



# JOURNAL OF THE ACADEMIC SOCIETY FOR QUALITY OF LIFE (JAS4QoL)

2019 VOL. 5(1) 3:1-12

## AN INVESTIGATION OF THE FACTORS AFFECTING SOCIAL SECLUSION AND THE SOCIAL ACTIVITY NEEDS IN HUSBAND-WIFE ELDERLY HOUSEHOLDS

Kosuke KAWAMURA\*, Yuki TAKENAKA, Emi TOKURA, Chisa KIMURA, Mikiyasu TANABE, Hiroko ITO, Tsukasa MIYAMA, Taeko HORI, Kenya MATSUMOTO

Kyoto Tachibana University, 34 Yamada-cho, Oyake, Yamashina-ku, Kyoto 607-8175, Japan ([kawamura-k@tachibana-u.ac.jp](mailto:kawamura-k@tachibana-u.ac.jp))

---

Citation: KAWAMURA, K.; TAKENAKA, Y.; TOKURA, E.; KIMURA, C.; TANABE, M.; ITO, H.; MIYAMA, T.; HORI, T.; MATSUMOTO, K. An Investigation of the Factors Affecting Social Seclusion and the Social Activity Needs in Husband-Wife Elderly Households *JAS4QoL* 2019, 5(1) 3:1-12.

Online: <http://as4qol.org/?p=2686>

Received Date: 6/17/2019 Accepted Date: 9/25/19 Published: 9/26/2019

---

### ANNOUNCEMENT

- The 2019 International Conference on Quality of Life will be held at Kyoto Pharmaceutical University from Sept 28-29, 2019. Further information can be found at <http://as4qol.org/icqol/2019/>
- We have moved to continuous publication. Beginning January 2019 the editing committee has decided to adopt a continuous publishing model for Journal publication. Individual articles will be released online as they become ready, allowing a steady stream of informative quality articles. We will also be moving to a calendar year issue cycle. In traditional terms, each volume will encompass a single year and consist of a single issue. Publishing on a just-in-time basis allows authors to present their results in a timely fashion, and our readers, students, and colleagues to access our content and cite articles more quickly and free from the restrictions of a predefined timetable. As a result of these changes, the look and style, as well as the function, of the Journal will be different, and hopefully improved.
- The 2018 International Meeting on Quality of Life was held recently. Proceedings as well as photos and other information can be found at <http://as4qol.org/icqol/2018/>

---

**MORE INFORMATION AT [HTTP://AS4QOL.ORG/](http://AS4QOL.ORG/)**

# An Investigation of the Factors Affecting Social Seclusion and the Social Activity Needs in Husband-Wife Elderly Households

Kosuke KAWAMURA, Yuki TAKENAKA, Emi TOKURA, Chisa KIMURA, Mikiyasu TANABE Hiroko ITO, Tsukasa MIYAMA, Taeko HORI, Kenya MATSUMOTO

Kyoto Tachibana University, 34 Yamada-cho, Oyake, Yamashina-ku, Kyoto 607-8175, Japan ([kawamura-k@tachibana-u.ac.jp](mailto:kawamura-k@tachibana-u.ac.jp))

## Abstract

**Objectives:** The present study investigated the factors causing social seclusion and understanding the social activities needed in husband-wife households to gain an insight in developing a program for preventing the elderly married couples from seclusion.

**Methods:** An anonymous questionnaire was distributed among a community of exclusively husband-wife elderly households (age: > 65 years). The questionnaire on self-efficacy scale with regard to going out among community-dwelling elderly (SEGE), rating scale for self-efficacy of physical activity in frail elderly people (physical activity SE), geriatric depression scale - short version-Japanese (GDS-S-J), and on social capital, age, gender, and long-term care level. SEGE values were categorized variables, while others were treated as individual variables by multiple regression analysis. In addition, the median SEGE values that were categorized by gender, confirmed the trends in social activity needs.

**Results:** In male elderly, 'walking', 'stair-climbing', 'lifting a weight' in the category of physical activity SE were high, and seclusion tendency was low in couples who had good husband-wife relationship, and seclusion tendency was high when GDS-S-J values were high. As for the female elderly, seclusion tendency was low when 'walking', 'lifting a weight', and social capital were high; the seclusion tendency was high when age, long-term care level, and GDS-S-J values were high. Additionally, the social activity needs did not exhibit differences when male and female elderly were compared separately according to median SEGE values.

**Discussion:** In the male elderly, it is important to prevent social seclusion from society via first mutual invitation to join social activity among the couples, and subsequently through intervention towards promoting elevated self-efficacy generated by couple-participation in physical activity. However, the female elderly can continue maintaining relationships with other community residents for their reciprocity. Thus, we found a gender difference needed to consider about seclusion prevention.

