

博士論文

Life Satisfaction and Participation of Older Adults with Care

Needs Who Live at Home

-Analysis Focused on Occupational Gap-

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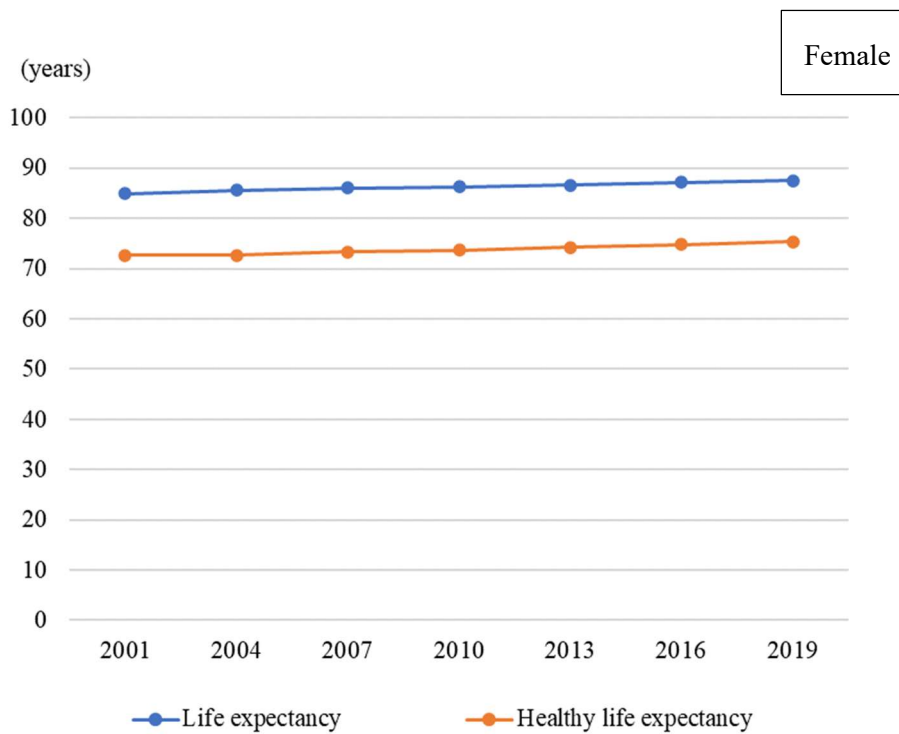
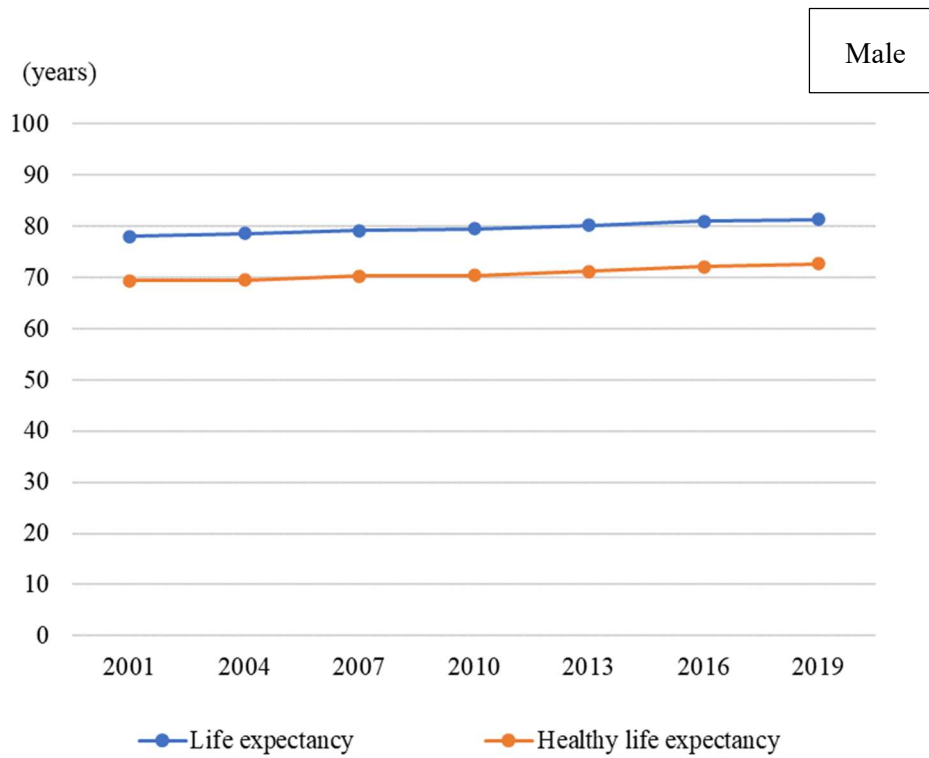
## **Chapter 1: General Introduction**

### **1.1 Background**

In September 2021, approximately 36.2 million people in Japan were over 65 years old. The ratio of older adults to the total population was 29.1%, a record high<sup>1)</sup>. The aging rate in Japan is the highest worldwide, and it is increasingly challenging to ensure the maintenance of a better life for them. This ongoing challenge occurs because the populations in some countries are expected to age at a faster rate than in Japan. The average life expectancy of Japanese in 2022 is 81.47 years for men and 87.57 years for women, is the highest in the world<sup>2)</sup>. As average life expectancy has increased, so has healthy life expectancy, or the period during which people can live without health problems that limit their daily lives. However, the gap between life expectancy and healthy life expectancy hardly narrowed between 2001 and 2019; it was 8.67 years for men and 12.28 years for women as of 2001, and 8.73 years for men and 12.07 years for women as of 2019<sup>2)</sup> (Figure 1-1).

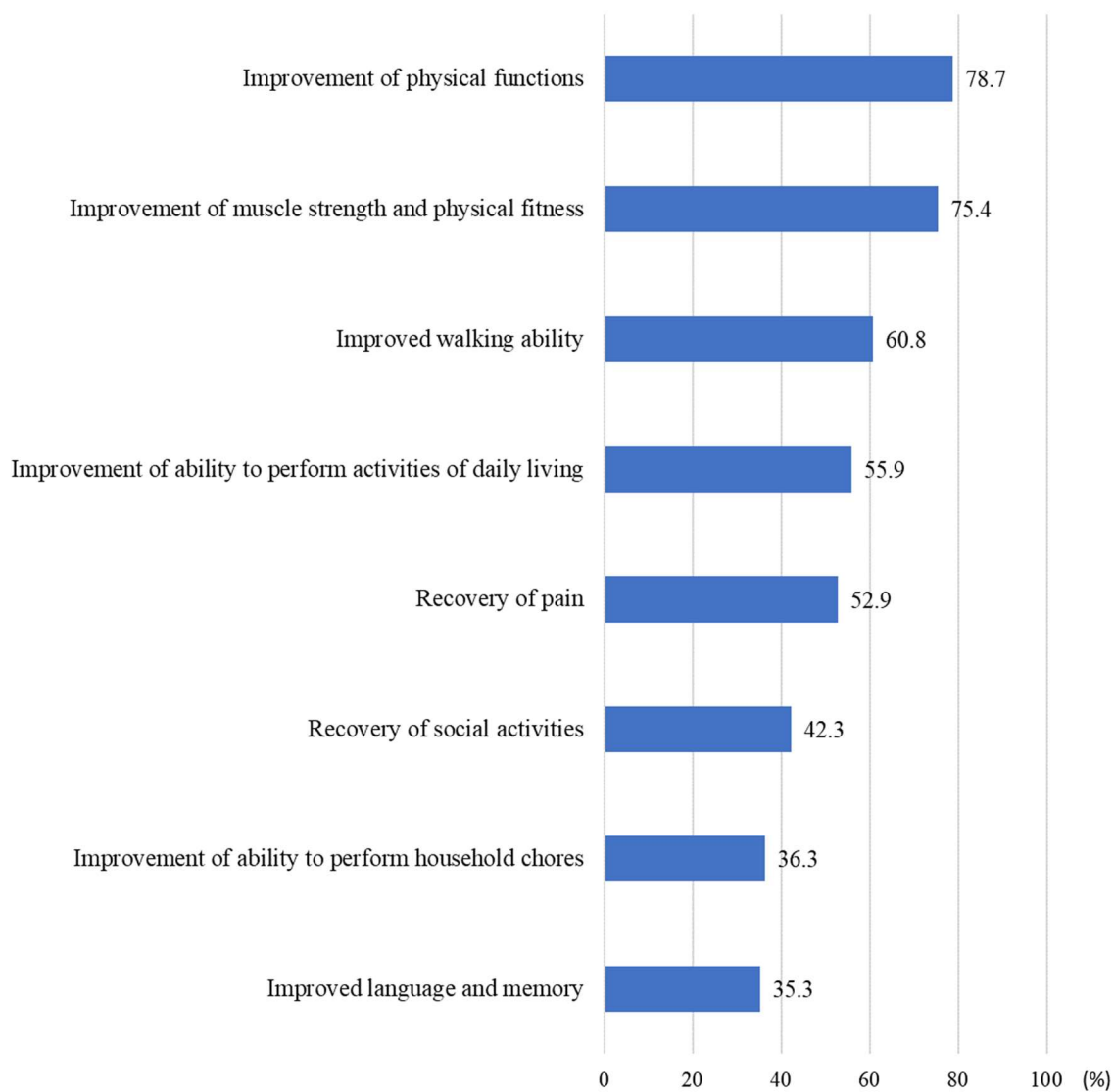
This gap is expected to increase pressure on social security costs due to higher medical and nursing care costs as well as the challenge is to reduce it<sup>3)</sup>. In rehabilitation, prevention and improvement of age-related decline in physical and mental functions is emphasized to bridge this gap<sup>4)</sup>. However, as average life expectancy and healthy life expectancy have remained virtually unchanged for more than a decade, the decline in physical and mental functions associated with aging among the older adults is inevitable. As long as healthy life expectancy is defined as “the period during which one can live without being limited in daily life by health problems” and such limitations are assumed to be due to an individual's body functions and structure, it will be difficult to reduce this difference.

The International Classification of Functioning, Disability, and Health (ICF) is a framework reflecting the dynamic, nonlinear interactions among health conditions, activity and participation, body functions, and structures as well as personal and environmental factors<sup>5)</sup>.



*Figure 1-1. Life expectancy and Health life expectancy changes from 2001 to 2019 by gender*

The ICF states that activity and participation can be promoted by the interaction between personal and environmental factors, even if body functions and structures do not improve. This implies it is possible to improve the state of disability (i.e., reduce the state of life function) including the possibility of extending the period of better life, without direct intervention in body functions and structures. The World Health Organization (WHO) focuses on participation as a health-related outcome and defines “participation” as involvement in situations of life<sup>5</sup>). It is important to support the participation of older adults whose physical and mental functions inevitably decline with age or whose physical and mental functions are not expected to improve to achieve a satisfying life. However, it has been reported that the frequency of participation among the older adults decreases with age<sup>6</sup>), and older adults with impaired physical functions participate less frequently than healthy individuals<sup>7</sup>); thus, challenges in the participation status of older adults with care needs remain. Despite this situation, in Japan, rehabilitation of older adults has tended to focus on the improvement of physical functions, and the approach to participation has been inadequate<sup>8</sup>). In a survey of 2,786 older adults undergoing rehabilitation<sup>8</sup>), more older adults chose improvement of physical functions (78.7%) or improvement of muscle strength and physical fitness (75.4%) than chose recovery of social activities (42.3%) as the reason for continuing rehabilitation (Figure 1-2).

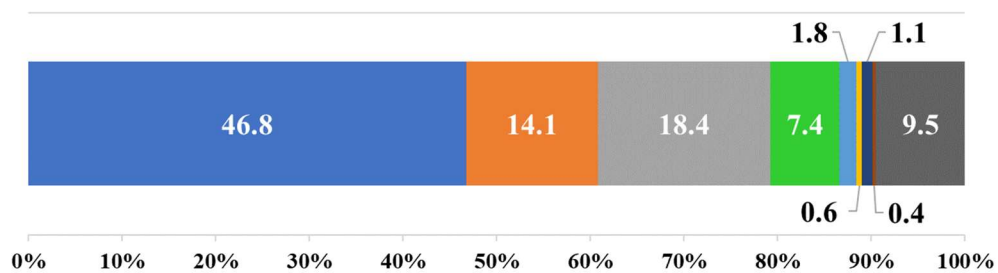


*Figure 1-2. Reasons for Continuing Rehabilitation in 2014 (n=2786)*

*The figure is adapted from Ministry of Health, Labour and Welfare (2014)<sup>8)</sup>*



In a survey of 3,415 rehabilitation professionals, 60.9% of respondents answered that the primary purpose of rehabilitation was to maintain or recover of mental and physical functions. This was higher than the proportion of those who answered the primary purpose of rehabilitation was activity or participation, such as maintaining activities of daily living (ADL) and/or instrumental ADL (IADL) (18.4%) or recovering social adaptability (0.6%)<sup>8)</sup> (Figure 1-3).



- Maintenance of mental and physical functions
- Recovery of mental and physical functions
- Recovery of ADL and IADL
- Maintenance of ADL and IADL
- Maintain social adaptability
- Recovery of social adaptability
- Medical Management
- Other
- Non-response

*Figure 1-3. Primary Purpose of Rehabilitation in 2013 (n=3415)*

*The figure is adapted from Ministry of Health, Labour and Welfare (2013)<sup>8)</sup>*

The report indicates that the home-visit rehabilitation programs in place focus on range of motion exercises (83.2%), muscle strengthening (78.4%), and gait exercises (69.3%) at about 70–80% each with less of an approach to activity and participation<sup>9)</sup> (Figure 1-4). Although rehabilitation professionals recognize the importance of activity and participation, it is difficult to implement these approaches in the actual rehabilitation programs, which may hinder the promotion of activity and participation among older adults with care needs.

