was amended, and for the first time, children with autism spectrum disorder became subject to compulsory education with legal support. (International and Support Center for Persons with Development Disorders. http://www.rehab.go.jp/)

Table 2 classifies Japan, the U.S., the U.K., Italy, Australia, South Korea, and China as to whether or not "developmental disorders" are defined.

<Table 2> Definitions of Developmental Disorders by Country

Developmental disorders defined	Developmental disorders not defined
Japan, South Korea	United States, Italy, United Kingdom, Australia, and China

As shown in Table 2, only Japan and South Korea clarify the definitions of developmental disorders. In the United States, which first used the term `developmental disorders`, a definition for `developmental disorders` has not been established.

2. Challenges of Developmental Disorders in the United States

In 1994, the DSM-4 was published by the American Psychiatric Association, after which the term `developmental disorders` began to be used for the first time. According to Tamaki, Chie, & Yoshiro (2016), the prevalence of autism spectrum disorder increased 20-fold in the United States, attention-deficit/hyperactivity disorder tripled, and bipolar disorder doubled (especially in children, where bipolar disorder increased 40-fold) in the 20 years since the publication of the DSM-IV. In addition, 90% of antidepressants, 80% of anti-anxiety drugs, and 90% of antipsychotics were prescribed by general practitioners, and concern has increased that people are suffering from psychiatric symptoms as a result of easy diagnoses and treatments. Avoiding such overdiagnosis/overtreatment was a concern in issuing the DSM-5. Against this background, the American Psychiatric Association began to use the term "neural developmental disorders" instead of "developmental disorders" after the release of the DSM-5.

Opposing the trends in the United States and many other countries, Japan is now embracing the term `developmental disorders.` Information on developmental disorders is not only in the classroom and healthcare settings, but also on television programs and the Internet. The popularity and prevalence of the term `developmental disorders` is expected to cause further confusion in Japan, despite the fact that its usage has been going against the global trend.

3. About "Special Educational Needs" (Special Education Needs, SEN) in the U.K.

Inclusion in education for children with disabilities is currently active around the world. In particular, according to Ida Akiha (2014), in the United Kingdom, where inclusion has been systematized, the British government introduced "special educational needs" (Special Education Needs, SEN) as a concept that mediates inclusion from the term "disability," including the term "developmental disorders." In addition, according to Sanagi (2014), the introduction of specific educational needs concepts "is intended to enable all factors as well as barriers to be taken into account." This was introduced not to abolish and "replace" the category of disability, but to guide the necessary responses, including the concept of disability, taking into account various factors affecting conditions in which children need special educational responses (i.e. conditions in special educational needs). Rather than abolishing categories or replacing terms, it can be viewed as a change in the viewpoints and methods used to guide the response needed by students.

III. About ICD and DSM

In Japan, developmental disorders are defined by the Developmental Disorders Support Act 2007, as shown in Table 1, based on the ICD-10 prepared by the World Health Organization. In Japan, ICD-10 is mainly used in diagnostic and diagnostic management systems in hospitals and in government systems and statistics. Diagnostic use is primarily in the psychiatric setting. According to Tani and Oikawa (2013), the ICD was first recommended in 1900 and revised roughly every 10 years, with major revisions in 2003 and 2010. The 10th edition (ICD-10) is currently used. On 18 June 2018, the World Health Organization released the ICD-11. This is the result of a full revision of the ICD-10. According to Ministry of Health, Labor, and Welfare (2019), the Japanese translation of ICD-11 will be "prepared by the ICD Expert Committee in cooperation with the Japanese Society of Medical Sciences, the Japanese Society of Dental Medicine, etc., and consulted with the ICD Subcommittee after confirming the ICD-11 to be submitted to the WHO General Assembly in May 2019." The full-scale introduction is expected to be after May 2019.

On the other hand, the DSM (Diagnostic and Statistical Manual for Mental Disorders) prepared by the American Psychiatric Association may be used as a diagnostic criterion that is used globally in Japanese medical practice as well as the ICD. During World War II, the DSM was a diagnostic manual used by psychiatrists in the testing of soldiers and in the treatment of returning soldiers. The first DSM to enter Japan was the fifth edition of the DSM, which was translated into Japanese by the Japanese Society of Psychiatry and Neurology. It was published as the "Diagnostic and Statistical Manual of Mental Disorders: American Psychiatric Association (2013)" one year after publication in the United States (Nishimatsu, 2014).

However, the issue of overdiagnosis/overtreatment of developmental disorders was recognized in the U.S. by the DSM-4, and addressed with the issuance of the DSM-5. However, the definition of developmental disorders in Japan was determined in 2007 by the Ministry of Health, Labour and Welfare, standard on the ICD. The standards for administrative services are also based on the ICD. As the release of the full revision of the ICD-11 is approaching, professionals in Japan hope that, like the rest of the world, the trend will change to focus on individual symptoms and needs, rather than a concept that is collectively referred to as `developmental disorders.`

IV. Japan's Current Situation and New Initiatives

1. Current Status of Developmental disorders Education in Japan

Although the number of pupils at all stages of compulsory education is decreasing due to the declining birthrate, the number of pupils who are subject to special needs education is increasing. According to the National Special Needs Education Institute, the number of students enrolled in the autism spectrum disorder and emotional disorders special needs classes has increased by approximately 6,000 every year since 2007. In 2014, pupils enrolled in the autism spectrum disorder and emotional disorders special needs classes as a percentage of the total number of pupils enrolled in special needs classes was approximately 44%. The number of pupils with developmental disorders (autism spectrum disorder, learning disability, attention-deficit/hyperactivity disorder) being instructed through regular courses has been increasing every year since 2007. Furthermore, in 2014, the percentage of pupils with developmental disorders receiving instruction through commuting courses as a portion of the total number of pupils in the class was estimated to be approximately 45%. It can be noted that developmental disorders are now prevalent in Japanese classrooms.

While developmental disorders can be diagnosed in the medical field, there are few specialists outside of the medical setting who can diagnose developmental disorders. Students who wish to undergo developmental disorders evaluations at the school site have to wait for several months.