**Keywords:** social seclusion, elderly, husband wife households

---

Citation: KAWAMURA, K.; TAKENAKA, Y.; TOKURA, E.; KIMURA, C.; TANABE, M.; ITO, H.; MIYAMA, T.; HORI, T.; MATSUMOTO, K. An Investigation of the Factors Affecting Social Seclusion and the Social Activity Needs in Husband-Wife Elderly Households. *JAS4QoL* 2019, 5(1) 3:1-12.

Available online at  
<http://as4qol.org/?p=2686>

Received: 6/17/2019  
Accepted: 9/25/19  
Published: 9/26/2019

©2019 JAS4QoL as4qol.org

## 1. Introduction

The total Japanese population is 126,710,000 individuals with 35,150,000 seniors of more than 65 years (yr) of age or 27.7% of the total population.<sup>1</sup> Of particular attention is the fact that rapid aging in regions where urbanization is especially fast/rampant in city suburbs.<sup>2</sup> Establishing special programs tailored to meet the support system for needs of certain district features has become an urgent commitment.

In residential make-up of the elderly exceeding 65 yr of age, husband-wife couples account for the highest number (31%).<sup>3</sup> In such (husband-wife) cases, the remaining spouse more likely moves to lone-household setting when the other spouse passes away. In other words, the number of lone-residence households is estimated to increase with time.<sup>4</sup> It is known that elderly living in lone-residence households tend to isolate themselves.<sup>5</sup> Even in husband-wife households, the remaining spouse is prone to such a seclusion tendency, especially males who find themselves readjusting to society,<sup>6</sup> resulting in social seclusion due to reduced interactive opportunities for interaction with other community residents. Social seclusion is a condition where a narrowing of the activity range is triggered by aging, psychological change, and environmental factors.<sup>7</sup> Additionally, the narrowing triggers unfavorable effects such as atrophy influence the elderly mentally and physically.<sup>8</sup> Despite the seriousness of this dire situation, a support system does not exist for 69.2% of the lone-household elderly (who replied they are not active in social activity),<sup>1</sup> indicating that programs for preventing seclusion are not adequately established.<sup>9,10</sup> Furthermore, support is not available in cases where isolation from society has already been established (which are difficult even for local welfare officer to track down): viz., it is estimated that only 1.4% of these have so far been accounted for.<sup>11</sup>

However, it is vital for elderly to persist in going outside their homes to continue maintaining relationships with other community residents. When social capital scores – interpreted as connecting with community residents – are higher, support relationships are established to excellent levels.<sup>12</sup> As such, fostering of social capital might contribute to strengthening cooperation among all residents in the community considered significant for community-inclusive care system.<sup>13</sup>

As a result of coaxing the elderly to join programs for prevention of social seclusion, there remain concern of issues of convenience from family members. The factors contributing to continue participating in such programs include: (i) establishing human relationships with new contacts, and (ii) the joy of receiving daily information from connected people.<sup>14</sup> Based on these findings, participating in social activity is to be promoted to both husband and wife when they are alive, with the thought of making and accumulating social capital through social activity on a continuous basis even when either one of the spouses dies. However, under current circumstances where established effective programs for preventing social seclusion are not in place, news and reports on actual social activity of the seclusion lives of elderly husband-wife couples living alone are limited. As such, the present study investigated the factors that are causing social seclusion, and understanding the social activities needed in husband-wife households to gain an insight in developing a program for preventing the elderly married couples from seclusion.

## 2. Methods and Subjects

### 2.1 Subjects

Households comprising elderly husband-and-wife (couple-households) residents of more than 65 yr old living in Community B (located near to University A) were subjects of study. Note that Community B used to be a bustling urbanized bed-town community with rapid population growth in a city suburb; however, the population growth has reached a plateau in recent years. At the time when the study was undertaken, the rate of population-aging was 30.5%,<sup>15</sup> and elderly couple-household residents (more than 65 yr old) comprised 30.4% of the total population.<sup>16</sup>

### 2.2 Methods

The purpose as well as moral and ethical considerations of the study were orally explained to social workers (research support personnel) using written supporting documents before a relevant questionnaire was given to them to administer for the various questions designed for the study. These local wel-

fare officer distributed the questionnaire to the appropriate elderly couple-households, and provided explanations of the study wherever and whenever possible. The questionnaire comprised questions related to the social seclusion tendency, depression tendency, husband-wife relationship, social capital, and social activity needs.