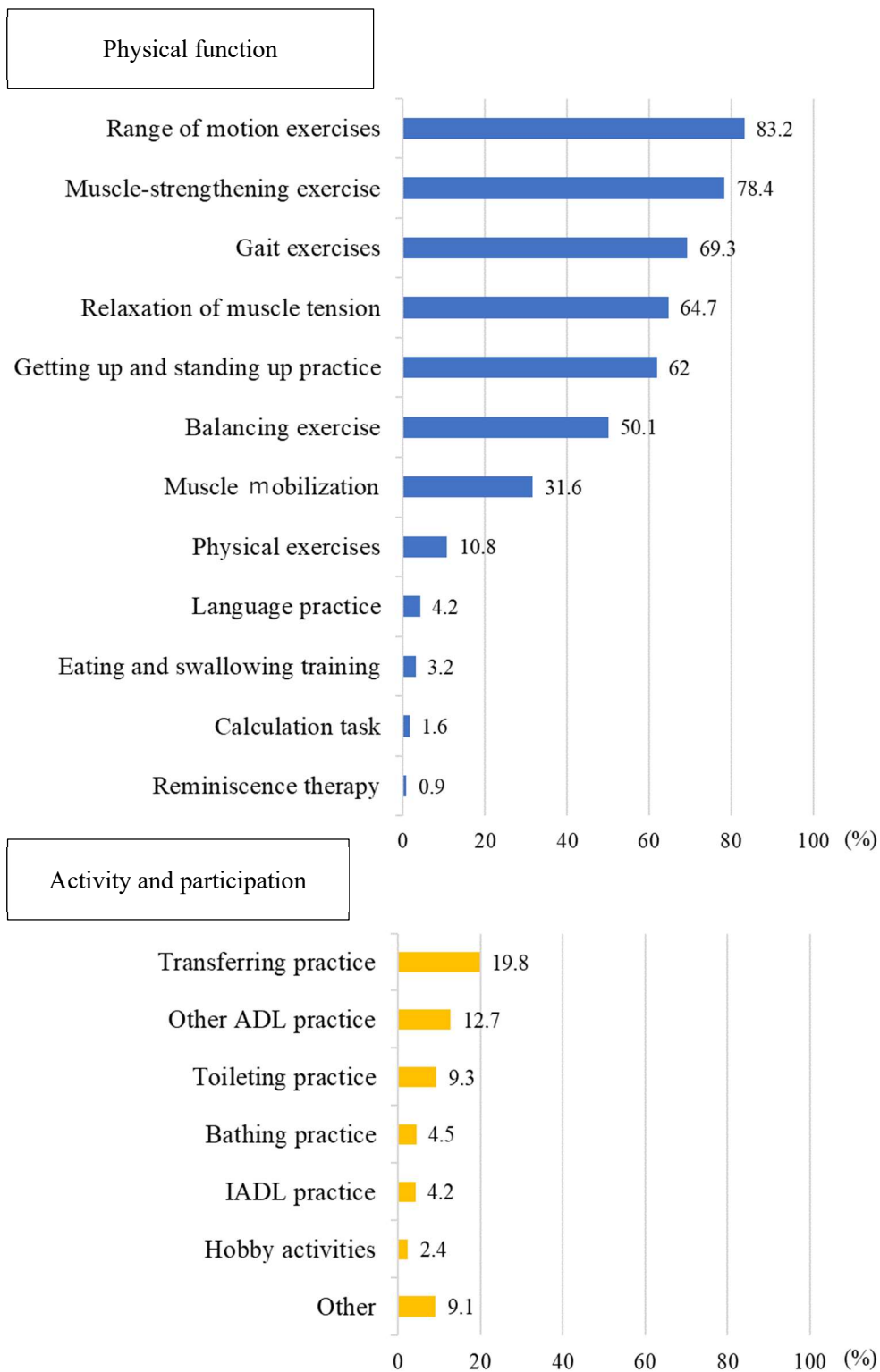


Figure 1-4. Home-Visit Rehabilitation Program in 2013 (n=1438)

The figure is adapted from Ministry of Health, Labour and Welfare (2013)<sup>9)</sup>

As the number of elderly people increase and they are expected to continue to live better in the community, a paradigm shift in the perception of rehabilitation is required for both rehabilitation professionals and older adults with care needs to promote the participation of older adults with declining physical functions and with care needs. To reconsider the traditional attitude that “life functions cannot be improved without improving physical functions” and to find and implement new values in rehabilitation for older adults with care needs, it is imperative to clarify what kind of participation will contribute to a better life for older adults with care needs.

In rehabilitation, participation is often assessed by performance and capacity<sup>5)</sup>. However, it is important in rehabilitation aimed at improving the life satisfaction of older adults with care needs to focus on the qualitative aspect of participation—whether people perform the activities they want and need to perform—in assessing the participation of older adults with care needs and reduced physical functions.

This study focuses on how participation can be important for older adults with declining physical function to continue to live at home while maintaining improved life satisfaction even when they are in need of care. Furthermore, the project describes the work involved in examining the effects of factors related to life satisfaction, including contextual factors of life function, to contribute to the rehabilitation of older adults with care needs.

## **1.2 Purpose**

The study aims to identify the effects of occupational gap-focused participation on improved life satisfaction for older adults with declining physical functions and care needs.

## **1.3 Structure of the Thesis**

Chapter 2 presents the Japanese version of the Occupational Gaps Questionnaire (OGQ-J) developed to evaluate occupational gaps, including qualitative aspects of participation. The

original version of the Occupational Gaps Questionnaire (OGQ) was developed in Sweden. After developing an OGQ-J adapted to Japanese culture, 1) linguistic and 2) psychometric validation were conducted. Chapter 3 describes the use of the OGQ-J to tabulate the occupational gap of older adults with care needs and details the characteristics of the gap. In Chapter 4, a decision tree analysis is used to explore how the occupational gap classifies life satisfaction. Chapter 5 presents a logistic regression analysis used to identify how factors including environmental and personal factors, which are contextual factors of life functioning, as well as the occupational gap measured by the OGQ-J, effect life satisfaction.

#### **1.4 Ethical Consideration**

The study complied with the guidelines of the Declaration of Helsinki and was approved by the Ethics Committee of Kobe Gakuin University (SOURIN 20–34).

## 1.5 Abbreviation

ADL	Activities of Daily Living
CART	Classification and Regression Tree
FIM	Functional Independence Measure
IADL	Instrumental Activities of Daily Living
ICF	International Classification of Functioning, Disability, and Health
LiSat-11	Life Satisfaction Checklist
OGQ	Occupational Gaps Questionnaire
OGQ-E	English Version of the Occupational Gaps Questionnaire
OGQ-J	Japanese Version of the Occupational Gaps Questionnaire
QOL	Quality of Life
SOC	Sense of Coherence
SOC-13	13-item Sense of Coherence scale
WHO	World Health Organization

## **1.6 Research Achievements in the Doctoral Program**

### **1.6.1 Conference Presentations**

- Misu Y, Kato M, Tanemura R, Okamura H, Yamamoto T. Development and Linguistic Validation of the Japanese Version of Occupational Gaps Questionnaire. The 55th Japanese Occupational Therapy Congress & Expo in Sendai, 2021.
- Misu Y, Kato M, Tanemura R, Okamura H, Yamamoto T. Feasibility of a Japanese version of the Occupational Gaps Questionnaire for healthy people: a pilot study. 18th WFOT congress, Paris, 2022.

### **1.6.2 Research Article**

- Misu Y, Kato M, Tanemura R, Okamura H, Yamamoto T. Development and Linguistic Validation of the Japanese Version of Occupational Gaps Questionnaire. Japanese Occupational Therapy Research. 2022; 41(3): 380-384. (In Japanese)
- Misu Y, Hayashi S, Iwai N, Yamamoto T. Factors Affecting the Life Satisfaction of Older People with Care Needs Who Live at Home. Geriatrics. 2022; 7(5): 117.

## **Chapter 2: Development and Psychometric Validation of the Occupational Gaps Questionnaire**

### **2.1 Introduction**

Participation is considered to positively influence health and well-being and lead to life satisfaction<sup>10</sup>). Hence, maximizing persons' participation is a goal for rehabilitation<sup>10, 11</sup>) and is considered an important rehabilitation outcome<sup>12</sup>). However, individuals may have difficulty doing the things they want or need to do in their everyday life owing to illness or injury, deterioration of physical functions with age, or environmental changes. The gap between what they want or need to do and what they actually do is called the occupational gap<sup>13</sup>). It is reported that people with fewer occupational gaps have higher life satisfaction<sup>14, 15</sup>). In rehabilitation, which aims to improve life satisfaction, it is important to understand the occupational gap of an individual.

The OGQ was developed to measure occupational gaps in Sweden<sup>13</sup>). The OGQ focuses on whether people perform the activities they want to do rather than on whether they can or cannot do the activities. The OGQ was developed based on person-centered theory<sup>16</sup>), which assumes respect for an individual's inherent knowledge, values, needs, and desires. The OGQ comprises 30 activity items in four domains: IADL and leisure, social, and work or work-related activities. Most of the activities have some examples, and participants answer "Yes" or "No" to the questions "Do you perform the activity?" and "Do you want to perform the activity?" for each activity item. The occupational gap refers to the activity participants want to do but do not do or that they do not want to do but do. In addition to questions on the 30 activity items, the OGQ includes open-ended questions to identify occupational gaps in activities not included in the activity items of the questionnaire and the importance of the occupational gaps.

The OGQ has been psychometrically validated and reported to be a useful measurement tool for



individuals with a wide range of disorders<sup>17)</sup>. The OGQ has been translated and culturally adapted into various languages and used in both clinical and research settings worldwide<sup>15, 18–20)</sup>, but no Japanese version has previously been developed. The use of the OGQ by rehabilitation professionals makes it possible to quantitatively identify individual occupational gaps and help them set goals and plan highly individualized rehabilitation programs that meet the individual needs of each participant. Therefore, in Study 1) of this chapter, the purpose was to develop the OGQ adapted to Japanese culture and to examine the linguistic validity (appropriateness of the written expression, content validity, and feasibility of implementation) of the OGQ-J. Then, in Study 2), the purpose was to evaluate the occupational gap of older adults with care needs using the OGQ-J and to conduct psychometric validation of the measure.

## **2.2 Study 1): Development of the Occupational Gaps Questionnaire**

### **2.2.1 Materials and Methods**

Before starting the development of the OGQ-J, permission for translation was obtained from the author of the original version of the OGQ and the Swedish Association of Occupational Therapists, which holds the copyright to the OGQ. Then, the OGQ-J was developed by a research team of five authors—three occupational therapists, one psychiatrist, and one physiotherapist—following standard procedures for producing linguistically valid translations<sup>21)</sup> with previous research<sup>15,18–20)</sup> (Figure 2-1).

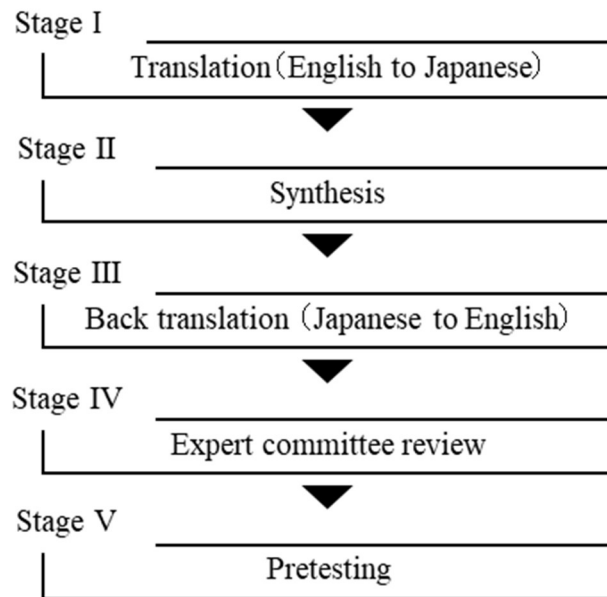


Figure 2-1. Procedure of Developing the Provisional Version of OGQ-J

< Stage I >

In the first phase of development, two native Japanese translators independently translated the English version of the OGQ (OGQ-E) into Japanese.

< Stage II >

The two translators reviewed their draft translations, then discussed and combined them into a single draft. The research team discussed whether there were any differences in semantic content before completing the Japanese translation.

As the OGQ is constructed from daily activities, it is necessary to consider the items and examples of activities according to the culture of the country where the questionnaire is used. The OGQ-J was developed by referring to the Japanese version of the Interests Checklist<sup>22)</sup>, the ICF<sup>5)</sup>, and the

Japanese Interest Checklist for the Elderly<sup>23</sup>). The research team and the author of the original version of the OGQ discussed the items and examples of activities adapted to Japanese culture.

< Stage III >

The Japanese translation was then back-translated by a translator who was a native Japanese speaker with experience living in an English-speaking country as well as by a professional translator.

< Stage IV >

The research team asked the authors of the OGQ to confirm that the content of the back-translation was consistent with the original version. They reflected on the points and comments raised by the authors of the OGQ, discussed the appropriateness and clarity, and completed a provisional version of the OGQ-J.

< Stage V >

Finally, the developed survey was administered to 36 healthy adults (19 male, 17 female) aged over 20 years ( $31.67 \pm 15.08$  years, range 20–64 years) who consented to participate. The time required to answer the questionnaire was measured. After the participants had answered the provisional version of OGQ-J, they were interviewed about (1) their overall impression of the questionnaire, (2) whether the time required to answer and the number of questions were appropriate, and (3) whether they easily understood the explanations and questions.

Table 2-1. Activity items in the English and Japanese versions of the OGQ

English version of the OGQ	Japanese version of the OGQ
<b>Instrumental Activities of Daily Living (IADL)</b>	
1 Grocery shopping	1 Grocery shopping
2 Cooking	2 Preparing for meals
3 Doing laundry	3 Doing Laundry
4 Cleaning	4 Cleaning
5 Doing light maintenance of home, garden, car	5 Performing a light maintenance of your home, garden, car
6 Doing heavy maintenance of home, garden, car	6 Performing heavy maintenance of your home, garden, car
7 Managing personal finances	7 Managing personal finances
8 Transporting oneself	8 Transporting oneself using a vehicle
<b>Leisure activities</b>	
9 Shopping	9 Shopping
10 Participating/taking interest in sports	10 Participating/taking an interest in sports
11 Participating in outdoor activities	11 Participating in outdoor activities
12 Having a hobby	12 Having a hobby
13 Participating in cultural activities	13 Participating in cultural activities
14 Watching TV/streaming or listening to radio	14 Watching TV/videos/listening to music, or the radio
15 Reading newspapers/news/magazines	15 Getting information
16 Reading literature/periodicals	16 Reading
17 Writing	17 Writing
18 Playing games	18 Playing games
19 Using computer or mobile phone	19 Using digital devices
<b>Social activities</b>	
20 Visiting/socializing/having contact with partner and children	20 Visiting/socializing/having contact with family or relatives
21 Visiting/socializing/having contact with relatives, friends and neighbours	21 Visiting/socializing/having contact with boy- or girlfriends, friends, or neighbors
22 Helping and supporting others	22 Helping and supporting others
23 Participating in club/association activities	23 Participating in regional/group activities
24 Practicing religion/spirituality	24 Religious activities, worship
25 Visiting restaurant, café, pub or going out dancing	25 Eating out
26 Travelling for pleasure	26 Travelling
	27 Dressing up ‡
<b>Work or work-related activities</b>	
27 Working	28 Working for payment
28 Studying	29 Studying
29 Taking care of and raising children †	
30 Performing voluntary work	30 Voluntary efforts

† : Activities integrated into No.22 in the Japanese version. ‡ : Activities added to the Japanese version.

### 2.2.2 Results

Table 2-1 shows the activity items for the OGQ-E and OGQ-J. In the OGQ-E, No. 15 “Reading newspapers/news/magazines,” No. 16 “Reading literature/periodicals,” and No. 25 “Visiting restaurant, café, pub or going out dancing” were expressed in concrete terms as examples of activity items. To make these activities easier for the Japanese to understand, the names of the activity items were modified to No. 15 “Getting information,” No. 16 “Reading,” and No. 25 “Eating out” to the extent that the meanings were the same, and the concrete activity names were presented as examples of activities. No. 8 of the OGQ-E, “Transporting oneself,” was changed to “Transporting oneself using a vehicle” to make it clearer that it referred to transportation by vehicle. No. 26 of the OGQ-E, “Travelling for pleasure,” was changed to “Traveling” to imply the same meaning. No. 20 of the OGQ-E, “Visiting/socializing/having contact with partner and children,” was modified to “Visiting/socializing/having contact with family or relatives,” and No. 21 of the OGQ-E, “Visiting/socializing/having contact with relatives, friends, and neighbors,” was modified to “Visiting/socializing /having contact with boy- or girlfriends, friends, or neighbors.” No. 24 of the OGQ-E, “Practicing religion/spirituality,” was changed to “Religious activities, worship,” which is included in the Japanese Interest Checklist for the Elderly<sup>23)</sup>, because the word “spirituality” is not familiar to Japanese. No. 29 of the OGQ-E, “Taking care of and raising children,” which was included in “Work or work-related activities,” was included in No. 22, “Helping and supporting others” in “Social activities” of the OGQ-J. The Japanese version of Interests Checklist<sup>22)</sup> includes “grooming,” and the Japanese Interest Checklist for the Elderly<sup>23)</sup> includes “clothes, hair, and makeup.” Since these activities are familiar in Japanese culture, the OGQ-J added these activities in No. 27 as “Dressed up” and used them as the final Japanese translation.