In addition, there are issues concerning the expertise of teachers in the field of special needs education, including developmental disorders. The Education Personnel License Law and the Enforcement Regulations were revised in fiscal year 2019. In 2019, new teaching courses will be launched for those who have completed the course. "Understanding of infants, children and pupils in need of special assistance" was added as a new requirement in the "Subjects on Basic Understanding of Education." Until now, it had been treated as a mandatory choice as a "curriculum related to teaching," but it became a mandatory requirement for the first time in 2019. In other words, among those who have obtained a teacher's license in Japan by 2019, there is a current situation in which children who need special support are instructed by teachers without specialized knowledge of infants, children, and pupils who need special support.

2. New Japanese Initiatives (IN-Child)

Similar to in the U.K. and other global trends, Japan has been developing advanced initiatives. The concept of "IN-Child" proposed by Han, Ota, and Kwon (2016) is one such development. IN-Child is an abbreviation for Inclusive Needs Child, which means children requiring comprehensive education. It is also defined as "children who require comprehensive education by a team, including specialists, due to such factors as delayed development, intellectual delay, or non-physical, emotional needs, and home environment." A child in need of comprehensive education may include children diagnosed with developmental disorders, those not diagnosed but showing a similar trend, or a child temporarily receiving comprehensive education due to an environmental factor.

Han, Ota, and Kwon (2016) developed the IN-Child Record, noting that long-term support needs to be considered in light of child development and that it needs to be recorded using a tool for educational assessment and ongoing support. The IN-Child Record is designed to promote inclusive education in the field of education and to promote the sound growth and development of IN-Child in need of some kind of assistance, and enables assessment and ongoing support for educational diagnostics that comprehensively capture IN-Child conditions. In addition to the educational evaluation of children, school teachers will also play a role in providing a new perspective on the needs of schoolchildren. IN-Child Record also includes a multidisciplinary perspective, such as healthcare, health, and childcare, and also incorporates concepts that are common to all domains, such as ICF and QOL. Using a multidisciplinary tool will enable educators to look at the needs of children from a variety of perspectives. At the same time, it is expected that it can be used by multidisciplinary professionals to better understand children's needs and be used as a common tool within a team of experts.

IN-Child Record consists of two domains: "Cause" and "Result". The cause domain includes the "Physical" and "Mental" subdomains. The "Physical" subdomain consists of "Body condition" and "Posture, movement, and motion" while the "Mental" domain consists of "Inattention" "Hyperactivity/impulsivity"、"Adherence"、 and "Self-esteem". The "Result" domain, on the other hand, includes the "Daily living" and "Learning" subdomains. The "Daily living"subdomain consists of "Social functioning" and "Communication", while the "Learning" subdomain consists of "Listening", "Speaking", "Reading", "Writing", "Calculating", and "Reasoning" (Han, Ota & Kwon, 2016) (Fig. 1). Reliability and constructional validity of scales have been tested (Han, Yano, Kohara,et al., 2017). Data on 624 elementary school pupils and 504 junior high school pupils in Okinawa Prefecture were collected at the time.　A book on "IN-Child" has also been published. The "IN-Child Record" is used to provide individual support based on the conditions and characteristics of children at school sites, and many successful cases are summarized. The "IN-Child" initiative has already been used at schools in Okinawa Prefecture, and it is thought that the book introduces many successful cases and is spreading nationwide. It is expected that this will be a new initiative in Japan's education system in the future.

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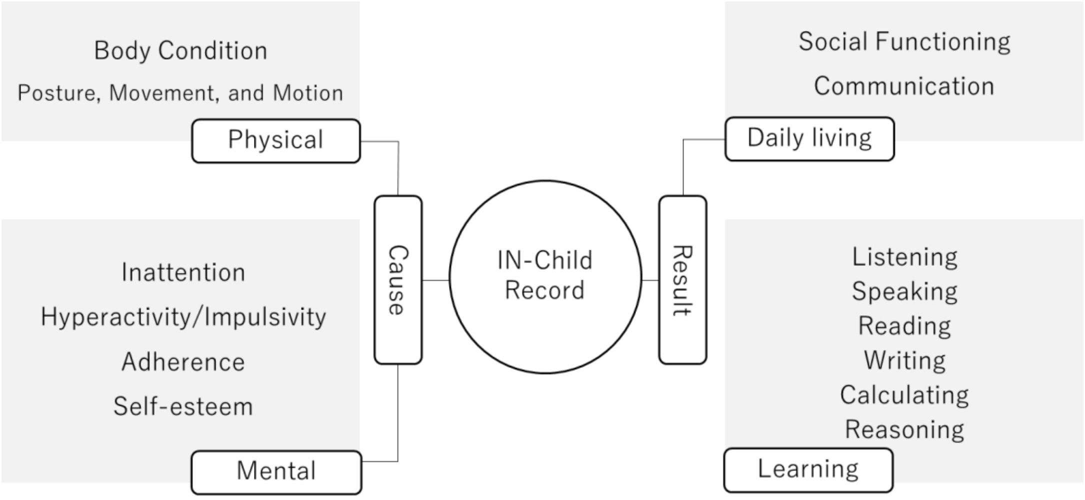

<figure 1>. IN-Child Record diagram

V. Discussion

In recent years, the identification of "developmental disorders" has become more prevalent in Japan. By examining the definitions and current status of `developmental disorders` in seven countries, and the nothing recent changes in the ICD and DSM, which are considered to be the leading diagnostic tools, we conclude there are probably similarities between the challenges facing "developmental disorders" in the United States and the current challenges facing Japan. In the United States, the prevalence of autism spectrum disorder increased 20-fold, 3-fold for attention deficit/hyperactivity disorder, and 2-fold for bipolar disorder (particularly 40-fold for bipolar disorder in children) in approximately 20 years following the issuance of DSM-IV. The issue of the DSM-5 has become a challenge to avoid over diagnosis and overtreatment (Tamaki, Chie &Yoshiro, 2016). In Japan, the number of children enrolled in the Special Support Class for Autism Spectrum Disorder and Emotional Disorders has increased by approximately 6,000 every year since FY2007. In FY2014, the percentage of children enrolled in the Training Class with Developmental Disabilities who use Training has increased by approximately 45% of the total number of children enrolled in the Training Class that uses Training Training in the United States. In Japan, there is no denying the possibility of "overdiagnosis/overtreatment." In response to this issue, the United States issued the DSM-5 from a revision of the DSM-4. However, nothing has been done in Japan to date.