With regard to the item of social seclusion, it is closely correlated to the incidence of going outside the home. To measure the social seclusion tendency, self-efficacy scale on going out among community-dwelling elderly (SEGE)<sup>17</sup> was used. SEGE consists of 6 items ranging from answers of 'completely no confidence' (1 point) to 'completely full of confidence' (4 points); and where the scores were expressed based on a 4-point Likert scale: viz., the higher the scores, the higher the self-efficacy (in going out from home), or in other words, the lower the tendency the higher would be the rate of social seclusion of subjects.

With regard to the conditions of physical activity, we employed rating scale for self-efficacy of physical activity in frail elderly people (physical activity SE).<sup>18</sup> Physical activity SE is closely significantly correlated with physical activity. Under each of the 3 items of 'walking,' 'stair-climbing,' and 'lifting a weight,' scores with answers ranging from 'completely unable to perform (1 point)' to absolutely 'able to perform (5 points),' were calculated from a 5-point Likert scale: viz., the higher the scores, the higher the self-efficacy in engaging in physical activity of subjects.

As for assessing the depression tendency, we used the geriatric depression scale - short version-Japanese<sup>19</sup> (GDS-S-J) analysis, which comprises 15 items with answers ranging from 'Yes' (1 point) or 'No' (0 point): viz., the higher the total scores, the higher the depression tendency.

In order to evaluate the effects of husband-wife relationship on social activity, we exploited the method used by the Cabinet Office in confirming the item via the 'National Survey of Lifestyle Preferences.'<sup>20</sup> Scores on the husband-wife relationship range from 'Dissatisfied (1 point)' to 'Satisfied (5 points),' were obtained using 5-point Likert scale.

As no questionnaires have been established as a standard for measuring social capital, and while currently available evaluation methods are either limited in reliability or inappropriate for assessment,<sup>21</sup> we used the more frequently-used 5-item method by Hayashi et al.<sup>21</sup> for assessing social capital (SC) in our study, where the scores ranging from 'I think so (4 points)' to 'I don't think so (1 point)' were obtained using the 4-item method. In items requiring reversed responses, scores ranging from 'I think so (1 point)' to 'I don't think so (4 points)' were graded accordingly.

Attribution of subjects was confirmed according to age and gender. With reference to Yamazaki et al.,<sup>17</sup> social seclusion has been defined as subjects living within their dwelling almost without going out of the residence (note: subjects are not even bed-ridden). In normal situations, those categorized in the long-term care level are omitted from the standard social seclusion criterion; however, as we set out to investigate the factors affecting social seclusion, and not to perform seclusion screening, we were concerned of the long-term care level of subjects. As for long-term care level, scores ranging from 'no confirmation done (0 point),' 'requiring support 1 (1 point),' 'requiring support 2 (2 points),' 'requiring long-term care 1 (3 points)' to 'requiring long-term care 5 (7 points)' were obtained accordingly.

Subjects were asked to fill in the free description about the social activity needs they were also asked to write in activity that they intend to join or continue participating in future.

### **2.3 Statistical Evaluations**

Comparisons of gender-dependent variables based on the median value were executed with the Mann Whitney U-test. To confirm the causative factors affecting social seclusion, SEGE-dependent variables, and independent variables of age, long-term care level, physical activity SE, GDS-S-J, husband-wife relationship, and SC were expressed for multiple regression analysis.

IBM SPSS Statistics 24 was used for statistical analyses, and differences where  $p < .05$  were considered significant. With regard to social activity needs, we examined the free description, after the median values of SEGE were divided according to the gender. On summations of the free description based on similarity, variables were categorized as follows: 'normally activity executed by one self,' 'activity executed by either one or more than 2 people,' or 'normally activity executed by more than 2 people.' The ratios on the whole were confirmed. Note that as there was not a standard with respect to the catego-

rization, the validity was enhanced after much discussion among the authors and relevant research personnel.

## 2.4 Ethical considerations

Subjects were briefed on the research objectives, methods, and participation at their own discretion by the research personnel; and contents of individual answers were kept confidential. Participation in the study would not affect subjects living in the community in any form. The participants were notified of the results via publication or reviewed reports in relevant academic societies. In such an event, personal information would be kept confidential based on ethical consideration. The above considerations were given in writing, and verbally explained to all participants. In cases where participants declined to cooperate with the study, their questionnaires were enclosed and sealed in their respective envelopes before returning to the relevant subjects.

Note that this study had prior approval (Guideline 18-27) from the Research Committee of Tachibana University before study execution.

## 3. Results

Of 682 questionnaires, 384 were completed (excluding those inappropriately filled out), and effective 319 responses were obtained (effective response rate: 46.8%). Of 319 cases, 132 (19.4%) filled in the free description about social activity needs.