In discussions on the back-translation, the following two points were confirmed by the author of the original version of the OGQ. First, the back-translation of “Transporting oneself” was

“Transport oneself using a vehicle.” The author of the original version of the OGQ asked whether the use of public transportation is included. We explained that the word “use” included not only operating a vehicle, but using public transportation in Japanese as well. Second, “Traveling for pleasure” was back-translated to “Travelling,” and the author of original version of OGQ asked if the word included travel that was not for the purpose of enjoyment. We explained that “travel” in Japanese means “a trip for enjoyment” and does not include a trip for other reasons, such as a business trip. The consistency between the English version and the Japanese version were confirmed through these processes, and we decided to use this as the provisional version of the OGQ-J.

The pretest results showed that the average response time for the provisional version of the OGQ-J was  $181.14 \pm 59.79$  seconds; all participants answered all questions. The interview results indicated that the instruction texts and questions were easy to understand and answer.

### **2.2.3 Discussion**

In this study, the OGQ-J was developed according to standard procedure<sup>21)</sup> for developing a translated version of a linguistically valid instrument. During this process, the research team and the author of the original version of the OGQ discussed the activity items that were culturally adapted to Japanese culture, and the pretest results confirmed that the instruction texts and questions of the provisional version of the OGQ-J were easy to understand and were comprehensible to Japanese people. The OGQ-J is an easy-to-use questionnaire in clinical and research settings because of the short time required to complete it.

The pretest was conducted with participants in their 20s to 60s. The average age of the participants was  $31.67 \pm 15.08$  years, which was relatively young; all participants were healthy, which may have made it easy to shorten response time and increase understanding of the content. It will be necessary to verify the reliability and validity of the OGQ-J by including older adults and people

with declining physical and mental functions in future research.

## 2.3 Study 2): Psychometric Validation of the Japanese version of Occupational Gaps Questionnaire

### 2.3.1 Materials and Methods

#### 2.3.1.1 Participants

In this cross-sectional study, the participants were recruited from older adults who were certified as needing support and nursing care under long-term care insurance and were using delivered homecare services and daycare services at home. Participants were individuals aged 65 or older, living at home for at least 3 months, with preserved cognitive function, and could answer a self-rating questionnaire. Whether the participant had the cognitive function to respond to the self-rating questionnaire was determined by a physical therapist or occupational therapist who was fully aware of the participant's cognitive status through daily care. Questionnaires were distributed to 267 individuals who consented to participation in this study. Of these individuals, 126 (47.2%) filled out all items in the questionnaires and were included in the analysis (Figure 2-2).

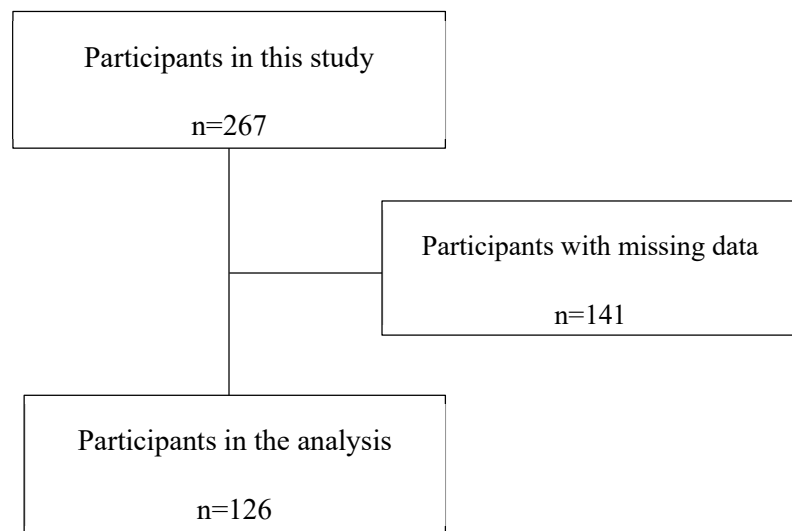


Figure 2-2. Flow chart of participant selection

The figure is adapted from Misu et al. (2022)<sup>31)</sup>



### **2.3.1.2 Data Collection**

Participants were recruited at the collaborating facilities and selected by a physical therapist or occupational therapist working at these facilities. Participants who consented to the study were given a handout with a self-rating questionnaire. OGQ-J developed in Study 1) was used to assess participation in activities.

### **2.3.1.3 Statistical Analysis**

The Rasch model was used to validate the internal scale validity of the OGQ-J. The Rasch model is increasingly used in rehabilitation medicine for developing and evaluating the psychometric properties of new and existing assessments. They are also used to examine whether items from tests or questionnaires measure unidimensional constructs. Using probabilistic transformation techniques, Rasch computer programs are used to convert the raw item scores from a test or questionnaire into equal-interval measures commonly referred to as logits<sup>24</sup>). In this study, the acceptance criteria for item fitness were determined to support the internal scale validity and person-response validity with item and person infit MnSq values of <1.4 logit and z values of <2.0, as per previous studies<sup>14, 15, 17</sup>). In this study, item and person fit indices and the unidimensionality of the OGQ-J were analyzed by principal component analysis of residuals. The analyses were conducted in the Rasch computer program WINSTEPS version 5.24.

### **2.3.2 Results**

Figure 2-3 is person-item location map of the Rasch-scaled OGQ-J showing the distribution of calibrated participants' scores (left side) and item locations (right side). The results of Rasch analysis showed that the distribution of the occupational gap by items ranged from -1.27 to 1.32 logits (mean = 0.00, SD = 0.66). The distribution of the occupational gap by participants ranged from -4.77 to 1.30 logits (mean = -1.97, SD = 1.44).

Table 2-2 shows the summary of the Rasch analysis. 114 (90.4%) participants fit the Rasch model. Cronbach's alpha coefficient was 0.89. The indices of person reliability, person separation, item reliability, and item separation were 0.68, 1.45, 0.82, and 2.17, respectively.

Figure 2-4 shows the results of the principal component analysis of residuals. A principal component analysis of residuals revealed that the OGQ scale could explain 38.9% of the variance in the data set.

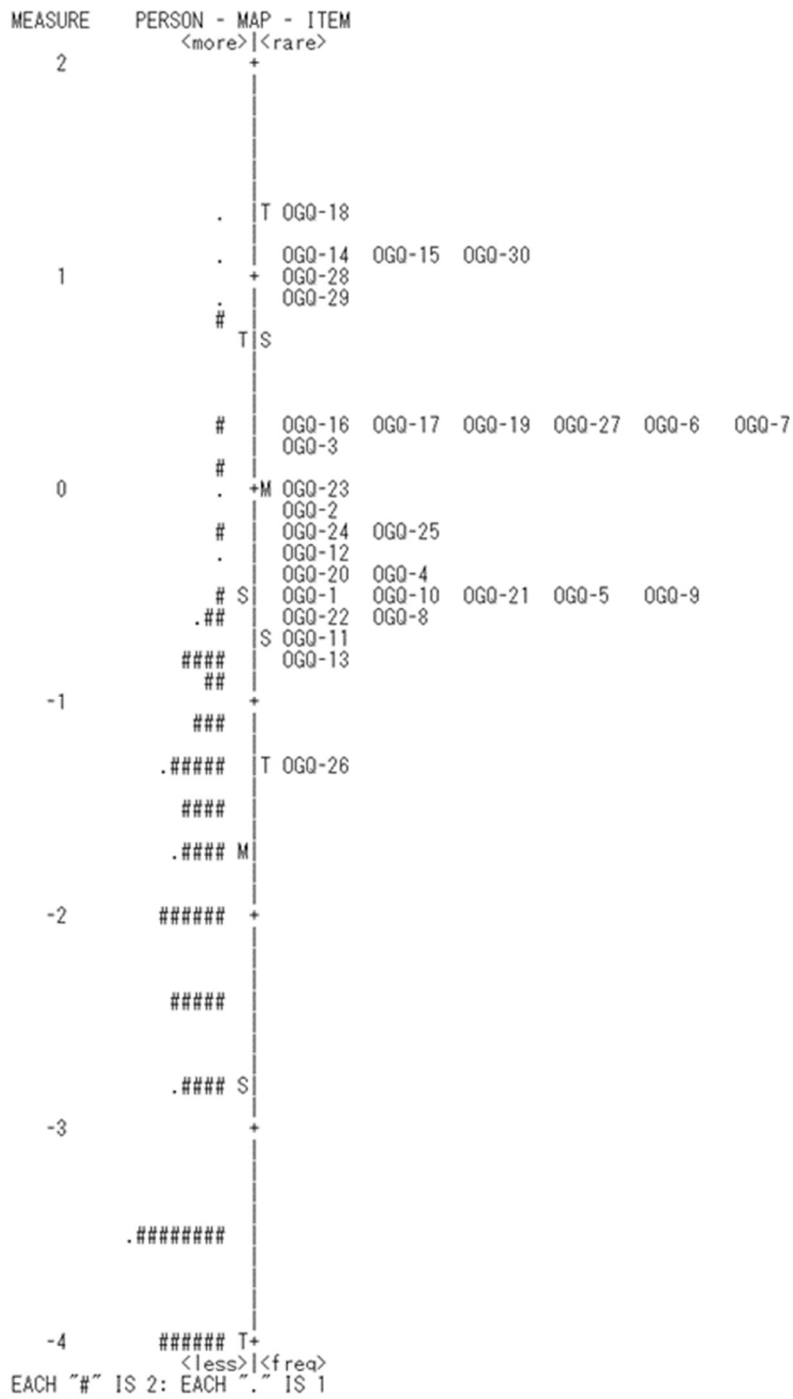


Figure 2-3. Person-item location map of the Rasch-scaled OGQ-J

Table 2-2. Summary of the Rasch Analysis

INPUT: 126 PERSON 30 ITEM REPORTED: 126 PERSON 30 ITEM 2 CATS WINSTEPS 5.1.0.0

SUMMARY OF 114 MEASURED (NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	MODEL S. E.	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	6.6	30.0	-1.67	.57	1.00	.03	1.07	.12
SEM	.5	.0	.11	.02	.01	.06	.04	.08
P. SD	5.1	.0	1.17	.21	.10	.66	.46	.86
S. SD	5.1	.0	1.18	.21	.10	.66	.47	.86
MAX.	23.0	30.0	1.30	1.02	1.32	2.01	3.41	2.06
MIN.	1.0	30.0	-3.55	.38	.71	-2.38	.36	-2.36
REAL RMSE	.62	TRUE SD	1.00	SEPARATION	1.61	PERSON RELIABILITY	.72	
MODEL RMSE	.61	TRUE SD	1.00	SEPARATION	1.64	PERSON RELIABILITY	.73	
S. E. OF PERSON MEAN = .11								

MINIMUM EXTREME SCORE: 12 PERSON 9.5%

SUMMARY OF 126 MEASURED (EXTREME AND NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	MODEL S. E.	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	6.0	30.0	-1.97	.69				
SEM	.5	.0	.13	.04				
P. SD	5.2	.0	1.44	.42				
S. SD	5.2	.0	1.45	.42				
MAX.	23.0	30.0	1.30	1.83				
MIN.	.0	30.0	-4.77	.38				
REAL RMSE	.82	TRUE SD	1.19	SEPARATION	1.45	PERSON RELIABILITY	.68	
MODEL RMSE	.81	TRUE SD	1.19	SEPARATION	1.47	PERSON RELIABILITY	.68	
S. E. OF PERSON MEAN = .13								

PERSON RAW SCORE-TO-MEASURE CORRELATION = .92 (approximate due to missing data)  
 CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .86 SEM = 1.96 (approximate due to missing data)  
 STANDARDIZED (50 ITEM) RELIABILITY = .78

SUMMARY OF 30 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL S. E.	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	25.1	126.0	.00	.26	1.01	-.07	1.07	.06
SEM	1.8	.0	.12	.01	.02	.12	.07	.18
P. SD	9.6	.0	.66	.04	.10	.66	.37	.99
S. SD	9.8	.0	.67	.04	.10	.68	.37	1.00
MAX.	48.0	126.0	1.32	.37	1.20	1.20	2.41	2.26
MIN.	9.0	126.0	-1.27	.21	.82	-1.46	.55	-1.54
REAL RMSE	.28	TRUE SD	.60	SEPARATION	2.17	ITEM RELIABILITY	.82	
MODEL RMSE	.27	TRUE SD	.60	SEPARATION	2.24	ITEM RELIABILITY	.83	
S. E. OF ITEM MEAN = .12								

ITEM RAW SCORE-TO-MEASURE CORRELATION = -.99 (approximate due to missing data)  
 Global statistics: please see Table 44.  
 UMEAN=.0000 USCALE=1.0000

Table of STANDARDIZED RESIDUAL variance in Eigenvalue units = ITEM information units

	Eigenvalue	Observed	Expected
Total raw variance in observations =	38.9035	100.0%	100.0%
Raw variance explained by measures =	8.9035	22.9%	21.9%
Raw variance explained by persons =	4.0531	10.4%	10.0%
Raw Variance explained by items =	4.8504	12.5%	11.9%
Raw unexplained variance (total) =	30.0000	77.1%	78.1%
Unexplned variance in 1st contrast =	2.5400	6.5%	8.5%
Unexplned variance in 2nd contrast =	2.1851	5.6%	7.3%
Unexplned variance in 3rd contrast =	1.9036	4.9%	6.3%
Unexplned variance in 4th contrast =	1.7765	4.6%	5.9%
Unexplned variance in 5th contrast =	1.5399	4.0%	5.1%

STANDARDIZED RESIDUAL VARIANCE SCREE PLOT

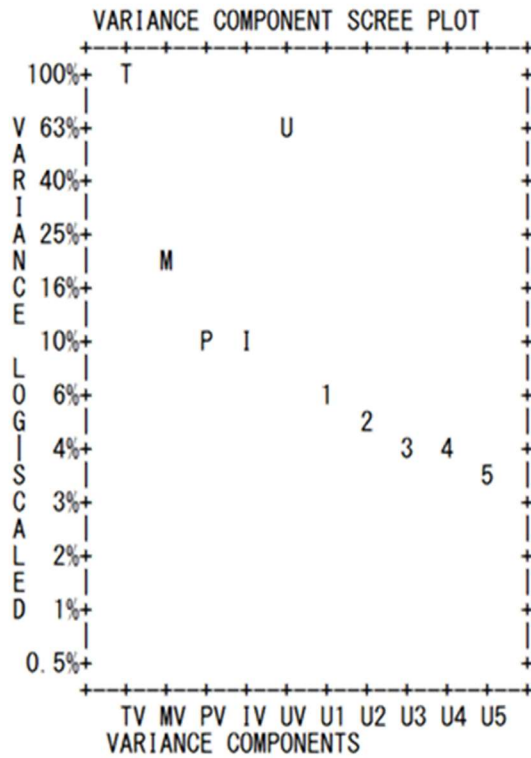


Figure 2-4. A principal component analysis of residuals of the OGQ

### 2.3.3 Discussion

Study 2 in this chapter provides psychometric validation of the OGQ-J. The Rasch analysis revealed that all items of the OGQ-J showed goodness of fit to the Rasch model (MnSq values of  $<1.4$  logit and  $z$  values of  $<2.0$ ), and it confirmed the validity of the internal scale. In previous studies that have validated the OGQ, all items have shown goodness of fit for the Rasch model. The 30 items of the OGQ-J are useful for measuring the occupational gap in older adults with care needs. Person response validity is not considered significantly compromised if the misfit is less than 5%<sup>13, 15, 25</sup>). The results of this study were slightly below the criteria, with 12 of 126 (9.5%) not fitting. The 12 participants who did not fit the Rasch model did not report any occupational gap and did not show the same responses for each activity item. Although these 12 participants were not fitted for the Rasch model, the OGQ-J was able to measure the characteristics of the occupational gap in older adults with care needs. The Rasch model states that the person and item domains must detect at least two distinct groups each, and a person and item separation index 1.5 or higher is desirable<sup>26</sup>). This study showed person and item separation indices of 1.45 and 2.17, respectively, approximating previous studies' values (1.67–1.82 and 2.88–3.32)<sup>14, 15, 17</sup>). The OGQ-J was able to separate persons and items into two distinct groups, indicating that it can find a wide range of people with an occupational gap. Unidimensionality is also further supported if the measurements obtained from the OGQ-J responses explained 50% of the total variance of the data, with less than 5% of the variation not explained by the first contrast<sup>27</sup>). In this study, principal component analysis of standardized residuals of the non-homogeneous sample showed that 38.9% of the total variance was explained by the Rasch dimension. This was lower than the criterion we set. The unexplained variance of the first contrast explained 6.5% of the residuals. This result does not fully satisfy the criteria for unidimensionality but follows similar trends to those reported by previous studies<sup>15, 17</sup>). The OGQ-J may have subdimensions depending on the area of activity, which needs to be interpreted by the domain.