Against this backdrop, research is being conducted to enable Japan to develop the groundbreaking theory of "IN-Child" and to conduct educational evaluations and provide continuous support tailored to individual needs through "IN-Child Record." The breakthrough in this study is that teachers assess the way children and students are seen in the classroom and that they can provide concrete instruction plans based on

IN-Child Record (Han, Ota, &Kwon, 2016). This study will enable education "to take into account not only disability but all other factors" such as in the United Kingdom. Without lagging behind the rest of the world, we hope that using IN-Child will enable Japan to achieve educational inclusion.

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SHORT PAPER

Consideration of Construct of the Education Curriculum Management Models for Health Impairment Education in Japan:

Focus on the Career Education for Children with Chronic Diseases

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ABSTRACT

This study aimed to identify educational challenges in career education for children with chronic diseases and to consider constructive constructs for building future education curriculum management models. The 12 literature were extracted and analyzed. The literature corresponds to the "career" area of the Scale C3 and examines the constructs needed for education curriculum management models for children with chronic diseases from the perspective of career education. Construct of education curriculum management models for chronically disease children suggested the following; “Describe the disease”, “Ask about the disease”, “Answer questions about the disease”, “Express one's opinion”, “Understand the disease”, “Understand the treatment and medications prescribed”, “Understand and respond to signs of disease deterioration”, “Understand the range of motion”, “Understand how to relieve stress”, “Practice science to avoid delays in studying”, “Accurately gather information about the disease”, “Explain and select medical insurance”, “Collect information for transition to adult health care”, “Choose work that takes into consideration the physical condition”, “Understand the precautions when choosing an occupation” and “Understand how to interact with others, marriage, and childbirth precautions”.

＜Key-words＞
health impairment, career education, education curriculum management, constructs

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I. Introduction

Although psychogenic diseases are increasing, many children with chronic diseases are also enrolled in the health impairment educational program. A primary challenge of chronic disease is carry-over. “Carry-over” refers to the continuation of a chronic diseases that occurs during childhood into adulthood. Patients who experience carry-over not only have medical problems, such as worsening progressive disease, cumulative disability, and sequelae, but also socioeconomic problems caused by the increased duration of their disease (Takei, Shiramizu & Sato et al., 2007). In addition, there have been incidences of childhood cancer survivors facing difficulties in finding employment or continuing in employment. In particular, it has been noted that after high school, there is not a support system for schoolwork for students who are in the transition period of carry-over (Tsuchiya, Nagata & Hirose, 2013). Studies investigating the occupational status of chronically-ill patients have found that people with chronic diseases are more likely to be unemployed than the Japanese norm (Enomoto, Mizuno & Okajima, et al., 2019). Furthermore, it was found that the quality of life and living satisfaction of unemployed persons is low. In these circumstances, it is necessary to provide career education for patients with chronic diseases so that they can develop independence starting in childhood.

Studies on the ability of teachers in charge of health impairment education to help children become socially independent showed a correlation with basic and general-purpose abilities (Taniguchi, 2014). Basic and general-purpose abilities refer to the capacity to provide the basis for social and vocational independence, regardless of occupational field or occupation (The Central Education Council, 2011). Because trend in currently promoting career education in japan it will also need to present education curriculum management models for children with chronic diseases.

However, there are few studies of career education in children with chronic diseases in Japan, and there are no education curriculum management models from the perspective of career education. The Scale for Coordinate Contiguous Career (Scale C^3), which is a tool for identifying the need for personal career development, has been developed for career training (Han, Numadate, Goya, et al., 2018). The scale is structured in two areas: personality and career. The area of "career" includes items that more specifically show the basic and general-purpose abilities determined by The Central Education Council (2011). The difficulty in social independence of children with chronic diseases is pointed out to be related to personality issues (Taniguchi, 2014). Therefore, Scale C^3 structures may be helpful in examining the constructs of education curriculum management models for children with chronic diseases from the perspective of career education.

This study aimed to identify educational challenges in career education for children with chronic diseases and to consider constructive constructs for building future education curriculum management models.

II. Methods

1. Literature Section

The literature was extracted using the Japanese databases “CiNii (Citation Information by National Institute of Informatics)” and “J-STAGE (Japan Science and Technology Agency)”. The literature is extracted by the following method (Table 1). The literature corresponds to the "career" area of the Scale C^3 and examines the constructs needed for education curriculum management models for children with chronic diseases from the perspective of career education.

<Table 1> Literature section criteria

1. Keyword	• Chronic disorders or Health impairment and carry-over • Chronic disorders or Health impairment and Transitional Support • Chronic diseases or Health impairment and career education
2.Screening criteria	• Issues related to the transition period from elementary school to high school or issues related to subsequent carry-over • Content related to career education and social independence • Exclude symposium materials • Exclude psychogenic disorders

2. Structure of the Scale for Coordinate Contiguous Career (Scale C^3)

The "career" area of the Scale C^3 was developed based on the basic and general-purpose abilities described by The Central Education Council (2011). The four sub-domains of the "career" area are "human relationship formation skills", "self-understanding and self-management skills", "basic skills of responding to tasks" and "career planning skills".

III. Results

1. Literature analysis

The results of the extracted literature are showed in Table 2. Of these, 12 were analyzed except for overlapping literature.

<Table 2> Number of papers that met the selection criteria

	CiNii	J-STAGE
Chronic disease and Carry-over	1	8
Health impairment and Carry-over	0	0
"Chronic disease" and "Transitional support"	0	1
Health impairment and Transition support	0	0
"Chronic diseases" and "career training"	1	0
Health impairment and career training	0	1

2. Results of consideration of construct

The constructs of education curriculum management models for children with chronic diseases, based on the career educational perspective, are showed in Table 3.

"Human relationship formation skills" includes "appreciating diversity," "communication skills," and "social skills". The human relationship formation skills of children with chronic diseases included the following: "They can explain the disease around them" (Nio & Ishikawa, 2013; Ishikawa, Nio & Takada, 2013), "Questions can be answered by healthcare professionals" (Maru, 2012; Nagoya & Abe, 2015; Yamamura, 2017), and "Ability to express one's opinion" (Nagoya & Abe, 2015).