### 3.1 Comparison of subject attribution based on genders (Table 1)

The mean age of all subjects was 77.1±5.0 yr: males (n=160) were 78.5±5.3 yr, while females (n=159) were 75.7±4.4 yr, indicating that the former was significantly higher.

With regard to long-term care level, males who did not qualify accounted for 147 (91.9%), requiring support 1 (n=2; 1.3%), support 2 (n=2; 2.5%), long-term 1 (n=5; 3.1%), and long-term care 2 (n=2; 1.3%). As for long-term care level of female subjects, 146 (91.8%) cases did not qualify, requiring support 1 (n=2; 1.3%), support 2 (n=4; 2.5%), long-term care 1 (n=1; 0.6%), long-term care 2 (n=3; 1.9%), long-term care 3 (n=2; 1.3%), and long-term care 4 (n=1; 0.6%). Points scored on long-term care level did not indicate any statistical significance between the genders.

### 3.2 Social seclusion tendency and comparison of factors influencing social seclusion (Table 1)

With regard to SEGE, the mean scores registered 17.8±4.0 (standard mean±S.D.): the respective mean male and female scores were 18.6±3.9 and 17.1±4.0, indicating that former had significantly ( $p<.05$ ) higher scores.

Table 1: Subject attributes based on genders: comparison of attributes affecting the social seclusion tendency.

	(Total)		Genders				<i>p</i>
	Mean	S.D.	male (n=160)		female (n=159)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Age	77.1	5.0	78.5	5.3	75.7	4.4	**
Long-term care level	0.2	0.9	0.2	0.7	0.3	1.0	
SEGE	17.8	4.0	18.6	3.9	17.1	4.0	*
<b>Physical activity SE:</b>							
Walking	21.5	5.0	21.9	4.7	21.0	5.3	*
Stair-climbing	18.7	6.0	20.0	5.6	17.4	6.1	*
Lifting a weight	22.1	4.2	23.1	3.4	21.2	4.7	*
GDS-S-J	3.8	3.4	3.7	3.3	4.0	3.5	
Husband-wife relationship	4.3	0.8	4.5	0.7	4.2	0.9	**
Social capital	15.7	2.5	15.6	2.4	15.8	2.5	

Verified by the Mann-Whitney-U test: \* $p<.05$ ; \*\* $p<.01$  S.D: standard deviation

Table 2: Factors influencing social seclusion of the elderly males.

	B	Mean±S.D.	$\beta$	t value	p value
(constant)	3.616	4.657		.776	.439
Age	.029	.046	.039	.626	.533
Long-term care level	-.157	.326	-.030	-.483	.630
<b>Physical activity SE:</b>					
<i>Walking</i>	.209	.071	.252	2.928	.004
<i>Stair-climbing</i>	.151	.058	.218	2.626	.010
<i>Lifting a weight</i>	.194	.095	.168	2.035	.044
GDS-S-J	-.241	.077	-.206	-3.129	.002
Husband-wife relationship	.794	.354	.140	2.240	.027
Social capital	.175	.097	.107	1.806	.073

Multiple regression analysis (best-subset), ANOVA:  $p < .01$ ,  $R^2 = .551$ ; adjusted value  $R^2 = .527$

As for 'walking' in physical activity SE scores, the total mean was  $21.5 \pm 5.0$  (male:  $21.9 \pm 4.7$  vs female:  $21.0 \pm 5.3$ ), with the males showing a significantly higher score. The total 'stair-climbing' scores was  $18.7 \pm 6.0$  (male:  $20.0 \pm 5.6$  vs female:  $17.4 \pm 6.1$ ), showing a tendency similar to walking with the males exhibiting significantly ( $p < .05$ ) higher scores. With regard to 'lifting a weight', the total mean scores registered  $22.1 \pm 4.2$  (male:  $23.1 \pm 3.4$  vs female:  $21.2 \pm 4.7$ ), again indicating the males were lifting significantly ( $p < .05$ ) higher weights.

As for GDS-S-J, the total mean scores were  $3.8 \pm 3.4$  (male:  $3.7 \pm 3.3$  vs female:  $4.0 \pm 3.5$ ), with no significant differences between the genders. The results of husband-wife relationship recorded a total of  $4.3 \pm 0.8$  (male:  $4.5 \pm 0.7$  vs female:  $4.2 \pm 0.9$ ), with the males showing significantly ( $p < .01$ ) higher scores.

Social capital had a total mean value of  $15.7 \pm 2.5$  (male:  $15.6 \pm 2.4$  vs female:  $15.8 \pm 2.5$ ) with no statistical significance between the genders.

### 3.3 Factors affecting social seclusion of the elderly males (Table 2)

As age, SEGE, physical activity SE, and husband-wife relationship exhibited significant differences between the genders, we further investigated the factors affecting social seclusion between genders.