## **Chapter 3: Characteristics of the Occupational Gaps among Older Adults with Care Needs**

### **3.1 Introduction**

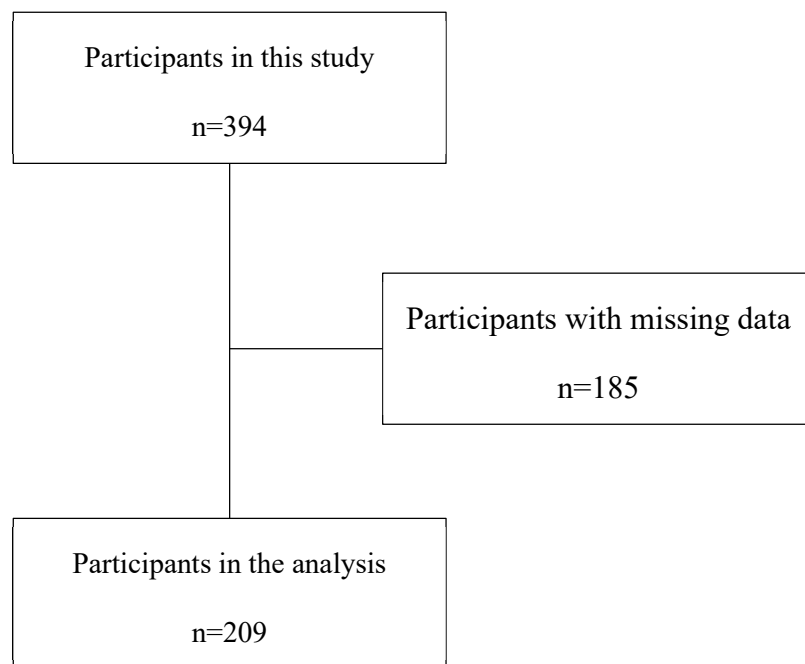
Factors of participation restrictions among older adults include illness, frailty, and declining abilities and frequency of participation decreases with age<sup>28</sup>). Therefore, older adults with care needs experience challenges with participation. However, it is reported that participation can be realized without necessarily improving body functions and/or structures<sup>5</sup>). However, the actual status of participation, i.e., the kinds of activities older adults with care needs participate in has not been clarified. When supporting an individual's participation in rehabilitation, it is important to focus on the "qualitative aspects of participation," such as how the individual performs the activities that they want to do, in addition to the ability to participate and the execution status. However, it is unclear the kind of activities older adults with care needs want to participate in.

Chapter 2 reported linguistic validity and psychometric validation of the OGQ-J for measuring the occupational gap between what "they actually do" and what "they want to do." The OGQ comprises activities in four domains: IADL, leisure activities, social activities, and work or work-related activities. It also elucidates two different types of occupational gap: "activities that they do not do but want to do" and "activities that they do but do not want to do." In addition, the OGQ can assess two different types of "no occupational gap," such as "activities that they do and want to do" and "activities that they do not do and do not want to do." Therefore, in total, the OGQ can assess four different occupational gap patterns. Previous studies have been analyzed by calculating the total number of two different types of occupational gap in the OGQ but have not been validated by considering the characteristics of the activity domains and four different types of occupational gap pattern in the OGQ. Therefore, this chapter aims to evaluate the occupational gap of Japanese older adults with care needs using the validated OGQ-J and to clarify the characteristics of their participation to highlight challenges in their participation.

## 3.2 Materials and Methods

### 3.2.1 Participation

Participants were individuals aged 65 or older, living at home for at least 3 months, with preserved cognitive function, and could answer a self-rating questionnaire. Whether the participant had the cognitive function to respond to the self-rating questionnaire was determined by a physical therapist or occupational therapist who was fully aware of the participant's cognitive status through daily care. After recruitment, 394 individuals agreed to participate in the survey. With the exception of 185 participants who failed to fill out the OGQ-J items, 209 participants were included in the analysis finally (Figure 3-1).



*Figure 3-1. Flow chart of participant selection*



### **3.2.2 Instruments**

#### **3.2.2.1 Demographic Data**

Demographic data included age, gender, and care level. The care level is evaluated using a 74-item questionnaire based on ADL and a physician's opinion, and is determined at seven levels: support 1 and 2, which require support in daily living; and care 1 (the least disabling) to 5 (the most severe disability)<sup>29, 30</sup>.

#### **3.2.2.2 Assessment of Occupational Gap**

OGQ-J was used to assess the occupational gap, which comprises 30 items in four domains: IADL (8 items), leisure activities (8 items), social activities (11 items) and work or work-related activities (3 items). The OGQ-J has been psychometrically validated in previous studies<sup>31</sup>. Participants are asked two questions: "Do you perform this activity?" and "Do you want to perform this activity?" Answering "Yes" to one question and "No" to the other is determined as an occupational gap.

In this study, there are two different types of no gap: "activities they do and want to do (No Gap 1)" where the respondent answered "Yes" to both questions, and "activities they do not do and do not want to do (No Gap 2)" where the respondent answered "No" to both questions, implying two different types of activity that are not occupational gap. Furthermore, there are two types of occupational gap: "activities that they do not do but want to do (Gap 1)" and "activities that they do but do not want to do (Gap 2)." (Table 3-1).

Table 3-1. Occupational gap patterns based on answers to the OGQ-J questions

Question of the OGQ-J	No Gap		Gap	
	No Gap 1	No Gap 2	Gap 1	Gap 2
Do you perform this activity?	Yes	No	No	Yes
Do you want to perform this activity?	Yes	No	Yes	No

*OGQ-J ; Japanese version of Occupational Gaps Questionnaire*

*No gap 1 ; Activity that they do and want to do*

*No gap 2 ; Activity that they do not do and do not want to do*

*Gap 1 ; Activity that they do not do but want to do*

*Gap 2 ; Activity that they do but do not want to do*

### 3.2.3 Statistical Analysis

Participants who agreed to participate in the study were handed a questionnaire by the staff when they were using long-term care services. Participants completed the questionnaire anonymously and returned the survey form via email. From the OGQ-J responses, each of the 30 activities was categorized into four occupational gap patterns. Thereafter, activities that were selected for each occupational gap pattern were tabulated to understand the characteristics of the occupational gap.

## 3.3 Results

### 3.3.1 Participants' Characteristics

Table 3-2 shows the demographic data and results of the OGQ-J. The mean age of the participants was  $80.10 \pm 7.51$  years. Eighty-eight (42.1%) were male, and 121 (57.9%) were female. The care level was as follows: 37 (17.7%) were support level 1, 78 (37.3%) were support level 2, 40 (19.1%) were care level 1, 27 (12.9%) were care level 2, 17 (8.1%) were care level 3, 7 (3.3%) were care level 4, and 3 (1.4%) were care level 5. The median (range) of the occupational gap,

“No Gap 1” was 11 (0–30), “No Gap 2” was 13 (0–28), “Gap 1” was 3.5 (0–22), and “Gap 2” was 0 (0–17).

*Table 3-2. Characteristics of the study participants (n=209)*

Variables	n, Mean, Median	%, SD, Range
Age, Mean (SD), years	80.10	7.51
Sex, n (%)		
Male	88	42.1
Female	121	57.9
Care level, n (%)		
Support level 1	37	17.7
Support level 2	78	37.3
Care level 1	40	19.1
Care level 2	27	12.9
Care level 3	17	8.1
Care level 4	7	3.3
Care level 5	3	1.4
OGQ-J, Median (range)		
No gap 1	11	0-30
No gap 2	13	0-28
Gap 1	3.5	0-22
Gap 2	0	0-17

*OGQ-J; Japanese version of Occupational Gaps Questionnaire.*

*No gap 1; Activity that they do and want to do.*

*No gap 2; Activity that they do not do and do not want to do.*

*Gap 1 ; Activity that they do not do but want to do.*

*Gap 2 ; Activity that they do but do not want to do.*

### 3.3.2 Characteristics of Occupational Gaps

Table 3-3 and figure 3-1,3-2,3-3,3-4 shows the tabulated results of the activities in each occupational gap pattern. The activities selected by approximately 90% of the participants as “No Gap 1” were “watching TV/video/listening to music, or the radio” (n=189, 90.0%) and “getting information” (n=181, 86.6 %). On the contrary, activities that were selected by fewer than 10% of the participants were “performing heavy maintenance of your home, garden, car” (n=14, 6.7%), “working for payment” (n=16, 7.7%), “studying” (n=17, 8.1%), and “voluntary efforts” (n=18, 8.6%).

The following four activities were selected by approximately 80% of the participants as “No Gap 2:” “working for payment” (n=176, 84.2%), “performing heavy maintenance of your home, garden, care” (n=171, 81.8%), “studying” (n=167, 79.9%), and “voluntary efforts” (n=165, 78.9%).

The activities selected as “Gap 1” were “travelling” (n=81, 38.8%), “participating in cultural activities” (n=60, 28.7%), and “participating in outdoor activities” (n=59, 28.2%). The activities selected by approximately 10% of the participants as “Gap 2” were “doing laundry” (n=23, 11.0%) and “cleaning” (n=21, 10.0%).

Table 3-3. Percentage of four difference types of perceived occupational gaps (n=209)

	No Gap 1	No Gap 2	Gap 1	Gap 2
<b>IADL</b>				
Grocery shopping	<b>43.5</b>	<b>30.1</b>	23.0	3.3
Preparing for meals	<b>47.4</b>	<b>35.9</b>	10.0	6.7
Doing Laundry	<b>50.7</b>	<b>31.6</b>	6.7	11.0
Cleaning	<b>37.3</b>	<b>34.4</b>	18.2	10.0
Performing a light maintenance of your home, garden, car	<b>36.4</b>	<b>37.3</b>	19.1	7.2
Performing heavy maintenance of your home, garden, car	6.7	<b>81.8</b>	9.1	2.4
Managing personal finances	<b>57.4</b>	<b>30.6</b>	8.1	3.8
Transporting oneself using a vehicle	<b>44.5</b>	<b>29.2</b>	19.6	6.7
<b>Leisure activities</b>				
Shopping	<b>41.6</b>	<b>30.6</b>	23.0	4.8
Participating/taking an interest in sports	18.7	<b>53.1</b>	<b>26.3</b>	1.9
Participating in outdoor activities	<b>29.7</b>	<b>39.7</b>	<b>28.2</b>	2.4
Having a hobby	<b>37.3</b>	<b>39.2</b>	21.5	1.9
Participating in cultural activities	15.3	<b>55.0</b>	<b>28.7</b>	1.0
Watching TV/videos/listening to music, or the radio	<b>90.0</b>	2.9	3.3	3.8
Getting information	<b>86.6</b>	5.7	3.8	3.8
Reading	<b>42.1</b>	<b>40.7</b>	14.8	2.4
Writing	<b>46.4</b>	<b>38.8</b>	12.0	2.9
Playing games	15.3	<b>76.6</b>	7.2	1.0
Using digital devices	<b>51.2</b>	<b>35.4</b>	8.6	4.8
<b>Social activities</b>				
Visiting/socializing/having contact with family or relatives	<b>58.4</b>	19.6	20.1	1.9
Visiting/socializing/having contact with boy- or girlfriends, friends, or neighbors	<b>53.1</b>	<b>26.8</b>	18.7	1.4
Helping and supporting others	21.1	<b>52.2</b>	<b>25.4</b>	1.4
Participating in regional/group activities	21.5	<b>59.8</b>	15.3	3.3
Religious activities, worship	<b>55.0</b>	24.9	16.7	3.3
Eating out	<b>41.1</b>	<b>34.0</b>	23.9	1.0
Travelling	13.9	<b>46.9</b>	<b>38.8</b>	0.5
Dressing up	<b>38.8</b>	<b>45.9</b>	12.4	2.9
<b>Work and work related activities</b>				
Working for payment	7.7	<b>84.2</b>	7.7	0.5
Studying	8.1	<b>79.9</b>	11.0	1.0
Voluntary efforts	8.6	<b>78.9</b>	12.0	0.5

No gap 1 ; Activity that they do and want to do

No gap 2 ; Activity that they do not do and do not want to do

Gap 1 ; Activity that they do not do but want to do

Gap 2 ; Activity that they do but do not want to do

The numbers in the table indicate percentages. Activities selected by more than 25% of the respondents are shown in bold.