"Self-understanding and self-management skills" has three sub-domains: "understanding one's role," "motivation," and "stress tolerance". The self-understanding and self-management skills of children with chronic diseases included the following: "Understand your illness" (Nio, 2008; Nio & Ishikawa, 2013; Tsuchiya, Nagata & Hirose, 2013; Ishikawa, Nio & Takada, 2013), "Understand the range of exercise" (Nio & Ishikawa, 2013; Ishikawa, Nio & Takada, 2013;), "Understand the details of the treatment and the drugs prescribed" (Maru, 2012; Nagata & Hirose, 2013; Ishikawa, Nio & Takada, 2013; Yamamura, 2017), "Can recognize and cope with signs of disease deterioration" (Maru, 2012), and "Education for stress relief" (Ikari, 2015).

"Basic skills of responding to tasks" consists of three sub-domains: information acquisition, information expression, and information processing. The basic skills of responding to tasks of children with chronic diseases included the following: "Learn about delays in study" (Ishikawa, Nio & Takada, 2013; Ikari, 2015), "Accurately gather information on diseases" (Ikari, 2015; Sasaki & Kojima; 2017), "Ability to explain about medical insurance" (Nagoya & Abe, 2015), and "Ability to gather information on preparation for transition to internal medicine" (Nagoya & Abe, 2015).

"Career planning skills" consists of two domains: "decision-making" and "carreer design." The career planning skills of children with chronic diseases included the following: "Ability to choose a job that takes into account their physical condition" (Nio & Ishikawa, 2013), "Confirm the precautions when choosing an occupation" (Yamamura, 2017), "Manage money" (Ymamura, 2017), and "Checks points of caution regarding how to interact with others, marriage, and childbirth" (Nagoya & Abe, 2015).

<Table 3> Construct of education curriculum management models for chronically disease children based on career educational perspective

Proposed construct	Career area of the Scale C^3 (Basic and general-purpose abilities)
• Describe the disease • Ask about the disease • Answer questions about the disease • Express one's opinion	Human relationship formation skills
• Understand the disease • Understand the treatment and medications prescribed • Understand and respond to signs of disease deterioration • Understand the range of motion • Understand how to relieve stress	Self-understanding and self-management skills
• Practice science to avoid delays in studying • Accurately gather information about the disease • Explain and select medical insurance • Collect information for transition to adult health care	Basic skills of responding to tasks
• Choose work that takes into consideration the physical condition • Understand the precautions when choosing an occupation • Understand how to interact with others, marriage, and childbirth precautions	Career planning skills

IV. Discussion

Children with chronic diseases are often restricted from participating in schools and society because of their illness. The impact of the illness on the child may also affect career development. In particular, it has been shown that restricting life activities due to the illness itself or its treatment causes stress, anxiety, and insecurity due to delays in studying (Ikari, 2015). In order to support the career development of children with chronic diseases, it is necessary to understand diseases and treatment methods and to consider their impact on children`s daily lives. In addition, children may need to develop skills to explain and understand the illnesses around them. People working with children with chronic diseases often communicate with family members, school teachers, friends, and healthcare professionals. It is therefore a key skill for people with chronic diseases to be able to ask doctors about their illnesses and to express their opinions (Nagoya & Abe, 2015). It is also considered necessary to have the power to infer what could happen with one's illness or occupational life when choosing a job.

The limitations of this study include the narrow focus of literature on career teaching for people with chronic diseases in Japan, which resulted in a small number of articles available for literature analysis. In the future, in order to create education curriculum management models for career education for children with chronic diseases, analysis of literature from non-paper sources will be included, and a more detailed modeling of the constructs will be considered. There are also many issues related to learning for children with chronic disease, but this study was not able to analyze those issues specifically. From the viewpoint of basic and general-purpose abilities, we believe that analyzing the content of each subject will create a curriculum for children with chronic diseases.

Children with chronic diseases face a number of career development challenges due to their needs as a result of their illness. The majority of unemployed patients are assessed to be self-employed (Enomoto, Mizuno & Okajima, et al., 2019). From the perspective of career education, therefore, it is necessary to create from basic and general-purpose abilities perspective models the formulation of curricula tailored to the needs of children with chronic diseases in the future.

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REVIEW ARTICLE

Review of Studies on Syntactic Development in Children and Adults with Intellectual and Developmental Disorders:

Comparing Japanese and International Studies

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ABSTRACT

It is known that people with intellectual and developmental disorders (IDD) have more deficits in syntactic than other linguistic abilities. However, only a few studies on the syntactic development of people with IDD have been conducted in Japan. As a result, basic studies, accumulated data and the development of assessment methods have been deficient in Japan compared to other countries. This review compared international research findings with studies conducted in Japan. The results indicated that various factors affect the acquisition of syntactic knowledge, including the type of disability and the educational environment, which have not been sufficiently investigated. Based on the results, we have discussed the need to conduct future studies in Japan. It is suggested that future studies need to undertake the following tasks. (1) Developing scales for assessing language development to objectively and comprehensively evaluate syntactic development. (2) Investigating factors affecting syntactic development in people with IDD from perspectives other than the mental age (MA) and intelligence quotient (IQ), including the type of disability, life experience, and cognitive development, among others. (3) Investigate syntactic development in IDD people based on their stage of development, i.e., before or after acquiring grammar.

＜Key-words＞
intellectual disabilities, syntax, language development, language disorder

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I. Introduction

People that understand Japanese can at least comprehend “content words” and “function words” (Teramura, 1982) and they can interact using the spoken language in daily conversational settings based on this understanding. In the Japanese language, postpositional particles, which are one type of function words, play a critical role in refining sentences and improving listeners and readers comprehension (Saito, 2001; Yokoyama, 2008).

Language development and communication in children with IDD show delays in comprehending and expressing different language components, such as phonemes, syntax, morphemes, meanings, and pragmatics, among others, which is caused by a delay in the development of symbolic functions (Ishida, 2010; Otomo, 2001). The syntactic development of IDD children shows especially significant delays than would be expected based on MA and mean length of utterances (MLU). Moreover, IDD children compared to typically developing (TD) children with the same level of MA and MLU have significantly lower scores for morphologically and syntactically complex skills, such as understanding function words and passive sentences (Ito, 1998; Rondal, 1995).