In the elderly males, factors such as 'walking', (standard partial regression coefficient ( $\beta$ ) = .252) 'stair-climbing' ( $\beta$  = .218), 'lifting a weight' ( $\beta$  = .168) of physical activity SE, and husband-wife relationship ( $\beta$  = .140) manifested as positive factors, whereas the GDS-S-J ( $\beta$  = -.206) value indicated a negative factor on SEGE. In other words, elderly couples with high scores on 'walking', 'stair-climbing', and 'lifting a weight' and excellent husband-wife relationship were less likely to suffer social seclusion, although high GDS-S-J scores might suggest a social seclusion tendency.

### 3.4 Factors affecting social seclusion of the elderly females (Table 3)

In the elderly females, factors such as walking ( $\beta$  = .430), lifting a weight ( $\beta$  = .172), and social capital ( $\beta$  = .182) of physical activity SE were positive factors, whereas age ( $\beta$  = -.169), long-term care level ( $\beta$  = -.154) GDS-S-J ( $\beta$  = -.147) indicated as negative factors on SEGE. In other words, elderly couples with high scores of walking, lifting a weight, and social capital relationship were less likely to exhibit social seclusion, although high age, long-term care level, and GDS-S-J scores might encourage social seclusion tendency.

Note that in all analyses between male and female, scores on the Variance Inflation Factor were unlikely to exceed 10, and multicollinearity issues were nonexistent. In addition, regular probability values of standardized residuals were almost all located on or on the right of the linear plot, thus advocating that the residuals followed a normal probability (Gaussian) distribution.

### 3.5 Social activity needs

A total of 132 (male: 63; female: 69) responses on social activity needs were collected. As the median value of SEGE registered 20 in the males, the group with  $< 20$  (low-SEGE) and  $\geq 20$  (high-SEGE) points

Table 3: Factors affecting social seclusion tendency of the elderly females.

	B	mean±S.D.	β	t value	p value
(constants)	15.785	4.568		3.455	.001
Age	-.156	.051	-.169	-3.043	.003
Long-term care level	-.635	.260	-.154	-2.443	.016
<b>Physical activity SE:</b>					
<i>Walking</i>	.328	.061	.430	5.427	.000
<i>Stair-climbing</i>	-.062	.050	-.094	-1.259	.210
<i>Lifting a weight</i>	.146	.063	.172	2.302	.023
GDS-S-J	-.169	.073	-.147	-2.331	.021
Husband-wife relationship	-.252	.244	-.055	-1.037	.302
Social capital	.288	.081	.182	3.543	.001

Multiple regression analysis (best-subset), ANOVA:  $p < .01$ ,  $R^2 = .638$ ; adjusted value  $R^2 = .619$

consisted of 30 and 33 subjects, respectively. As for the females, because the median SEGE value was 18, groups with  $<18$  (low-SEGE) and  $\geq 18$  (high-SEGE) points consisted of 28 and 41 subjects, respectively.

In the male elderly, ca. 40% of low- and high-SEGE groups answered: ‘activity usually performed by one person’ and ‘activity performed by even either one person or 2 people together’; and ca. 20% of both

Table 4: Social activity needs in elderly males (n=63)

Category	Low-SEGE group (<20 points; n=30)			High-SEGE group ( $\geq 20$ points; n=33)		
	Content	No. (%) of subjects	Total %	Content	No. (%) of subjects	Total %
<b>Activity usually performed by 1 person</b>	Art appreciation	4 (9)	38	Artwork production	6 (10)	38
	Artwork production	3 (7)		Body-stretching	4 (7)	
	Reading	3 (7)		Reading	4 (7)	
	Gardening	2 (4)		Art appreciation	2 (3)	
	TV-watching	2 (4)		Instrumental performance	2 (3)	
	Astronomical observation	1 (2)		Swimming	1 (2)	
	Fishing	1 (2)		Brain-training	1 (2)	
	Body-stretching	1 (2)		Gardening	1 (2)	
<b>Activity performed by even either one person or 2 people together</b>	Walking	4 (9)	38	Jogging	1 (2)	36
	Golfing	4 (9)		Walking	7 (12)	
	Traveling	4 (9)		Golfing	5 (8)	
	Volunteer activity	3 (7)		Mountaineering	4 (7)	
	Mountaineering	1 (2)		Traveling	3 (5)	
<b>Activity usually performed by more than 2 people</b>	Dancing	1 (2)	24	Volunteer activity	2 (3)	26
	Residents' association activity	6 (13)		Residents' association activity	8 (14)	
	Dinner parties	3 (7)		Board games	3 (5)	
	Table-tennis	1 (2)		Karaoke/chorus	2 (3)	
	Karaoke/chorus	1 (2)		Communication with the young	1 (2)	
				Tennis	1 (2)	
		Table-tennis	1 (2)			