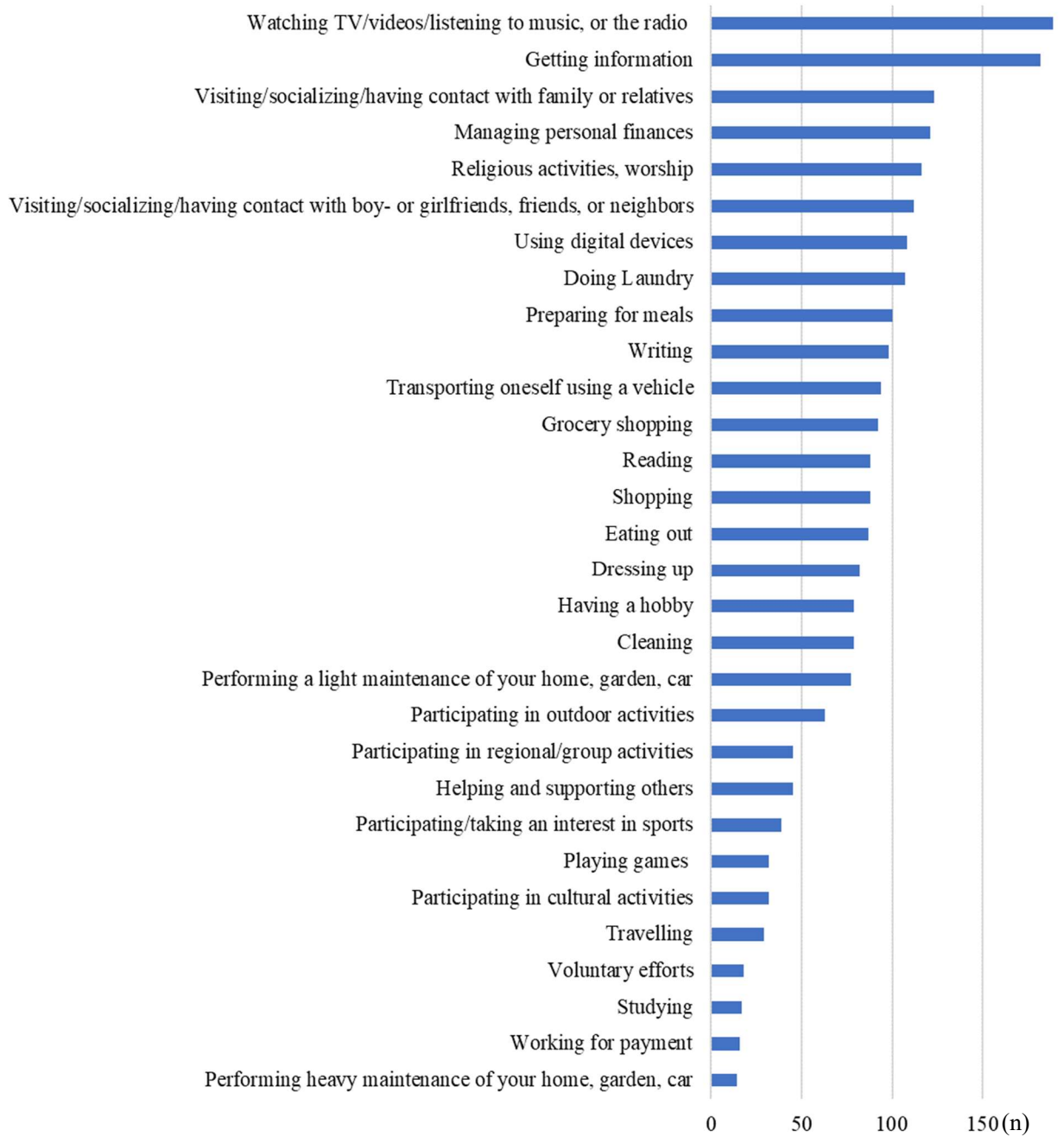


Figure 3-1. The number of No gap 1; Activity that they do and want to do

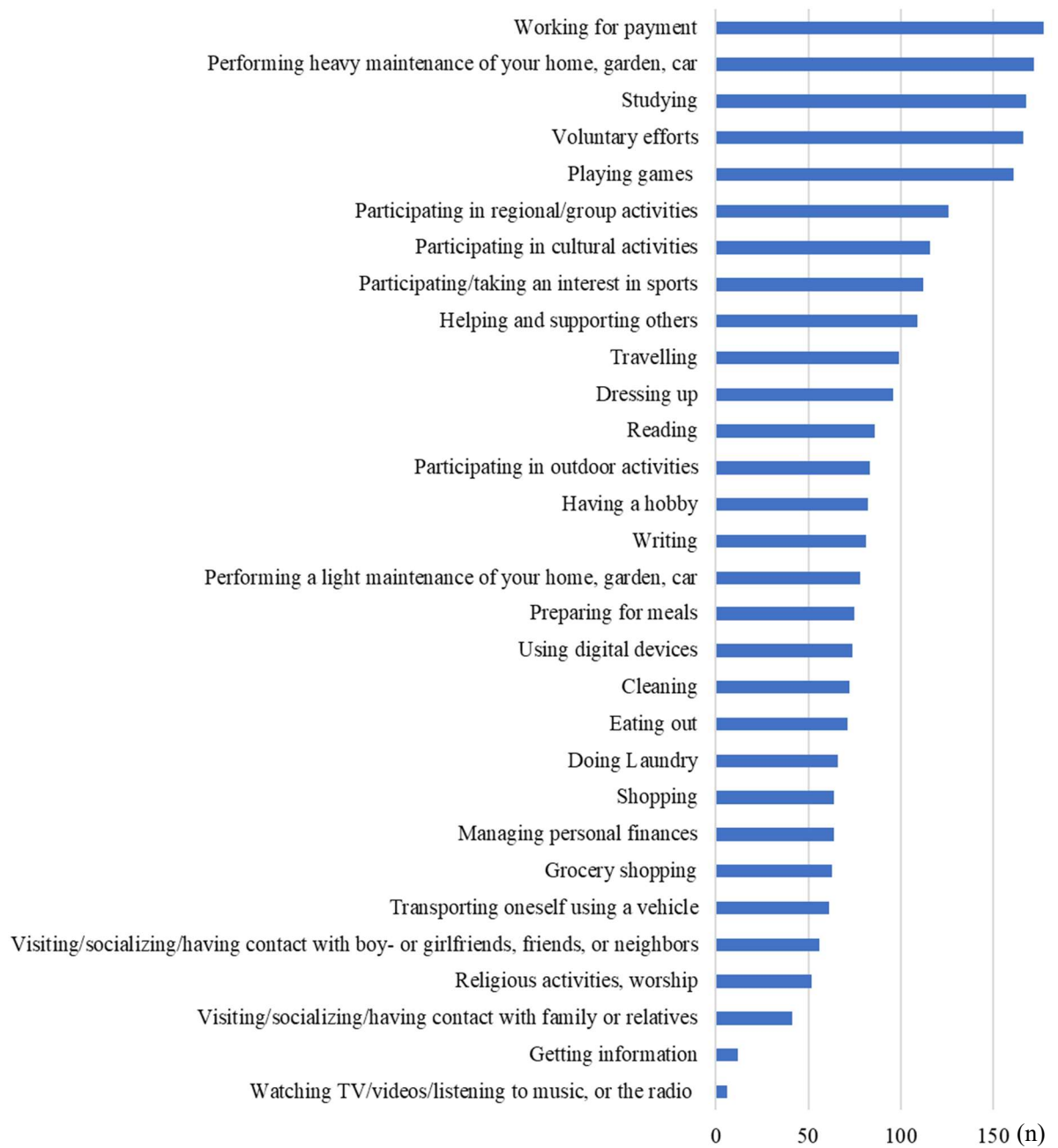


Figure 3-2. The number of No gap 2; Activity that they do not do and do not want to do

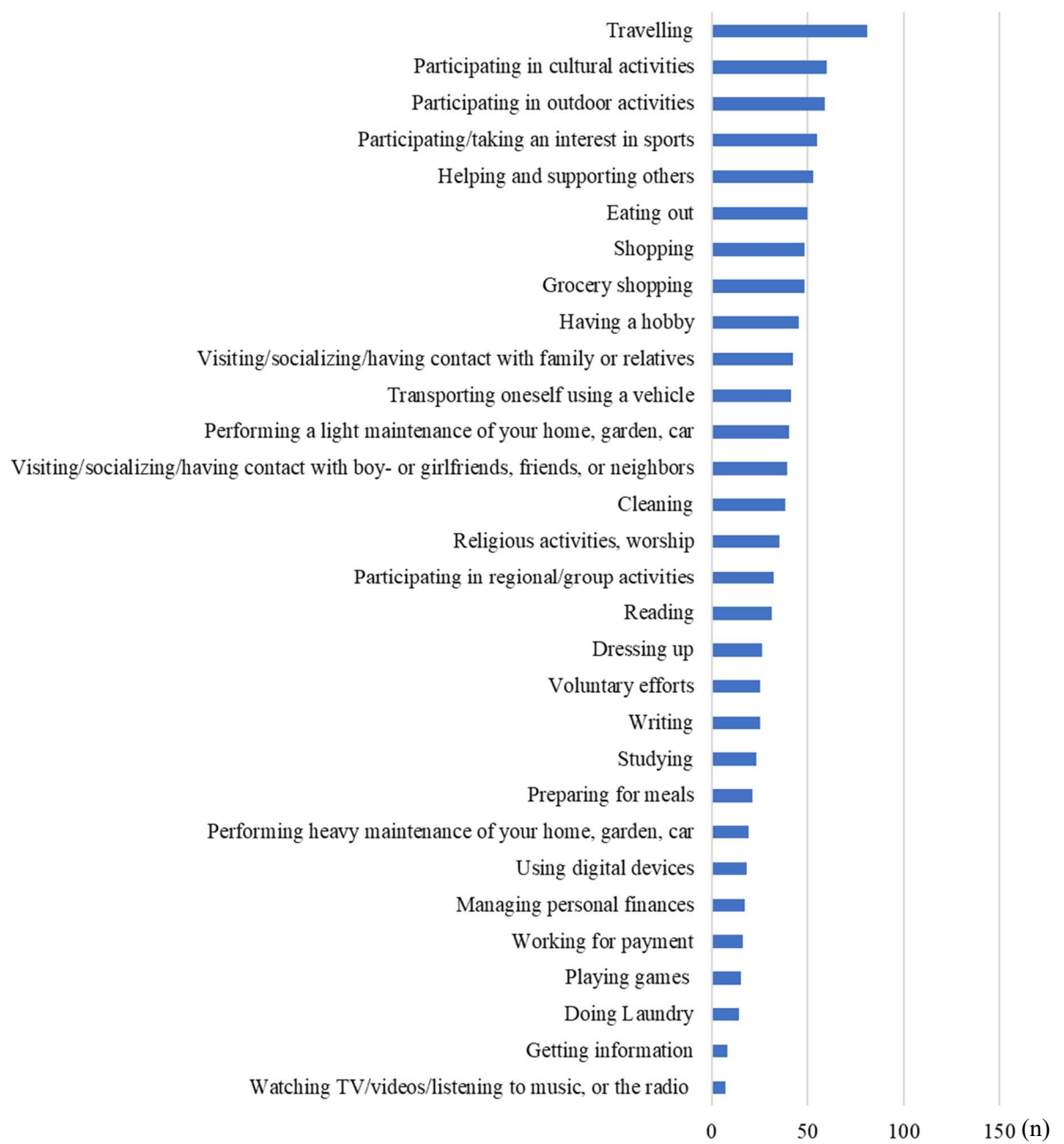


Figure 3-3. The number of Gap 1; Activity that they do not do but want to do



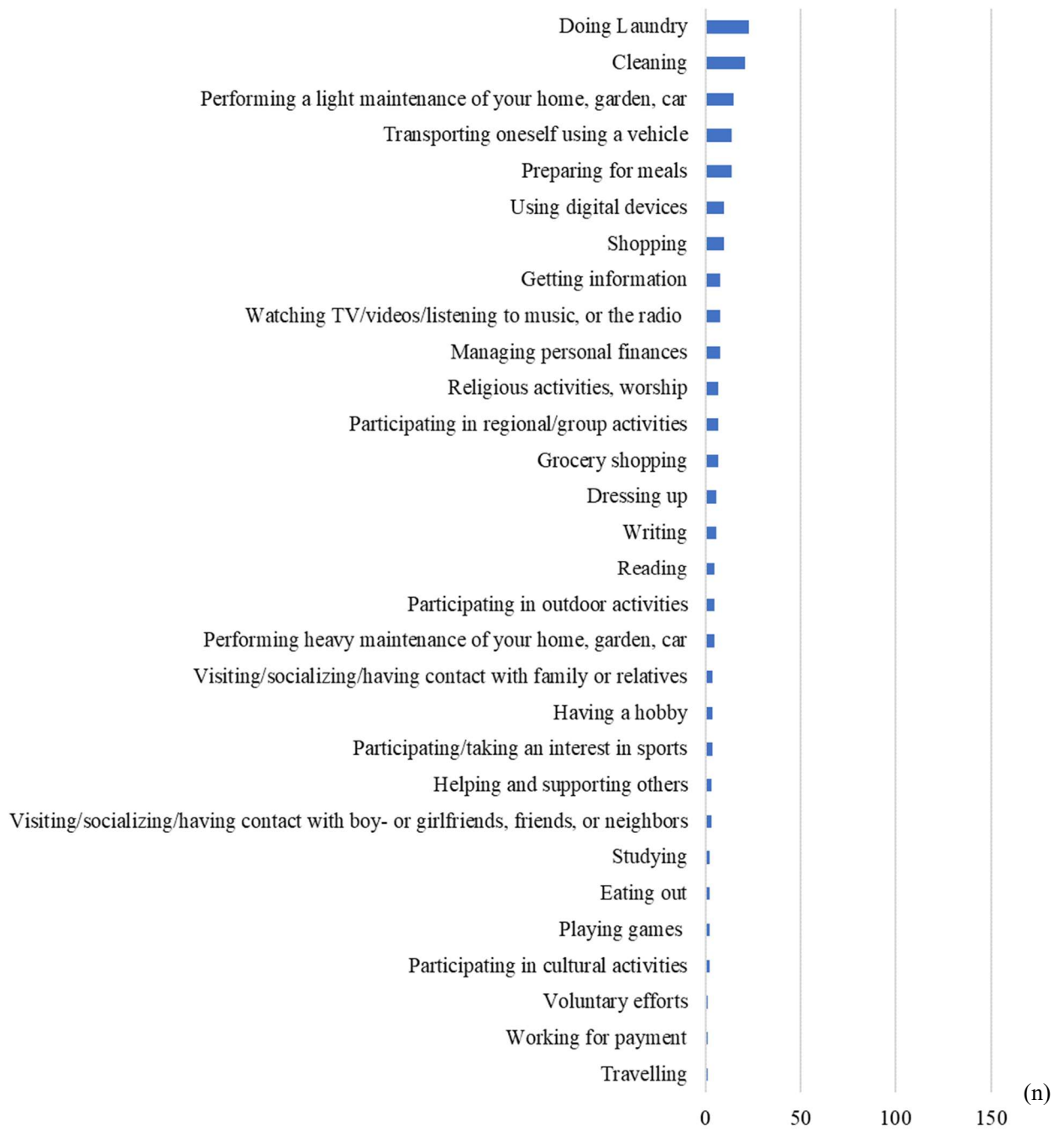


Figure 3-4. The number of Gap 2; Activity that they do but do not want to do

### 3.4 Discussion

The OGQ-J was used to tabulate the occupational gaps of older adults with care needs, the activities selected by around 90% of the participants as “No Gap 1” were “watching TV/video/listening to music or radio” (n=189, 90.4%) and “getting information” (n=182, 87.1%). “Getting information” included “reading the newspaper” and “using the internet,” which were less physically burdensome activities. On the contrary, only 14 respondents (6.7%) selected “performing heavy maintenance of your home, garden, car,” 16 respondents (7.7%) selected “working for payment,” 17 participants (8.1%) selected “studying,” and 18 respondents (8.6%) selected “voluntary efforts.” These activities were selected a lot of participants as “No Gap 2.” A large number of participants selected the three activities items “work or work-related activities” one of the OGQ domains as No Gap 2. “Performing heavy maintenance of your home, garden, car” was the most physically burdensome activity in the IADL. The results suggest that physical burden, social role, and responsibility in the activity may influence older adults’ need for participation in the activity.

Although the number of respondents with occupational gaps was low in general, “Gap 1” existed in social and leisure activities, with 81 respondents (38.8%) in “travelling,” 60 (28.7%) in “participating in cultural activities,” and 59 (28.2%) in “participating in outdoor activities,” indicating a tendency for individuals to participate in social and leisure activities. The activities selected as “Gap 2” included IADL, with 23 (11.0%) and 21 (10.0%) respondents selecting “doing laundry” and “cleaning,” respectively. Previous studies of older adults undergoing rehabilitation also reported that more participants perceived Gap1 in leisure and social activities than in IADL. The results of this study indicate that older adults with care needs also have challenges in participating in leisure and social activities.

The ratio of participants who experienced occupational gaps in this study was lower than in previous studies of stroke survivors<sup>15</sup>). Here, the participants were older adults who received

support and nursing care from long-term care insurance services, and it is possible that they were able to perform activities that they wanted to do with support and care. It is further possible that the average age of the participants in this study was higher than in the previous study, and thus their motivation for participation as well as the number of “activities that they want to do” declined with age. In previous studies, the total number of “Gap 1” and “Gap 2” was often analyzed as the number of occupational gaps. However, in the present study, the responses obtained were tabulated by the gap patterns, and the characteristics of occupational gaps of older adults with care needs were identified in further detail. Therefore, it is possible to provide appropriate rehabilitation that considers the occupational gap patterns by focusing not only on the occupational gap, but also on activities without an occupational gap.

## **Chapter 4: Classification of Life Satisfaction by Occupational Gap among Older Adults with Care Needs**

### **4.1 Introduction**

Previous studies using the OGQ have found that people five years after stroke onset<sup>7)</sup> and people with motor pain and stress-related conditions<sup>32)</sup> experience more occupational gaps compared to healthy populations. In addition, associations between occupational gaps and life satisfaction have been reported in people after acquired brain injury<sup>14)</sup> and stroke<sup>33)</sup> and in caregivers of stroke patients<sup>34)</sup>. These previous studies have been analyzed by calculating the total number of two different types of occupational gap in the OGQ, but have not been validated by considering the characteristics of the activity domains and four different types of occupational gap patterns in the OGQ.