Delays in syntactic development are expected to result in difficulties in understanding others’ referential intentions and feeling, as well as discrepancies in communication between speakers and listeners. These may cause problem behaviors and difficulties in social participation. Abe & Kuribayashi (2010) investigated communication conditions between children with intellectual disabilities as well as developmental disorders and day-care staff. They suggested that poor communication between staff and children resulting from the communication methods used by staff that was unsuitable for these children caused problem behaviors in children. Therefore, it is important to obtain data on effective methods of teaching languages to people with IDD and to support them effectively.

There are fewer studies on the syntactic development of people with IDD conducted in Japan compared to other countries. Therefore, this study examined the findings of previous studies conducted in other countries, where many basic studies have been undertaken, data accumulated, and different scales for assessing language development have been developed. Moreover, studies conducted in other countries were compared with the findings of Japanese studies. Based on the results, future research needs of Japan are discussed. Additionally, the research on the syntactic development of people with IDD is discussed.

II. Method

1. Data collection method

We searched PubMed, ERIC, CiNii, and J-STAGE, with the keywords “intellectual disabilities/syntax," "intellectual disabilities/sentence structure," and "intellectual disabilities/postpositional particles." As a result, 20 articles were obtained from PubMed, 126 from ERIC, 22 from CiNii and 183 from J-STAGE, a total of 351 articles (the last search date was July 31, 2018) among which 146 were written in English and 205 in Japanese.

Articles investigating Autism Spectrum Disorders (ASD), Down Syndrome (DS), and Williams Syndrome (WS) were also searched by the same procedures, and 194 articles on ASD (165 in English, 29 in Japanese), 337 on DS (150 in English, 187 in Japanese), and 90 on WS (82 in English, 8 in Japanese), a total of 621 articles were obtained among which 972 (351＋621) were on people with intellectual and developmental disorders. Moreover, documents were identified from reference lists. Consequently, 66 (34 in English, 32 in Japanese) articles were extracted for the study.

2. Inclusions and exclusions criteria

Studies were included in this review if they met the following criteria: (1) The subject were children or adults with intellectual or developmental disorders; (2) Studies were on syntactic development; (3) Articles were in English or Japanese. On the other hand, articles were excluded if (1) The subject were not children or adults with intellectual or developmental disorder.; (2) Did not include studies on syntactic development; and (3) Articles were not written in English or Japanese.

III. Findings of international studies

1. Language development scales for evaluating syntactic functions

Different indices and standardized tests have been developed in countries outside Japan for comprehensively assessing syntactic development. Moreover, researchers have been used these tests and indices to examine people with IDD and classify them according to disability types including ASD, DS, and WS (Channell, McDuffie, Bullard, et al., 2015; Chapman, Schwartz & Kay-Raining, 1991; Karmiloff-Smith, Grant, Berthoud, et al., 1997; Volterra, Capirci, Pezzini, et al., 1996). Of these, the Test for Reception of Grammar-2 (TROG-2; Bishop, 2003) has been used in six studies. Auditory abilities for syntactic comprehension can be simply evaluated by using TROG-2, which allows participants to choose a picture they consider to be the most appropriate for representing a word or a sentence that was verbally indicated by an examiner. Moreover, MLU (Brown, 1973), which is an essential index for assessing expressive aspects of language has been standardized for English-speaking countries. MLU has been used in nine studies. The developmental age (DA) of the respondent can be estimated by MLU values. In Japan, however, MLU has been inadequately standardized because there are different opinions about the division of grammatical morphemes (Otomo, 2010). Many other scales for assessing language development have been used overseas, including the Test for Auditory

Comprehension of Language-4 (TACL-4; Carrow-Woolfolk, 2014), Goldman Fristoe Test of Articulation-3 (GFTA-3; Goldman & Fristoe, 2015), and Clinical Evaluation of Language Fundamentals-Preschool-2 (CELF-P2; Wiig, Secord & Semel, 2004), among others.

In Japan, attempts have been made to develop scales to assess language development by evaluating syntactic aspects of language (Miyata, Otomo & Nishizawa, 2004; Saito, 2002; 2003). However, only two standardized tests have been developed in Japan to date: J. COSS (Nakagawa, Koyama & Suga, 2010) and the Syntactic Processing Test for Children-Revised (STC; Fujita & Miyake; 2016). In addition, the LC scale, LCSA (Otomo, Hayashi, Hashimoto, et al., 2013; 2012), S-S Test (Kodera, Kurai & Satake, 1998), and the Syntactic Processing Test of Aphasia-Revised (STA; Fujita & Miyake; 2000) that have been developed in Japan also include items for assessing syntactic aspects of language. However, these scales can only evaluate some grammatical abilities, and not overall grammatical abilities. Furthermore, the LC scale mainly assesses syntactic comprehension, whereas the LCSA assesses syntactic comprehension from the perspective of syntax/pragmatics, and the use of postpositional particles, auxiliary verbs, and conjunctions. Other tests, such as the S-S Test evaluate the expression of lexical bundles, whereas the STA assesses sentence structures based on the conjugation of verbs.

2. Studies on types of disabilities

1) Syntactic development of people with ASD

It has been suggested that children with ASD face problems in syntactic aspects of language including the use of the perfect tense and passive sentences. (Ricks & Wing, 1975; Pierce & Bartolucci, 1977; Tager-Flusberg, 1981). Tager-Flusberg (1981) stated that “ASD children’s active and passive, biased and reversible sentence comprehension is lower than in TD children matched for Vocabulary Age (VA).” Moreover, Perovic, Modyanova, & Wexler (2013) indicated that comprehension of reflexive pronouns, such as “Bart’s dad is touching himself,” in ASD children was significantly lower than in TD children with similar nonverbal IQ and grammatical comprehension. Also, it is generally considered that ASD children cannot utter grammatically complex sentences (Capps, Losh & Thurber, 2000; Eigsti, Bennetto & Dadlani, 2007). Eigsti, Bennetto, & Dadlani (2007) suggested that “syntactic delays in autism might reflect conceptual, rather than grammatical delays.” Furthermore, ASD children compared to TD children make more mistakes in using grammatical morphemes, including the use of the third person singular and the past tense. ASD children also make unique mistakes, such as omissions or echolalia (Roberts, Rice & Tager-Flusberg, 2004). Additionally, it has been reported that even people with ASD having a normal level of intellectual functioning have low complex syntax scores (Durrleman, Hippolyte, Zufferey, et al., 2015; Rama & Lisa, 2016).