Table 5: Social activity needs in the elderly females (n=69)

Category	Low-SEGE group (<18 points; n=28)			High-SEGE group (≥18 points; n=41)		
	Contents	No. (%) of subjects	Total %	Contents	No. (%) of subjects	Total %
<b>Activity usually performed by 1 person</b>				Artwork production	15 (19)	
	Artwork production	9 (15)		Swimming	5 (6)	
	Body-stretching	8 (13)		Body-stretching	5 (6)	
	Reading	4 (7)		Art appreciation	4 (5)	
	Gardening	3 (5)		Reading	3 (4)	
	Musical instrumental performance	3 (5)	50	Jogging	2 (3)	48
	Art appreciation	2 (3)		Musical instrumental performance	2 (3)	
	Brain-training	1 (2)		Astronomical observation	1 (1)	
				Gardening	1 (1)	
<b>Activity performed by even either one person or 2 people together</b>	Walking	4 (7)		Walking	7 (9)	
	Traveling	3 (5)		Volunteer activity	6 (8)	
	Golfing	2 (3)		Traveling	6 (8)	30
	Mountaineering	2 (3)	22	Golfing	2 (3)	
	Volunteer activity	1 (2)		Mountaineering	1 (1)	
	Dancing	1 (2)		Dancing	1 (1)	
<b>Activity usually performed by more than 2 people</b>	Karaoke/chorus	6 (10)		Karaoke/chorus	7 (9)	
	Dinner party	4 (7)		Residents' association activity	4 (5)	
	Residents' association activity	3 (5)	28	Table-tennis	4 (5)	24
	Board games	2 (3)		Dinner parties	2 (3)	
	Table-tennis	2 (3)		Communication with the young	1 (1)	
				Tennis	1 (1)	

groups answered: 'activity usually performed by either one person or 2 people' (Table 4).

In the low-SEGE group the type of social activity needs with 'activity usually performed by 1 person' was most frequently stated to be 'art appreciation' followed by 'artwork production' and so on. As for 'activity performed by even either one person or 2 people together' these were often represented as walking followed by golfing, etc. With regard to 'activity usually performed by more than 2 people' these were most closely associated with residents' association activities, followed by dinner parties, etc.

As for social activity needs in the high-SEGE group, 'activity usually performed by 1 person' was mostly likely to involve artwork production, followed by body-stretching, etc. With regard to 'activity performed by even either one person or 2 people together', walking was most frequently cited, followed by golfing, etc. Moreover, 'activity usually performed by more than 2 people' most frequently involved with residents' association activities, followed by board games, and so on.

However, in the case of elderly females, ca. 50% in both low- and high-SEGE groups showed a need for 'activity usually performed by 1 person' (Table 5).

The type of social activity needs cited in the low-SEGE group for 'activity usually performed by 1 person' most frequently involved artwork production, followed by body-stretching, and so on. As for 'activity performed by even either one person or 2 people together', walking was most frequently cited,



followed by traveling, and so on. Karaoke/chorus singing was most frequently chosen, followed by attending dinner party in 'activity usually performed by more than 2 people' and so on.

As for contents of social activity needs in the high-SEGE group, artwork production was most frequently chosen, followed by swimming, etc. in 'activity usually performed by 1 person'. As for 'activity performed by even either one person or 2 people together', walking was most frequently cited, followed by volunteer activity, etc. Karaoke/chorus singing was most frequently chosen, followed by residents' association activity in 'activity usually performed by more than 2 people' and so on.

## 4. Discussion

### 4.1 Subject categorization

In the present study, the mean age of males was significantly higher than females; this was probably due to the higher mean marriage age of the former.<sup>22</sup>

In addition, SEGE scores of the male elderly were significantly higher, coinciding with previous finding<sup>23</sup> that the incidence of social seclusion of female elderly was higher by self-assessed deterioration in health. However, previous reports<sup>24, 25</sup> have demonstrated that social seclusion was gender-independent, and therefore the correlation between social seclusion and gender remains controversial. The present findings suggest that, at least in part, special regional characteristics may influence social seclusion tendency of elderly residents.