In Chapter 3, the OGQ-J was used to identify the characteristics of participation by older adults with care needs. With this clarification, it is necessary in rehabilitation to understand the characteristics of the individual's occupational gap and have an analytical perspective on what kind of occupational gap determines their life satisfaction. The purpose of this chapter was to clarify how the occupational gap patterns in each activity domain in the OGQ-J classify the life satisfaction of older adults with care needs.

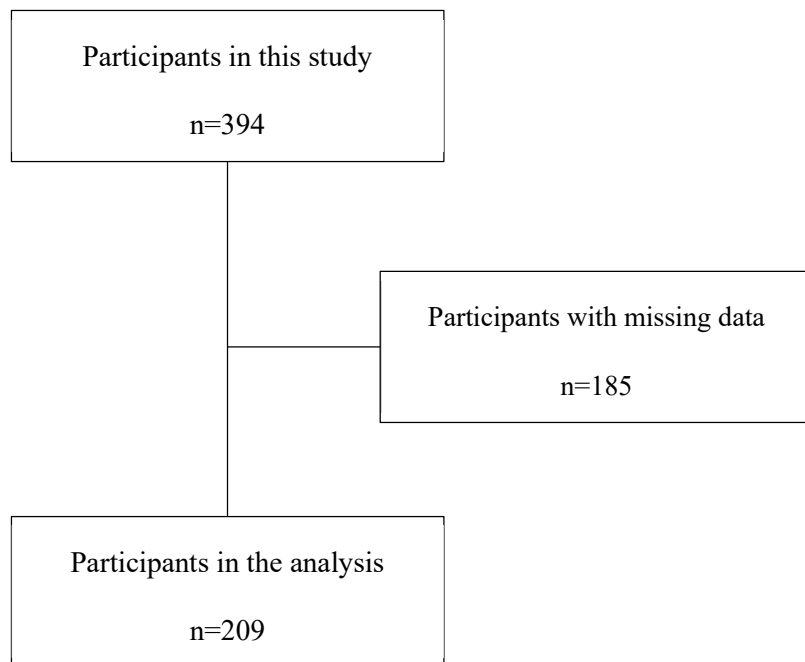
### **4.2 Materials and Methods**

#### **4.2.1 Participants**

Participants included individuals aged 65 years or older, living at home for at least three months from the date of the survey and who were certified as requiring support or care under the long-term care insurance system in Japan. The eligibility criteria for the participants were those who received long-term care services and had preserved cognitive functioning to complete a self-rating

questionnaire. The participants' cognitive functioning to respond to the self-rating questionnaire was determined by an occupational or physical therapist who was fully aware of the participants' cognitive statuses through daily care.

After recruitment, 394 individuals agreed to participate in the survey. With the exception of 185 participants who failed to fill out the necessary questionnaire items, 209 participants were included in the final analysis.



*Figure 4-1. Flow chart of participant selection*

## **4.2.2 Instruments**

### **4.2.2.1 Demographic Data**

Demographic data included age, gender, and care level. The care level is evaluated using a 74-item questionnaire based on ADL and a physician's opinion, and is determined at seven levels: support 1 and 2, which require support in daily living; and care 1 (the least disabling) to 5 (the most severe disability)<sup>29,30</sup>.

### **4.2.2.2 Assessment of Occupational Gaps**

OGQ-J was used to assess the occupational gap, which comprises 30 items in four domains: IADL (8 items), leisure activities (8 items), social activities (11 items) and work or work-related activities (3 items). Participants are asked two questions: "Do you perform this activity?" and "Do you want to perform this activity?" Answering "Yes" to one question and "No" to the other is determined as an occupational gap.

In this study, there are two different types of no gap: "activities they do and want to do (No Gap 1)" where the respondent answered "Yes" to both questions, and "activities they do not do and do not want to do (No Gap 2)" where the respondent answered "No" to both questions, implying two different types of activity that are not occupational gap. Furthermore, there are two types of occupational gap: "activities that they do not do but want to do (Gap 1)" and "activities that they do but do not want to do (Gap 2)."

### **4.2.2.3 Assessment of Life Satisfaction**

The Life Satisfaction Checklist (LiSat-11)<sup>35</sup> was used to assess life satisfaction. The LiSat-11 contains 11 items: 1 global satisfaction and 10 domain-specific satisfaction questions. The first question of the LiSat-11, "Life as a whole is ...?" is used to comprehensively assess life satisfaction, and is rated on a 6-point self-rating scale, ranging from 1 "very dissatisfied" to 6

“very satisfied;” a score of 1–3 indicates “unsatisfied,” and a score of 4–6 indicates “satisfied.” In this study, the global satisfaction question was used in accordance with previous studies<sup>36</sup>). The validity of using only the first question of LiSat-11, the overall life satisfaction question, to comprehensively assess life satisfaction has been verified<sup>37</sup>).

### **4.2.3 Statistical Analysis**

The Classification and Regression Tree (CART) analysis was performed to identify the occupational gap that determined life satisfaction. The CART analysis is a statistical method that optimally divides the parent node into two child nodes by a division criterion called the Gini improvement index, when the dependent variable is a categorical variable<sup>38, 39</sup>). It also has a feature of representing the classification in a tree diagram, which visually and intuitively facilitates the understanding of statistical results.

In this study, 30 activity items from participants’ responses were tabulated for each of the four OGQ-J domains (IADL, leisure activities, social activities, and work or work-related activities) and four occupational gap patterns (No Gap 1, No Gap 2, Gap 1, and Gap 2).

The CART analysis was performed using the state of life satisfaction (“unsatisfied” or “satisfied”) as the objective variable and demographic data (age, gender, and care level) and four occupational gap patterns for each activity domain (a total of 19 variables) as explanatory variables. In the CART analysis, the decision tree was constructed using the Gini partition function with a maximum tree depth of 5 and a minimum number of parent node cases of leaf node of 20. The classified decision trees were visualized and their accuracy was evaluated using a confusion matrix. Statistical analysis was conducted using R (version 4.2.1, R Foundation for Statistical Computing, Vienna, Austria).

## **4.3 Results**

### **4.3.1 Participants' Characteristics**

Table 4-2 shows the demographic data and results of the OGQ-J and LiSat-11. The mean age of the participants was  $80.10 \pm 7.51$  years. Eighty-eight (42.1%) were male, and 121 (57.9%) were female. The care level was as follows: 37 (17.7%) were support level 1, 78 (37.3%) were support level 2, 40 (19.1%) were care level 1, 27 (12.9%) were care level 2, 17 (8.1%) were care level 3, 7 (3.3%) were care level 4, and 3 (1.4%) were care level 5.

Regarding life satisfaction, 4 participants (1.9%) were very dissatisfied, 14 (6.7%) were dissatisfied, 38 (18.2%) were rather dissatisfied, 86 (41.1%) were rather satisfied, 58 (27.8%) were satisfied, and 9 (4.3%) were very satisfied. The median (range) of the occupational gap, “No Gap 1” was 11 (0–30), “No Gap 2” was 13 (0–28), “Gap 1” was 3.5 (0–22), and “Gap 2” was 0 (0–17).

### **4.3.2 Occupational Gap by Domain of Life Satisfaction Classification**

The results of the LiSat-11 questionnaire placed 56 (26.8%) and 153 (73.2%) participants in the unsatisfied and satisfied group, respectively.

Figure 4-1 shows the decision tree generated by the CART analysis. The number of “No Gap 1” in social activities, and the number of “Gap 1” in IADL, age, and care level were selected as nodes to classify life satisfaction.

The root node for classifying life satisfaction was selected as “No Gap 1” in social activities. Eighty-three percent of the participants with more than three “No Gap 1” in social activities were classified as satisfied. Among participants with less than three “No Gap 1” in social activities, the next most important prediction factor was the number of “Gap 1” in IADL. Seventy-two percent of the participants with more than three “Gap 1” in IADL were classified as unsatisfied. The next factor in classifying participants with less than two “Gap 1” in IADL was age.



Table 4-2. Characteristics of the study participants (n=209)

Variables	n, Mean, Median	%, SD, Range
Age, Mean (SD), years	80.10	7.51
Sex, n (%)		
Male	88	42.1
Female	121	57.9
Care level, n (%)		
Support level 1	37	17.7
Support level 2	78	37.3
Care level 1	40	19.1
Care level 2	27	12.9
Care level 3	17	8.1
Care level 4	7	3.3
Care level 5	3	1.4
LiSat-11, n (%)		
Unsatisfied	56	26.8
Very dissatisfied	4	1.9
Dissatisfied	14	6.7
Rather dissatisfied	38	18.2
Satisfied	153	73.2
Rather satisfied	86	41.1
Satisfied	58	27.8
Very satisfied	9	4.3
OGQ-J, Median (range)		
No gap 1	11	0-30
No gap 2	13	0-28
Gap 1	3.5	0-22
Gap 2	0	0-17

*LiSat-11; Life Satisfaction Checklist*

*OGQ-J; Japanese version of Occupational Gaps Questionnaire*

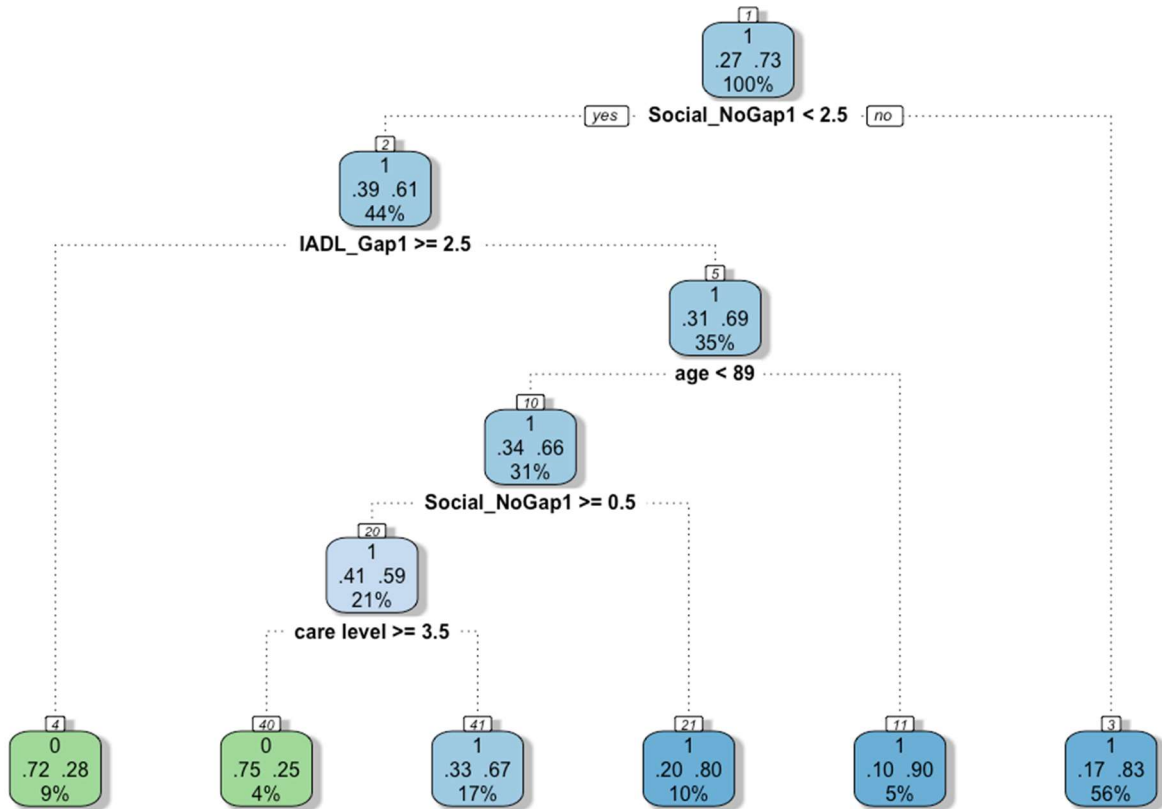


Figure 4-1: Classification of life satisfaction by 4 types of occupational gap patterns

Social\_No Gap 1; Activity that they do and want to do in social activity.  
 IADL\_Gap 1 ; Activity that they do not do but want to do in IADL.

The top number of each node, 1 indicates a high percentage of participants classified as satisfied, while 0 indicates a high percentage of participants classified as unsatisfied. The number in the middle of a node is the percentage of participants in that node who are unsatisfied (left) and the percentage who are satisfied (right). The number at the bottom of each node is the percentage of participants included in that node of all the participants. For the conditions of the branching indicated at each node, the branching is to the left in case of “Yes” and to the right in case of “No”.

If age was older than 89, ninety percent of the participants were classified as satisfied. Participants under 89 years were classified by the number of “No Gap 1” in social activities. At the parent node of the leaf node, the care level was selected. Seventy-five percent of the participants were classified as unsatisfied if their care level was 4 or higher.

In the classification model presented in the CART analysis, the number of cases that were correctly classified as life satisfaction from the confusion matrix was 146 and 19 for satisfied and unsatisfied, respectively, with a classification accuracy of 78.9%.

#### **4.4 Discussion**

The results of the CART analysis showed that the number of “No Gap 1” in social activities and the number of “Gap 1” in IADL were important factors in classifying life satisfaction. The status of “participation” came out to be a more important factor in classifying participants’ life satisfaction than their care level or age. The number of “No Gap 1” in social activities was the most important factor in classifying life satisfaction among the four occupational gap patterns in each domain of the OGQ-J. It was suggested that increasing the number of social activities that “they do and want to do” is the key to improving life satisfaction among older adults with care needs. Previous studies have reported that satisfaction with participation in social activities is a more important predicting factor for the quality of life of community-dwelling older adults with disabilities than the amount of participation<sup>40</sup>). The findings of the present study support previous research suggesting that participation as “they want to perform” in social activities is important for life satisfaction. However, it has been reported that aging and declining physical functions are associated with constrained life spaces<sup>41</sup>), which may reduce opportunities for participation in social activities for older adults. It is also reported that older adults with disabilities who use home care services have unmet needs for social activities rather than daily activities<sup>42</sup>), thus participation in social activities for older adults with declining physical functions are a challenge. Older adults

with care needs may be reluctant to participate in social activities because they require personal assistance and many environmental adaptations for participation. If the occupational therapist suggests strategies to ease personal and environmental barriers that restrict participation, the participants may show an interest in participation in social activities.

When the number of “No Gap 1” in social activities was less than two, then the next most important factor determining life satisfaction was the number of “Gap 1” in IADL. Three or more activities in IADL that “they do not do but want to do (Gap 1)” indicated that participants were more likely to be unsatisfied with their life. In a previous study comparing the characteristics of the occupational gap between Swedish people who were recruited from the general population and undergoing rehabilitation owing to stress-related illness or musculoskeletal pain, the proportions of the two types of occupational gaps (Gap 1 and Gap 2) showed similar distribution trends in the two groups. However, the two types of occupational gaps in IADL showed different distributions. The group undergoing rehabilitation was reported to have a higher percentage of activities “they do not do but want to do (Gap 1)” in IADL than the control group, whereas the control group had more activities “they do but do not want to do” (Gap 2) in IADL than the rehabilitation group<sup>32</sup>). IADL are activities closely related to daily life among the four domains of the OGQ, and have the characteristic that people “do not want to do” when they are able to do the activity, but begin to “want to do” when they have reduced their daily functioning and are unable to do the IADL that they used to commonly do.