2) Syntactic development of people with DS

The vocabulary and syntactic development of children with DS proceeds in parallel with their cognitive development, whereas the development of semantic aspects of language is age dependent (Chapman, Schwartz & Kay-Raining, 1991; Miller, 1988). On the other hand, semantic and syntactic expressions of DS people are significantly delayed compared to their cognitive development (Chapman, Seung, Schwartz, et al., 1998; Finestack & Abbeduto, 2010). The development of syntax in DS children is not only late compared to TD children, but it also does not show the expected development pattern relative to the development of vocabulary. Moreover, DS children have severe deficits in syntactic development of (Miller, 1988). Channell, McDuffie, Bullard, et al. (2015) reported that "people with DS were less likely to use adverbs and verbs in their stories than their cognitively matched TD peers," suggesting the possibility of a "specific weakness in phonological memory" and "a difficulty in abstract learning," which might affect the acquisition of verbs.

Different studies conducted in outside Japan have focused on grammatical morphemes. These studies have indicated that DS people have more morphological/syntactic deficits than deficits in vocabulary and pragmatics (Atake & Ito, 2012; Miles & Chapman, 2002; Ring & Clahsen, 2005; Stathopoulou & Clahsen, 2010). For example, Buckley (1999) reported that DS children tend to omit grammatical morphemes, such as articles, be-verbs, pronouns, and prepositions. Eadie, Fey, Douglas, et al. (2002) analyzed utterances of DS children in play settings and compared their expression of grammatical morphemes with MLU matched TD children. They demonstrated a difference in language acquisition based on the type of grammatical morpheme; such that the expression of regular past tense and the third person singular was less common in DS compared to TD children, whereas no differences were found in the expression of the irregular past tense.

3) Syntactic development of people with WS

Language development of children with WS is looks more optimistic than their cognitive development. For example, the vocabulary development of children with WS is generally extremely positive (Bellugi, Lichtenberger, Jones, et al., 2000), because their comprehension and production of syntax is intact, and the comprehension of passive/conditional sentences is good (Bellugi, Bihrle, Jernigan, et al., 1990; Bellugi, Wang & Jernigan, 1994; Osborne & Mervis, 2007). On the other hand, Volterra, Capirci, Pezzini, et al. (1996) compared WS children and TD children of matched MA using the Peabody Picture Vocabulary Test (PPVT) and TROG. This study indicated that WS children "look similar to normal controls in lexical comprehension, but they appear to perform more poorly in grammatical comprehension." Moreover, comprehension levels of passive sentences in WS children were significantly lower than in TD children (Perovic & Wexler, 2010). Furthermore, WS children were poor at comprehending and using grammatical morphemes (Karmiloff-Smith, Grant, Berthoud, et al., 1997; Eliseo, Verónica, Maite, et al., 2017). These findings were different from those of Bellugi, et al. However, it is generally known that people with WS have good verbal short-term memory (Mervis, Robinson, Bertrand, et al., 2000) and TROG-2 results could be related to the good verbal short-term memory of WS (Mervis & John, 2010; Robinson, Mervis & Robinson, 2003). Therefore, it is possible that the above-described differences are the result of verbal short-term memory of people with WS

IV. Research conducted in Japan

Studies reported in Japanese were searched and identified using CiNii and J-STAGE based on the types of disability that was investigated in each study. We could find no studies related to WS. Therefore, research conducted in Japan on IDD, ASD, and DS are described.

1. Syntactic development of people with IDD

Matsumoto (1989) examined sentence comprehension strategies of IDD people using the movement method, which consists of moving an object by listening to a sentence, and the picture card selection method. The results indicated that more participants used probability strategies when using the movement method, although visual clues were also used in both procedures, suggesting that information processing process differed between the two techniques. The study by Matsumoto (1989) highlights difficulties in analyzing data on language comprehension. Moreover, Matsumoto (1993) indicated that IDD people using probability strategies had lower digit span scores than those using lexical-ordering strategies or case-particle strategies, suggesting that working memory plays an important role in sentence comprehension. Furthermore, there were no differences in digit span scores between participants using lexical-ordering strategies and case-particle strategies. However, the former needs a larger working memory capacity (Matsumoto, 1999; 1993). Matsumoto (1999) discussed this issue and suggested that participants using case-particle strategies had acquired “patterns of mental sentences” (Matsumoto & Furutsuka, 1994) and did not need to memorize each case particle, thereby possibly reducing working memory load.

Takeo & Ito (2014) examined the comprehension of passive sentences in IDD children by classifying passive sentences into direct or indirect sentences. Indirect sentences has the nuance that a subject had suffered some damage or inconvenience, whereas the indirect sentences do not have this nuance. The results of the classification indicated significantly lower indirect passive sentence scores in IDD children suggesting difficulties in comprehending the meaning of such sentences, which is indicative of some damage or inconvenience, whereas syntactic complexity might not have affected their comprehension.

Kishaba (1998a) suggested that the three active sentence comprehension strategies;

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semantic, lexical-ordering, and postpositional particle strategies, might be acquired during the preoperational period, which is one cognitive developmental stage suggested by Piaget. On the other hand, children would have to reach the concrete operational period and acquire decentration in order to comprehend passive sentences.

Ooki & Ikeda (1985) reported on the acquisition of two-word utterances by IDD children. TD children mainly focus and talk about human actions from an early age, whereas IDD children often tend to speak about things other than people, possibly because they have difficulties in abstracting the actions of other people and abstracting people. On the other hand, Ooki & Ikeda (1985) advocated that the abridged consciousness of own and others actions, delays in the abstraction of own and others actions, as well as difficulties in distinguishing the self and others as "actors," among other reasons, could be more important explanations of language delays of IDD children. Moreover, Ike (1979) examined the process of acquiring postpositional particles by IDD children and suggested that the low abstraction abilities of IDD children might cause a delay in the acquisition of postpositional particles. It is possible that cognitive development including the development of interest in and attention to surrounding objects and sounds could play a more important role in development. It is also known that cognitive development is related to language acquisition during the early period (Amano & Seto, 1985; Ogura, 2006; 1999) and that IDD children have significant delays in cognitive development. As a result, cognitive foundations of IDD children might be insufficient, resulting in the problems discussed above. Therefore, in addition to developing an understanding of vocabulary, it would be important to improve nonverbal cognitive abilities that are essential for language acquisition.