Furthermore, the significantly higher physical activity SE of the male elderly (vs female elderly) converged with the higher Barthel Index in the male elderly reported previously;<sup>26</sup> the low physical activity SE of female elderly could be attributable to cases with bone fracture experienced in previous falls.<sup>26, 27</sup>

The mean husband-wife relationship scores registered 4.3 in the elderly, coinciding with 84.4% of those surpassing the age of 60 yr citing said relationship as satisfactory.<sup>18</sup> Additionally, the male elderly indicate significantly higher satisfaction on said relationship, implying that they are more dependent on and had higher trust in their spouses/wives (husbands was 29.2 points higher than spouses/wives).<sup>29</sup>

When the two genders are viewed separately, significant differences in these variables were established. In other words, it is necessary to consider gender separately when analyzing the factors influencing social seclusion on the elderly as well as social activity related to prevention of social seclusion in the elderly.

### 4.2 Factors affecting social seclusion of elderly households comprising exclusively of husband and wife

With regard to SEGE, the physical activity SE in the male elderly accounted for the total, while 'walking' and 'lifting a weight' were positive factors in the female elderly. In other words, the self-efficacy of 'going outdoor' enhanced when the self-efficacy of physical activity increased, thus lowering the risk of social seclusion. This serves as a factor for developing social seclusion regardless of the gender, yielding results similar to factors affecting walking function, and physical strength decrease.<sup>14</sup> Additionally, age and long-term care levels were negative factors in the female elderly. This finding coincides with a previous study<sup>31</sup> indicating that the risk of social seclusion is higher with long-term care levels only in female elderly. Moreover, GDS-S-J was a negative factor in both genders: i.e. the higher the depression the weaker the self-efficacy on going out.<sup>32</sup> This depression tendency in the elderly is closely correlated with reduced motor function; viz., eliciting influence on increased anxiety over falls and thereby leading to social seclusion tendency.<sup>33</sup>

The special features obtained in the study included the following positive factors: i.e. husband-wife relationship in the male elderly and social capital in the female elderly. In the male elderly, the subjective well-being of husband and wife even in taking meals outside the house was factored in as a positive influence,<sup>34</sup> implying that being with the spouse per se was a chance to trigger going outdoors for the male elderly. However, in cases where departures from spouses through death induced the loss of identity of being the man-of-the-house, there might be a higher risk in elderly of social seclusion tendency.<sup>35</sup> As for the female elderly, the fact that the higher the social capital, the lower the social seclusion tendency implies that participating in regional activities propels higher reciprocity. In other words, female elderly

with high reciprocity have been reportedly able to develop a higher subjective feeling of health,<sup>36</sup> demonstrating the importance of fostering relationships with community residents.

#### **4.3 Social activity related with the prevention of social seclusion**

The range of social activities in the elderly contracts with time, aggravating social seclusion as social interactions decrease.<sup>37</sup> Additionally, as support decreases even in husband-wife households with high social capital, it is necessary for such households to build close networking with the local community when the level of health of the couple is in high social capital,<sup>11</sup> especially when the husband – generally – is the one who is frequently in need of support from the spouse<sup>35</sup> in preventing future social seclusion.

As preventive measures against social seclusion, exercise programs, life-review programs, etc. have been executed using various physical and psychological approaches, although the outcomes/effects have been varied.<sup>38</sup> Moreover, as some joining these programs feel participation is meaningless, their giving up on participation becomes a matter of time. Therefore, it is important to formulate measures to prevent social seclusion by developing concern and cultivating interest in social activities for the elderly.

In this study, even when the social activity needs were categorized, low- and high-SEGE groups did not exhibit differences, coinciding with a previous study,<sup>39</sup> where even with categorizing the presence and absence of social seclusion, marked differences in social activity were not observed.

However, as ‘activities usually performed by more than 2 people’ are many, fostering social capital as a preventive measure against social seclusion is highly possible. In this study, types of social activities were more of the ‘activity usually performed by more than 2 people’ than ‘activity performed by even either one person or 2 people together’, and further exceed ‘activity usually performed by 1 person’, indicating that the crucial influence of physical activity was ever growing.

In our study, when the high physical activity SE and excellent husband-wife relationship are related to preventing social seclusion in male elderly, coaxing participation between husband and wife enhances physical activity self-efficacy, resulting in increased rates of ‘activity usually performed by more than 2 people’. In addition, when social capital is high, social seclusion can be prevented in the female elderly: The social activity needs of females were most predominantly of ‘activity usually performed by 1 person’. In the case of the female elderly of husband-wife couples, as relationships with community residents can be fostered and maintained via reciprocity even without initiating new social activity, further studies to explore preventive measures of social seclusion in elderly husband-wife couples are warranted.

#### **4.4 Limitations of this study**

The effective response rate was 46.8%, and the unanimous questionnaire response rate related to social activity needs was a low 19.4% in the present study. The low response rate for social activity needs may be due to the request for free description. Additionally, because categorization of the social activity needs was not standardized, there was therefore a limitation in generalization of results. Furthermore, in investigating preventive programs for social seclusion of elderly husband-wife couples based on social activity needs, care should be exercise regarding different mindsets of different subjects had when answering the questionnaire even if the questionnaire answers were analogous.