In an 8-year longitudinal study of Japanese older adults, social role functions were reported to be the first to be lost with aging, followed by intellectual activities and IADL<sup>43</sup>). Participation in IADL is an activity that becomes a goal until the end of life for older adults with decreased social activity, and thus, this may have a high level of importance and priority for participation. Therefore, in the CART analysis in this study, the high number of IADL that “they do not do but want to do” is considered to have increased the possibility of classifying the participants’ life

satisfaction as unsatisfactory.

It has been reported in previous studies that the fewer the number of occupational gaps, the higher the level of life satisfaction<sup>14, 33</sup>). However, it is important not only to reduce the number of occupational gaps, but also to increase the number of activities “they want to do” and support them to perform them in occupational therapy, which aims to improve the life satisfaction of older adults with support and care needs.

## **Chapter 5: Factors Affecting the Life Satisfaction of Older Adults with Care Needs**

### **5.1 Introduction**

With the rapidly aging population, the Japanese government surveyed the attitudes of Japanese people aged 40 or older years toward an aging society in 2016<sup>44)</sup>. The results showed that 73.5% of the respondents wished to receive care in a familiar home with family members or nursing care services when necessary. The Japanese government is promoting medical and nursing care at home to enable older adults to live in their homes even when they require the highest level of nursing care<sup>45)</sup>. The number of older adults with care needs living at home is expected to keep increasing<sup>46)</sup>, and they will need more support and care to continue living a satisfactory life in their homes until death.

In 2020, the Japanese government conducted the survey “International Comparative Survey on the Lives and Attitudes of the Elderly”, which reported that approximately 50% of the older adults in the United States, Germany, and Sweden, whereas only 20% of the older adults in Japan reported being “satisfied with their lives” in terms of the current life situation<sup>47)</sup>. This report indicates that older adults in Japan are less satisfied with their lives than those in other countries. In addition, previous studies of older Japanese people have reported that those with declining physical functions have lower life satisfaction<sup>48)</sup>, and those with lower levels of independence in ADL have lower life satisfaction than those with high levels of independence<sup>49)</sup>. There are challenges in maintaining and improving the life satisfaction of older Japanese people with care needs. Previous studies have reported that life satisfaction among older adults is related to their abilities and function, such as physical health<sup>50)</sup>, level of care required, bedridden state<sup>51)</sup>, and degree of ADL independence<sup>49, 51)</sup>.

However, previous studies on survivors of stroke and individuals with spinal cord injuries reported that the level of disability is not related to life satisfaction<sup>52, 53)</sup>. Quality of life (QOL)

varies widely even in the same level of disability, and physical function and ADL ability are not sufficient to explain QOL<sup>54</sup>). According to the ICF, the interaction of environmental and individual factors may promote activity and participation without improving body functions and structures<sup>5</sup>). Therefore, environmental factors are important for the participation and life satisfaction of older adults with reduced physical and mental functions<sup>55, 56</sup>).

Personal factors influencing life satisfaction have focused on the sense of coherence (SOC), a core concept in salutogenesis<sup>57, 58</sup>). In salutogenesis, aging is inevitable, but humans can live a vital life until death, and health can be generated even in the states of disease and decrease in function<sup>58</sup>). Based on salutogenesis, SOC is an important personal factor in maintaining life satisfaction among older adults with care needs.

These findings are indicative of the fact that to maintain and improve the life satisfaction of older adults with care needs, whose physical functions are difficult to improve or declining gradually, it is important to administer rehabilitation that focuses on not only physical functions but also environmental factors and personal factors as well as activities and participation.

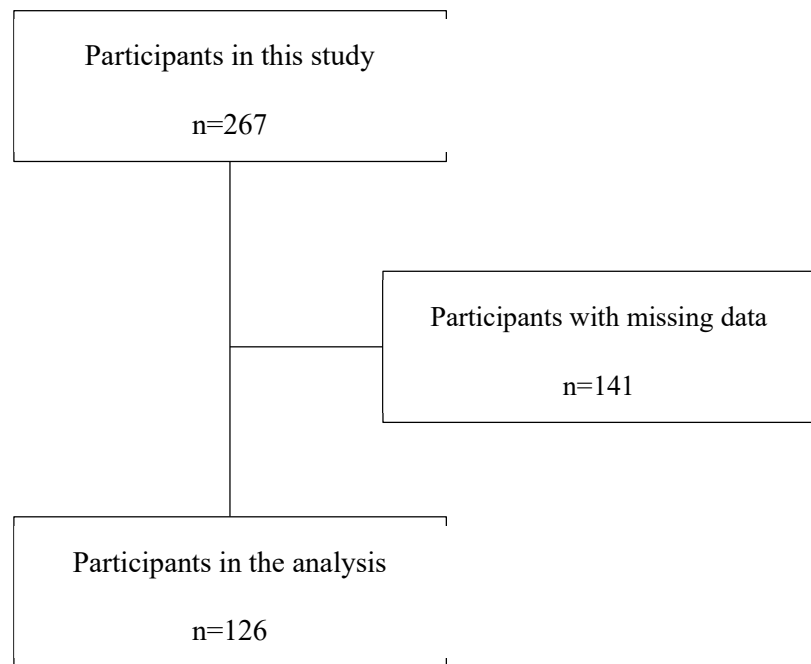
Chapter 4 focused on the occupational gap among older adults with care needs, examined the relationship between participation and life satisfaction, and identified characteristics of the occupational gap important in classifying life satisfaction. The chapter aimed to clarify how environmental factors, SOC, and functional independence, in addition to the occupational gap, affected life satisfaction among older adults with care needs living at home.

## **5.2 Material and Methods**

### **5.2.1 Participants**

In this cross-sectional study, the participants were recruited from older adults who were certified as needing support and nursing care under long-term care insurance and were using delivered homecare services and daycare services at home. Participants were individuals aged >65, living

at home for at least 3 months, with preserved cognitive function, and could answer a self-rating questionnaire. Whether the participant had the cognitive function to respond to the self-rating questionnaire was determined by a physical therapist or occupational therapist who was fully aware of the participant's cognitive status through daily care. Questionnaires were distributed to 267 individuals who consented to participation in this study. Of these individuals, 126 (47.2%) filled out all items in the questionnaires and were included in the analysis (Figure 5-1).



*Figure 5-1. Flow chart of participant selection*

*The figure is adapted from Misu et al. (2022)<sup>31)</sup>*



### 5.2.2 Instruments

The questionnaire collected details such as the participant's age, sex, family structure (living alone, living with a partner, and living with others), educational background (graduated from elementary school, junior high school, high school, and college or university), and perceived economic status (wealthy, normal, and poor).

LiSat-11<sup>35)</sup> was used to assess life satisfaction. The LiSat-11 consists of 11 items that can assess overall and domain-specific life satisfaction. The first question on the LiSat-11, "Life as a whole is ...?", is a relatively general question to comprehensively assess life satisfaction, and the validity of using only this question has been confirmed<sup>37)</sup>. In the present study, the overall life satisfaction was used to assess participant's life satisfaction, following the same procedure as mentioned in a previous study<sup>36)</sup>. The scale is a six-point self-rating scale, ranging from 1, "very dissatisfied", to 6, "very satisfied"; a score of 1–3 indicated "unsatisfied", and a score of 4–6 indicated "satisfied". The psychometrically validated LiSat-11 Japanese version was used in this study.

The OGQ-J<sup>31)</sup> was used to assess participation in activities. OGQ-J consists of 30 activities, which were IADL, leisure activities, social activities, and work or work-related activities. Participants were asked "Do you perform this activity?" and "Do you want to perform this activity?" for each item, with "Yes" or "No" as responses for each question<sup>14)</sup>. The OGQ has been psychometrically validated and is considered a functional instrument for measuring occupational gaps<sup>14, 17)</sup>.

The 13-item SOC scale (SOC-13) was used to assess SOC<sup>57)</sup>. The SOC-13 is a self-rating questionnaire developed by Antonovsky and has been tested for reliability and validity. The SOC-13 consists of 13 questions about how one feels about life, and questionnaire items are rated on a 7-point Likert scale. Higher SOC scores indicate a high capacity for adaptation in their life. The Japanese version of the SOC-13 which has been confirmed to be reliable and valid, was used<sup>59)</sup>.

This study comprehensively examined environmental factors considered important to the life functions of older adults with care needs. The environmental domain of the World Health

Organization Quality of Life Assessment<sup>60)</sup>, Comprehensive Environmental Questionnaire<sup>61)</sup>, and Craig Hospital Inventory of Environmental Factors<sup>62)</sup> were used as references in selecting assessment items. The WHO refers to environmental factors make up the physical, social, and attitudinal environment in which people live and conduct their lives<sup>5)</sup>. In this study, the questionnaire on environmental factors consisted of 12 items, which included four items on the physical environment (mobility at home, comfort level at home, ease of going out, and transportation around the house), three items on the attitudinal environment (relationship with family, friends and acquaintances, and local residents), and five items on the social environment (whether the person receives the necessary care and support, whether care services are accessible, satisfaction with the services they use, whether the environment is conducive for participation in leisure activities, and whether the environment provides access to necessary stuff and information). The questionnaire on environmental factors is rated on a 5-point scale, ranging from “1” indicating applicable to “5” meaning very applicable; higher scores indicate a finer environment in the domain. For three items of the attitudinal environment, the mean scores were calculated excluding the items related to relationships with family and friends; this is because the person who has no family member or friend cannot answer these questions.

The functional independence measure (FIM)<sup>63)</sup> was used to assess the degree of functional independence, which consists of 13 motor items and 5 cognitive items and is rated on a 7-point scale, in which 1 indicates total assistance, and 7 means independence. A higher score on the FIM indicates greater functional ability. The FIM reportedly has high reliability and validity and is widely used in rehabilitation<sup>64)</sup>. The total score for each motor and cognitive item was calculated.

### **5.2.3 Data Collection**

Participants were recruited at the collaborating facilities and selected by a physical therapist or occupational therapist working at these facilities. Participants who consented to the study were

given a handout with a self-rating questionnaire in which demographic data, LiSat-11, OGGQ-J, environmental factors, and SOC were surveyed.

Participants anonymously responded to survey form, and the completed forms were sent to the authors via mail. The FIM used to assess functional independence was assessed by an occupational therapist, physical therapist, or nurse who regularly observed the participants' activities of daily living and was collected and returned by mail separately from the participants' survey forms.

#### **5.2.4 Statistical Analysis**

Participants were assigned into two groups: an unsatisfied group with a life satisfaction of  $\leq 3$  and a satisfied group with a life satisfaction  $> 3$ . Each variable identified from the survey was compared between the two groups, and the variables were examined for entry into a logistic regression analysis. Age, SOC-13, and environmental factors were analyzed using the t-test, sex and family structure were analyzed by the  $\chi^2$  test, and other items were analyzed using the Mann–Whitney test. Multicollinearity for the logistic modeling was checked using Spearman's rank correlation coefficients between variables. Logistic regression analysis (forced entry method) was conducted with life satisfaction as the objective variable, variables determined by univariate analysis as explanatory variables, and age, sex, and economic status as adjustment variables. Statistical analysis was conducted using R (version 4.2.1, R Foundation for Statistical Computing, Vienna, Austria). with a significance level of 5%.

### **5.3 Results**

#### **5.3.1 Participants' Characteristics**

Table 5-1 shows the characteristics of the study participants. The mean  $\pm$ SD of age was  $79.33 \pm 7.51$  years; 54 (42.9%) were male, and 72 (57.1%) were female. Regarding family structure, 32

(25.4%) were living alone, 44 (34.9%) were living with a partner, and 50 (39.7%) were living with others. Overall, 3 respondents (2.4%) graduated from elementary school; 41 (32.5%) from junior high school; 56 (44.4%) from high school; and 26 (20.6%) from college or university. For economic status, 11 respondents (8.7%) considered themselves “wealthy”, 108 (85.7%) as “normal”, and 7 (5.6%) as “poor”. In comparing two groups, including 141 respondents with missing data and 126 participants included in the analysis, no significant differences were found in any of the items in terms of basic attributes in the returned survey forms.

In the analysis of LiSat-11, 2 (1.6%) were very dissatisfied, 10 (7.9%) dissatisfied, 26 (20.6%) rather dissatisfied, 51 (40.5%) rather satisfied, 33 (26.2%) satisfied, and 4 (3.2%) very satisfied of their current life. The median of occupational gaps as measured by the OGQ-J was 4 (range, 0–22). The SOC-13 core was  $60.23 \pm 11.65$ . The FIM motor score was  $82.61 \pm 9.35$ . The FIM cognitive score was  $33.11 \pm 3.27$ , and the score on the environmental factor questionnaire was  $3.67 \pm 0.52$ .

Table 5-1. Characteristics of the study participants (n = 126)

Variables	n, Mean, Median	%, SD, Range
Age, Mean (SD), years	79.33	7.51
Sex, n (%)		
Male	54	42.9
Female	72	57.1
Family structure, n (%)		
Living alone	32	25.4
Living with a partner	44	34.9
Living with others	50	39.7
Education background, n (%)		
Elementary school	3	2.4
Junior high school	41	32.5
High school	56	44.4
College or university	26	20.6
Economic status, n (%)		
Wealthy	11	8.7
Normal	108	85.7
Poor	7	5.6
LiSat-11, n (%)		
Unsatisfied	38	30.2
Very dissatisfied	2	1.6
Dissatisfied	10	7.9
Rather dissatisfied	26	20.6
Satisfied	88	69.8
Rather satisfied	51	40.5
Satisfied	33	26.2
Very satisfied	4	3.2
OGQ-J, Median (Range)	4	0–22
SOC-13, Mean (SD)	60.23	11.65
FIM, Mean (SD)		
Motor items	82.61	9.35
Cognitive items	33.11	3.27
Environmental factors, Mean (SD)	3.67	0.52

*LiSat-11; Life Satisfaction Checklist*

*OGQ-J; Japanese version of Occupational Gaps Questionnaire*

*SOC-13; 13-item Sense of Coherence*

*FIM; Functional Independence Measure*

*The table is adapted from Misu et al. (2022)<sup>31)</sup>*

### **5.3.2 Factors Affecting Life Satisfaction**

Regarding life satisfaction, 38 (30.2%) were allocated to the unsatisfied group and 88 (69.8%) to the satisfied group according to their LiSat-11 scores. Table 5-2 shows a comparison of characteristics between the unsatisfied and satisfied groups. The unsatisfied and satisfied groups were compared for each variable, and significant differences were found in the following items: economic states ( $p = 0.0079$ ), OGQ-J ( $p < 0.001$ ), SOC-13 ( $p = 0.0032$ ), environmental factors ( $p < 0.001$ ), FIM motor items ( $p = 0.0167$ ), and FIM cognitive items ( $p = 0.0383$ ). No strong correlations that affect multicollinearity were found for each of the variables in the items that were significantly different in the univariate analysis. Logistic regression analysis that was adjusted for age, sex, and perceived economic status using the forced entry method was conducted with life satisfaction as the objective variable and OGQ-J, SOC-13, FIM motor and cognitive items, and environmental factors as explanatory variables. Significant differences were found for OGQ-J ( $p = 0.0352$ , odds ratio (OR) 0.90, 95% confidence interval (CI) 0.81–0.99) and environmental factors ( $p = 0.0083$ , OR 4.41, 95% CI 1.52–14.11). The discriminant accuracy rate was 80.16% (Table 5-3).