Also, individual differences in the syntactic development of IDD children have been reported. Miyata, Otomo, & Nishizawa (2004) suggested that MA and DA assessed by developmental tests might not always reflect the level of linguistic expression. For example, an IDD child with the psycholinguistic age (PLA) and DA levels lower than a three-year-old child who nevertheless had better grammatical abilities than an IDD child with the PLA/DA level of a three-year-old child has been reported. Furthermore, Kishaba (1998b) investigated an IDD child that could comprehend "GA" and "O" case particles in Japanese and could process reversible sentences by using these case particles. This suggested that IDD children using case-particle strategies might not always comprehend and use "GA" and "O."

2. Syntactic development of people with ASD

Nakagawa, Matsumoto, & Ito (2013) compared syntactic knowledge of active/passive sentences in ASD children with intellectual disabilities and TD children. They reported that the correct response rate of ASD children was significantly lower than TD children with the identical vocabulary age (VA). Moreover, the correct response rate for passive sentences was significantly lower than for active sentences in both groups. These findings suggesting that ASD children have more deficits related to passive sentences than TD children corroborate Kumagai (1986) and Tager-Flusberg (1981), and support the idea that ASD children have difficulties in comprehending passive sentences. Nakagawa, Matsumoto & Ito (2013) suggested that the above findings could have resulted because of (1) difficulties in acquiring sentences with changes in verb forms according to case changes, (2) not acquiring knowledge of sentences including changes in noun phrases, and (3) congenital difficulties in changing the perspective, among others. Moreover, they suggested that the low correct response rate for active/passive sentence comprehension tasks in ASD children with intellectual disabilities could not be explained by VA, and that characteristics of syntactic difficulties were different for different people. Kumagai (1985) suggested that ASD children often made reversals of the subject and misused postpositional particles. For example, when seeing a picture expressing "*kuma ga hachi ni hitosashiyubi wo sasareta* (a bear was stung by a bee on the index finger)," they constructed the following sentences: "*kuma ga hachi ni hitosashiyubi wo sashiteiru*" or "*kuma ga hachi wo sasareta.*"

3. Syntactic development of people with DS

There is only one report on the syntactic comprehension of people with DS (Saito, 2002). Saito (2002) reported that DS children had a significant delay in acquiring grammatical comprehension morphemes and suggested that the comprehension of case particles and the voice might be rarely acquired before the MA of eight years.

Ayuzawa & Ikeda (1993) investigated the development of sentence structures in utterances made by school-aged DS children. The total number of sentences expressed by DS children was smaller than IDD children without DS having the same VA. Even when VA increased, they less often used complex sentences. Ayuzawa & Ikeda (1993) suggested the necessity to examine the specificity of cognitive processes in these children, and especially the correlations with serial processing. Issues related to serial processing were also examined by Tanaka (1985) and Hartley (1982). According to Tanaka (1985), speech acts of IDD children using picture cards indicate difficulties in understanding the picture content, i.e., forming the intention for making utterances, which requires simultaneous processing. Moreover, they have difficulties in connecting words in the order of the utterance, which requires serial processing, as well as forming/developing linear diagrams of sentences, which requires serial aspects of language. Ike, Saito & Kobayashi (1978) also reported similar characteristics in IDD children.

Watamaki (1999) reported on the development of postpositional particles in DS children and suggested that it was consistent with the order of acquisition in a TD child (Okubo, 1978). Moreover, the developmental order of postpositional particles/auxiliary verbs in DS children was identical to TD children. On the other hand, Saito (2002, 2003) suggested that the expression of case particles in DS children was significantly delayed compared to TD children. Moreover, that acquisition of case particles was unstable, and it was difficult for them to acquire case particles before the MA of 7-8 years. Rikura & Kuroda (1989) also reported similar findings that the acquisition of postpositional particles in DS adults was delayed compared to people with developmental retardation with the identical MA. They acquired only “DE” between the MA of five years and three months of age and that of six years and three months of age. Furthermore, DS children first acquired sentence-ending particles and then acquired case particles. They had a strong orientation towards issues related to interpersonal meanings during the early stage of grammatical acquisition (Watamaki, 1999). The use of sentence-ending particles in IDD children tends to progress further than TD children with the same MA (Ike, Saito & Kobayashi, 1978). On the other hand, it is difficult for ASD children to use the sentence-ending particle “NE” (Satake & Kobayashi, 1987; Watamaki, 1997). It is generally considered that one of the characteristics of DS people is the development of proper sociality (Martin, Klusek, Estigarribia, et al., 2009; Mundy, Sigman, Kasari, et al., 1988), which might lead to the ease of acquiring sentence-ending particles. On the other hand, ASD people have problems in the development of sociality, which might be reflected in the acquisition of sentence-ending particles. Acquisition of sentence-ending particles is considered to have a strong correlation with sociality development.

Not only the extent of the acquired vocabulary but also functions of acquired words are important for expressing sentences (Saito, 1988; 1989). Single-word expressions have three functions; (1) a demanding function, e.g., “Manma,” expressing “I want to eat,” (2) an emotional function, e.g., words accompanying actions and words expressing emotions or intentions, and (3) a display function, e.g., naming things and describing actions and conditions. Saito (1988) considered that the display function had a high possibility of developing into sentences, whereas the emotional function had a low possibility. Saito (1989) suggested that single-word expressions of DS compared to TD children include more words having emotional functions that may not lead to constructing sentences. Therefore, it is possible that syntactic development is affected by the functions of acquired words.

V. Future Research Needs of Japan

1. Assessment

Different scales on language development have been developed internationally to evaluate syntactic aspects of language. These include TROG-2, the Test for Auditory Comprehension of Language Fourth Edition (TACL-4), and MLU, among others. In Japan, on the other hand, the total number of studies on teaching, supporting, and evaluating syntactic aspects of language is small (Enomoto & Shimada, 2002; Oshiro, 2014). Moreover, effective methods of teaching, supporting, and evaluating syntactic development has not been established in Japan. Furthermore, there are only a few standardized scales for assessing language development. In addition, the existing

Japanese language development tests include items for assessing syntactic aspects of language, however, they cannot accurately and comprehensively evaluate grammatical abilities. Furthermore, as suggested by Matsumoto (2004), task sentences used as stimuli and assessment items differ in different fields of research, making it difficult to compare among different fields.

J. COSS, which was developed by referring to the Test for Reception of Grammar (TROG; Bishop, 1989) was recently published in Japan. It has enabled us to evaluate general grammatical comprehension abilities in the Japanese language. Children having hearing impairments, pervasive developmental disorders, and ASD have been analyzed by using J.COSS and the results have been discussed (Nakagawa, 2010; Nakagawa & Koyama, 2013; Nakagawa, Takei & Koyama, 2013). However, no studies have been conducted on IDD people. Therefore, it is necessary to examine the appropriateness of J.COSS for IDD people in the future.

There is also a need to develop scales for objectively and comprehensively measuring the language development of IDD children in Japan from the perspective of syntactic development. Moreover, comparison with TD children should be conducted by using these scales to investigate the characteristics of language development of IDD children. However, there are different types of grammar in the Japanese language. Therefore, the language can be understood even if the word order or grammar are not used correctly. As a result, there is a need to define grammatical abilities required in daily conversational settings before developing scales for assessing language development.

2. Factors affecting the syntactic development of IDD children

Different studies conducted from the perspective disability types have been reported internationally. In Japan, on the other hand, there are fewer studies on disability types. These include four ASD related studies and seven DS related studies, whereas no WS related studies have been reported. Moreover, Japanese studies dealing with IDD people include participants with other disabilities, such as DS and ASD, among others. Therefore, the syntactic development of IDD people has not been sufficiently investigated in Japan to date.

Previous studies have indicated that ASD children have difficulties in comprehending personal pronouns and passive sentences, as well as using sentence-ending particles, which might be caused by characteristics of ASD, including difficulties in changing the perspective (Okuda & Inoue, 2002) and problems in sociability. It has been suggested that DS children have deficits in auditory short-term memory (Jarrold & Baddeley, 1997 that might cause difficulties in acquiring vocabulary and grammatical morphemes, which may lead to deficits in syntactic development. Moreover, WS people have a wide range of vocabulary and do not have grammar, reading, or writing skills deficits (Hosokawa, 2003; Bellugi, Bihrle, Jernigan, et al., 1990). This gives the impression that they do not have any language delays of development. However, recent studies have indicated that the syntactic development of WS people is not always adequate (Perovic & Wexler, 2010; Volterra, Capirci, Pezzini, et al., 1996), and they do have certain problems in language development. WS is a rare disorder afflicting one in 20,000-30,000 people (Hosokawa, 2003). Therefore, it is difficult to gather samples of WS people for research purposes and compare them with people with other disabilities. It is suggested that future studies investigate the syntactic development of WS children by using case studies.

Children having delays in cognitive development, such as ASD, DS, and WS, show unique developments in cognitive functions. It is important to examine correlations between the characteristic development of each cognitive domain in each disorder and syntactic development in detail. Not only symptoms and characteristics but also factors affecting the syntactic development of IDD children should be examined from the perspective of disability types, as has been undertaken in other countries.

On the other hand, previous studies have indicated that methods of acquiring syntactic knowledge and the process of syntactic development in children with identical types of disabilities differ (Kishaba, 1998b; Miyata, Otomo & Nishizawa, 2004; Nakagawa, Matsumoto & Ito, 2013). Syntactic development of IDD individuals cannot be explained only by the level of intellectual development or the characteristics of the disorder. Moreover, individual differences have been observed in the syntactic development of TD children as well as IDD children (Saito, 2002). Grammatical abilities have a strong correlation with reading. Family environment has a significant effect on children in lower grades, whereas the level of intelligence has a significant effect on children in higher grades (Uchiyama, 2010). It would be useful to examine the syntactic development of IDD children from the perspective of individual differences when investigating different factors affecting language acquisition, such as life experience, the frequency of using language, and the educational environment, among others, as well as for providing adequate support to IDD children.

Children with delays in intellectual development also show delays in syntactic development, which might be affected not only by the level of intellectual development and insufficient syntactic knowledge but also by other factors including traits of disorders and individual differences. It is considered necessary to examine factors affecting the syntactic development of IDD children from the perspective of disability types as well as individual differences.

3. Research methods

Previous studies have indicated that utterances of IDD children are short and simple. Even if they can speak in sentences, they have difficulties in acquiring grammatical morphemes, such as case particles and passive sentences. The Japanese language is an agglutinative language, and case particles play important roles. As a result, IDD children might have difficulties in maintaining smooth communications with others, because the comprehension of grammatical morphemes is essential for understanding the Japanese language. comprehension of connections between words, i.e., semantic relationships, is important, and it is acquired before the acquisition of grammar. After the acquisition of grammar, children can express different meanings by attaching morphemes to words, such as *"hashiite inai* (not running)" and *"okorareru* (being scolded)," among others. As a result, it is necessary to examine the syntactic development of IDD children based on their developmental stage, i.e., before or after acquiring grammar.

It is suggested that the acquisition of vocabulary for producing a sentence in the period before acquiring grammar should be analyzed minutely (Saito, 1988; 1989) and examined from the perspective of case grammar, e.g., how to connect acquired vocabulary to syntactic development (Ooki & Ikeda; 1985). In the period after acquiring grammar, factors affecting the acquisition of grammatical morphemes, especially correlations with cognitive development should be investigated. Matsumoto (1999, 1993) has indicated that working memory plays an important role in sentence comprehension, whereas Volterra, Capirci, Pezzini, et al. (1996) suggested that grammatical comprehension of WS children was not well-developed, regardless of a well-developed auditory short-term memory. It is considered that sentence comprehension is related not only to working memory but also to the transition from short-term to long-term memory. If there are problems in the process of transition, grammatical information might not be transferred into knowledge.

Based on the above discussion, it is would be necessary to examine syntactic development in the spoken language of IDD children by dividing their language into periods before and after the acquisition of grammar from the perspectives of morphology and syntax. Furthermore, it is suggested that fundamental studies should be conducted on correlations with cognitive development to accumulate basic data.

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