Table 5-2. Comparison of characteristics between unsatisfied group and satisfied group

	Unsatisfied Group (n = 38)		Satisfied Group (n = 88)		p-Value
Age, Mean (SD), years	77.55	7.82	80.10	7.82	0.062
Sex, n (%)					
Male	15	39.5	39	44.3	0.614
Female	23	60.5	49	55.7	
Family structure, n (%)					
Living alone	9	23.7	23	26.1	0.291
Living with a partner	17	44.7	27	30.7	
Living with others	12	31.6	38	43.2	
Education background, n (%)					
Elementary school	0	0	3	2.4	0.775
Junior high school	14	36.8	27	21.4	
High school	17	44.7	39	31.0	
College or university	7	18.4	19	15.1	
Perceived economic status, n (%) **					
Wealthy	1	2.6	10	7.9	0.0079
Normal	32	84.2	76	60.3	
Poor	5	13.2	2	1.6	
OGQ-J, Median (Range) **	7	0–22	2	0–17	<0.001
SOC-13, Mean (SD) **	55.63	9.71	62.21	11.9	0.0032
FIM, Mean (SD)					
Motor items *	79.47	10.86	83.98	8.33	0.0167
Cognitive items *	31.92	4.77	33.62	2.20	0.0383
Environmental factors, Mean (SD) **	3.36	0.47	3.81	0.48	<0.001

OGQ-J; Japanese version of the Occupational Gaps Questionnaire, SOC-13; 13-item Sense of Coherence, FIM; Functional Independence Measure.

\*  $p < 0.05$ , \*\*  $p < 0.001$

The table is adapted from Misu et al. (2022)<sup>31)</sup>

Table 5-3. Binary logistic regression analyses of variables potentially associated with life satisfaction (n = 126)

	Estimate	p-Value	Odds Ratio	95% CI	
				Lower	Upper
OGQ-J *	-0.107	0.0352	0.90	0.81	0.99
SOC-13 <sup>2</sup>	0.018	0.4573	1.02	0.97	1.07
FIM motor items	-0.017	0.5895	0.98	0.92	1.04
FIM cognitive items	0.157	0.0693	1.17	0.99	1.40
Environmental factors *	1.484	0.0083	4.41	1.52	14.11

OGQ-J; Japanese version of the Occupational Gaps Questionnaire, SOC-13; 13-item Sense of Coherence, FIM; Functional Independence Measure.

\*  $p < 0.05$ , Model  $\chi^2$ ;  $p < 0.001$ , Hosmer–Lemeshow;  $p = 0.232$ , The discriminant accuracy rate = 80.16%. Adjustment variable = age, sex, economic status.

The table is adapted from Misu et al. (2022)<sup>31)</sup>

#### **5.4 Discussion**

This study was conducted to determine how functional independence, participation, environmental factors, and SOC affect the life satisfaction of older adults with care needs. The results revealed that comprehensive environmental factors and participation in activities that the person wants to do have greater effects than functional independence and SOC have on life satisfaction among older adults with care needs.

In 2002, the WHO developed the concept of “active aging” as a response to the progress of global aging<sup>65</sup>). Active aging places considerable value on individuals’ participation in activities that they find meaningful<sup>66</sup>). The study focused on participation in activities they wanted to do rather than on their ability to participate or their execution of those activities. The results of this study show that participation in activities they desired affects their life satisfaction; additionally, most of the activities that participants “do not do but want to do” are social and leisure activities in OGQ-J. The results of this study confirm the importance of the concept proposed by WHO and suggest that even older adults with care needs may maintain a better level of life satisfaction by promoting participation in activities that “they want to do”. Even though a person may have care needs, participation in social and leisure activities is an important perspective that can lead to further improvement in life satisfaction.

The results of this study suggest that comprehensive environmental factors may be a significant factor that influences life satisfaction. The results support previous studies reporting that physical/structural barriers of environmental factors are strongly related to satisfaction with participation among older adults using homecare services<sup>67</sup>). The life functions of older adults with reduced mental and physical function are considered more influenced by environmental factors. In this study, the participants were older adults with care needs and had some decline in their physical and mental functions. Therefore, environmental factors may have a stronger influence on life satisfaction. In this study, three environmental aspects were comprehensively



assessed based on the ICF definition: physical environment, attitudinal environment, and social environment<sup>5</sup>). Environmental factors that were assessed comprehensively demonstrated significant effects on the life satisfaction of older adults with care needs. The study indicated the importance of comprehensive assessment and support for the three aspects of environmental factors, namely physical environment (such as the environment in and around the home), human environment (such as building good relationships with family and friends), and social environment (such as the accessibility of health and social care services), to improve the life satisfaction of older adults with care needs.

Finally, SOC score was significantly higher in the satisfied group than in the unsatisfied group in univariate analysis, but no significant effect was found in multivariate analysis. In previous studies, people with higher SOC scores reported having a higher QOL<sup>68, 69</sup>) and life satisfaction<sup>70, 71</sup>), which was different from the predicted results in the present study. SOC increases with age and remains stable in the presence of chronic illness and disability<sup>69</sup>). Therefore, it was considered insufficient to explain life satisfaction in this study. In addition, this study examined factors that affect life satisfaction in a statistical model, including environmental factors and participation, which may have reduced the influence of SOC. The SOC score for an individual is a more or less constant value during adult life, being established by the end of the second decade of life, and with only minor and temporary changes in response to major changes in patterns of life experiences<sup>72</sup>). The SOC of older adults is considered stable and not easily changed. Thus, it is difficult to expect change through support and intervention. The results of this study suggest that even those with low SOC scores can be expected to have improved their life satisfaction by improving environmental factors and promoting participation in desired activities.

In the rehabilitation of older adults with care needs, finding out what activities the person wants and needs to perform and considering methods to achieve them will lead to increase their life satisfaction rather than directly approaching their physical functions. The only facilitating factor

for activity and participation is environmental factors in the ICF<sup>5</sup>). Participation may be promoted by modifying the environment even if physical function has declined and is not expected to improve.

## **Chapter 6: General Conclusion**

### **6.1 Conclusion**

This research was conducted to determine the impact of occupational gap-focused participation on improved life satisfaction of older adults with care needs due to declining physical function.

To achieve the overall purpose of this research, the OGQ-J developed in Sweden to evaluate occupational gaps was developed (Chapter 2). First, a pretest was administered to healthy Japanese adults to confirm linguistic validity. Next, the OGQ-J was used to evaluate occupational gaps, and Rasch analysis was conducted to psychometrically validate the OGQ-J for use with older adults with care needs. The results confirmed the validity and reliability of the OGQ-J. With the development and validation of the OGQ-J adapted to Japanese culture, it is now possible to assess not only participants' performance and capacity to participate, but also the qualitative aspect of participation, i.e., whether the participant performs the "activities they want to do".

In Chapter 3, the OGQ-J created in Chapter 2 was used to assess the occupational gap of older adults with care needs, and the aggregate results were used to describe its characteristics. A large percentage of participants selected activities such as "watching TV or videos, listening to music or radio," and "getting information;" a smaller percentage selected work or work-related activities as "activities they want to do." It was thought that participants tended to want to engage in activities with less physical burden and fewer social roles. "Activities that they do not do but want to do" tended to be social and leisure activities such as "travel," "participation in cultural activities," and "participation in outdoor activities" while "activities that they do but do not want to do" were mostly found in IADL activities such as "cleaning" and "laundry." These results confirm that OGQ-J can evaluate the characteristics of the occupational gap in older adults with care needs in four domains (IADL, social activities, leisure activities, and work or work-related activities).

Chapter 4 focused on the occupational gap and life satisfaction in the four domains measured by

the OGQ-J; it was found in Chapter 3 that each domain of the OGQ-J had characteristics of the occupational gap of older adults with care needs. A decision tree analysis was conducted to determine how the occupational gap in each domain classified the life satisfaction of older adults with care needs. The results revealed that the most important factor determining life satisfaction was the number of social activities that they “do and want to do;” the second most important factor was the number of IADL that they “do not do but want to do.” The occupational gap was a more important factor in classifying life satisfaction than age, gender, or level of care needed. The results suggest that older adults with care needs may maintain better life satisfaction by engaging in social activities and IADL that they want to perform.

The number of occupational gaps that they “do not do but want to do” can be reduced by making sure that they “do not want to do” the activity. However, older adults may be reluctant to participate due to the stigma associated with disability, such as the inconvenience to others and not wanting to be a burden to others due to declining physical function. The results of this study suggest that the most important factor in classifying life satisfaction was the number of social activities they “do and want to do,” suggesting that it is important not only to reduce the occupational gap but also to increase the number of activities they “want to do” by encouraging older adults with care needs to be interested and challenged to participate.

Chapter 5 focused on the number of occupational gaps, “want to do but do not do,” which may have a strong influence on life satisfaction. In addition, various factors that may affect life satisfaction, along with the occupational gap, were included, such as functional independence that represents the level of disability and environmental and personal factors that are contextual factors of life function. How each factor affected life satisfaction was examined using logistic regression analysis. After adjusting for age, gender, and economic status, the factor with the strongest effect on life satisfaction was the comprehensive environmental factor, consisting of physical, attitudinal, and social environmental factors, followed by the number of “want to do but do not do”

occupational gaps as the factor with significant influence. However, functional independence and personal factors had a smaller effect on life satisfaction. The results of this study revealed that environmental factors and characteristics of participation focused on the occupational gap had a stronger influence on the level of satisfaction with a better life of older adults with care needs than the care level or degree of functional independence, which represent the decline in physical functions and the level of impairment.

For older adults with declining physical functions to continue to lead satisfying lives at home even after they need nursing care, the study suggested the importance of rehabilitation that not only supports the improvement of mental and physical functions and physical structures but also arranges the physical, attitudinal, and social environments. This was because the older adults could participate in activities that they wanted to perform even after their physical and mental functions declined.

## **6.2 Limitations and Implications**

According to the ICF, the interaction of environmental and individual factors may promote activity and participation without improving body functions and structures<sup>5)</sup>. This research suggests the importance of participation focusing on environmental factors and the occupational gap for the life satisfaction of older adults with care needs. However, it is not clear how the relationship between environmental factors and occupational gap and the relationship among factors, including explanatory factors, affect life satisfaction. In addition, this research was designed as a cross-sectional study, and it is not clear how age-related declines in physical function and changes in caregiving level affect changes in occupational gap and life satisfaction over time.

This study included older adults who were evaluated as needing support and care under the long-term care insurance system in Japan and who used home care services. However, the study used

a self-rating questionnaire and the participants' care level was relatively mild. Therefore, the participants were considered to have a higher level of functional independence than we expected. Future analysis should include people with severe care levels to examine their occupational gap and life satisfaction in further detail.

Despite these limitations, this is the first study in Japan, to the best of our knowledge, to examine how participation of older adults with care needs, viewed as the number of occupational gaps as measured by the OGQ-J, affects their life satisfaction. The study showed that even with the decline in physical functions associated with aging and the need for nursing care, it is possible for people to experience life satisfaction by engaging in “activities that they want to perform” The results of this study provide important information that will contribute to the development of rehabilitation for older adults with care needs.

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## Appendix

### Self-Rating Questionnaire

#### Demographic Data and Life Satisfaction

以下の質問についてご回答ください。現在の状況について教えてください。  
2～8については、あてはまるものひとつに☑をつけてください。

- 1 年齢を教えてください。  
(            ) 歳
- 2 性別を選択してください。  
 男性             女性
- 3 介護度を以下より選択してください。  
 要支援 1       要支援 2  
 要介護 1       要介護 2       要介護 3       要介護 4       要介護 5
- 4 家族構成を以下より選択してください。  
 一人暮らし  
 配偶者と二人暮らし  
 子どもと同居  
 その他
- 5 教育歴（最終学歴）を以下から選択してください。  
 小学校卒  
 中学校卒  
 高等学校  
 専門学校・短期大学・大学卒
- 6 経済状況について、最もあてはまるものを選択してください。  
 余裕がある  
 ふつう  
 困っている
- 7 この4週間、あなたが移動した最も遠い場所についてあてはまるものをひとつだけ選択してください。  
 自宅で寝ている部屋から出ていない  
 自宅で寝ている部屋以外の部屋まで行った  
 自宅の庭または近隣の場所まで外出した  
 近隣よりも離れた場所（ただし町内）に外出した  
 町外に外出した
- 8 ご自身の生活全体についてどの程度満足していますか。最もあてはまるものをひとつだけ選択してください。  
 とても不満である  
 不満である  
 どちらかといえば不満である  
 どちらかといえば満足である  
 満足である  
 とても満足である



## Environmental Factors

あなたの生活環境についてお聞きします。  
 それぞれの項目について、1から5までの  
 最もあてはまる数字に○をつけてください。

	まったくあてはまらない	あてはまらない	どちらともいえない	あてはまる	かなりあてはまる
1. 自宅内は移動しやすい環境である	1	2	3	4	5
2. 自宅は快適で使いやすい環境である	1	2	3	4	5
3. 自宅は外出しやすい環境である	1	2	3	4	5
4. 自宅周辺の交通の便に満足している	1	2	3	4	5
5. 家族との関係は良好である	1	2	3	4	5
<input type="checkbox"/> 家族はいない					
6. 友人や知人との交流がある	1	2	3	4	5
7. 友人や知人との関係は良好である	1	2	3	4	5
<input type="checkbox"/> 友人や知人はいない					
8. 地域の人との交流がある	1	2	3	4	5
9. 地域の人との関係は良好である	1	2	3	4	5
10. 必要な介護や支援を受けている	1	2	3	4	5
11. 医療機関や福祉・介護サービスの利用のしやすさに満足している	1	2	3	4	5
12. 現在利用している医療・福祉・介護サービスに満足している	1	2	3	4	5
13. 余暇活動に参加しやすい環境である	1	2	3	4	5
14. 必要としているものや情報が入手できる環境である	1	2	3	4	5
15. 安全で健康的な生活を送る環境である	1	2	3	4	5

13-item Sense of Coherence Scale 1/2

あなたの人生に対する感じ方について伺います。

下記の13の質問に対して、あなたの感じ方をもっともよく表している段階の番号にひとつだけ○をつけてください。

1) あなたは、自分の周りで起こっていることがどうでもいい、という気持ちになることがありますか？	1	2	3	4	5	6	7
	まったくない			とてもよくある			
2) あなたは、これまでに、よく知っていると思っていた人の、思わぬ行動に驚かされたことがありますか？	1	2	3	4	5	6	7
	まったくなかった			いつもそうだった			
3) あなたは、あてにしていた人がっかりさせられたことがありますか？	1	2	3	4	5	6	7
	まったくなかった			いつもそうだった			
4) 今まで、あなたの人生には、明確な目標や目的が、	1	2	3	4	5	6	7
	まったくなかった			あった			
5) あなたは、不当な扱いを受けているという気持ちになることがありますか？	1	2	3	4	5	6	7
	よくある			まったくない			
6) あなたは、不慣れな状況にいると感じ、どうすればよいかわからない、と感じることがありますか？	1	2	3	4	5	6	7
	とてもよくある			まったくない			
7) あなたが毎日していることは、	1	2	3	4	5	6	7
	喜びと満足を与えてくれる			つらく退屈である			

13-item Sense of Coherence Scale 2/2

8) あなたは、気持ちや考えが非常に混乱することがありますか？	1	2	3	4	5	6	7
	とてもよくある			まったくない			
9) あなたは、本当なら感じたくないような感情を抱いてしまうことがありますか？	1	2	3	4	5	6	7
	とてもよくある			まったくない			
10) どんなに強い人でさえ、ときには「自分がダメな人間だ」と感じることもあるものです。 あなたは、これまで、「自分はダメな人間だ」と感じたことがありますか？	1	2	3	4	5	6	7
	まったくなかった			よくあった			
11) 何か起きたとき、ふつう、あなたは、	1	2	3	4	5	6	7
そのことを過大に評価したり 過少に評価してきた				適切な見方をしてきた			
12) あなたは、日常の生活で行っていることにほとんど意味がないと感じることがありますか？	1	2	3	4	5	6	7
	よくある			まったくない			
13) あなたは、自制心を保つ自信がなくなることがありますか？	1	2	3	4	5	6	7
	よくある			まったくない			