### **5. Conclusions**

In this study, investigation of the factors affecting social seclusion in the elderly, and easy-to-participate social activity needs with little burden yielded the following results:

(1) In the male elderly, cases with high physical activity SE scores comprising ‘walking’, ‘stair-climbing’, ‘lifting a weight’ and excellent husband-wife relationships, the social seclusion tendency would be low; however, for those with high GDS-S-J scores, the reverse would occur. As such, mutual coaxing of elderly couples in participation of social activity was important in enhancing physical activity self-efficacy, which subsequently influences and prevents social seclusion.

(2) In the case of female elderly, high physical activity SE scores comprising ‘walking’, ‘lifting a weight’ and social capital reduced social seclusion, while factors such as age, long-term care levels and high GDS-S-J scores would likely yield the reverse tendency. Although the female elderly could foster

and maintain relationships with community residents through reciprocity, there remain cases of social seclusion. As such, investigations on measures to prevent social seclusion in female elderly in husband-wife couples are warranted.

## 6. Acknowledgements

The authors wish to express their sincerest gratitude to those who have directly and indirectly assisted in the study. Thanks are due to critical reading by Professor Anthony FW FOONG and Mr. David Crespo in making the manuscript more comprehensive.

## 7. References

1. Government of Japan Cabinet Office, <https://www8.cao.go.jp/kourei/ishiki/h29/gaiyo/index.html> (2019.03.22)
2. Nakashima, T., Tajima, K., Kim, W., Okuda, Y., Shimizu, Y., Hirano, T. (2011). Extracting the practical subjects of informal care based on the characteristics of community (1) : Results of the research in the S area of suburban Kasugai-city where the population has been rapidly aging. *Journal of social welfare, Nihon Fukushi University*, 125, 103-119.
3. Ministry of Health, Labour and Welfare, <https://www.mhlw.go.jp/toukei/saikin/hw/k-tyosa/k-tyosa16/dl/02.pdf> (2019.03.22)
4. Ministry of Health, Labour and Welfare, <https://www.mhlw.go.jp/stf/shingi/2r98520000032exf-att/2r98520000032f26.pdf> (2019.03.22)
5. Kurihara (Wakasa), R., Katsura, T. (2003). Factors Affecting the Lifestyle of the Elderly Who Live Alone: Indoor Type or Outdoor Type. *Journal of the Japanese Association of Rural Medicine*, 52 (1), 65-79.
6. Muroya, K, Tajima, T. (2013). Psychological processes and readaptation to life in society of elderly widowers. *Journal of UOEH*, 35 (3), 241-246.
7. Hirai, H., Kondo, K. (2007). Review of the literature on the 'Tojikomori' elderly in Japan study trends, definition, and review of cohort studies. *Nihon Kosho Eisei Zasshi*, 54 (5),293-303.
8. Shinkai, S., Watanabe, N., Yoshida, H., Fujiwara, Y., Amano, H., Lee, S., Nishi, M., Tsuchiya, Y. (2010). Research on screening for frailty: development of "the Kaigo-Yobo Checklist". *Nihon Kosho Eisei Zasshi*, 57 (5), 345-354.
9. Yamazaki, S., Fujita, K., Imuta, H., Yasumura, S. (2016). Effectiveness of a home-visit program on improving self-efficacy toward going out: Support in homebound elderly. *Applied gerontology*, 10 (1), 27-36.
10. Wakayama, S., Takata, Y., Kubota, T., Nakamura, S., Fujita, Y., Maki, N., Hasegawa, D., Yanagi, H. (2016). Sense of coherence (SOC): Social and psychological factors in the homebound elderly in a community. *Journal of General and Family Medicine*, 39 (2), 98-105.
11. Sugisawa, H., Ishikawa, H., Sugihara Y. (2012). Possibilities for detection of homebound elderly people through the welfare commissioner (Minsei-iin). *Nihon Kosho Eisei Zasshi*, 59 (5), 325-332.
12. Sakaguchi, S., Fukumoto, K., Nakagawa, T., Masuda, Y. (2017). Association between social capital and social support for elderly community residents. *The Journal of Kyushu University of Nursing and Social Welfare*, 18 (1), 51-61.
13. Ministry of Health, Labour and Welfare, <https://www.mhlw.go.jp/file/06-Seisakujouhou-12300000-Roukenkyoku/0000192996.pdf> (2019.03.22)
14. Yamagata, E., Komatsu, M., Sugihara, Y., Watanabe, Y., Kimura, M., Inoue, T., Okayama, Y. (2018). The factors related to participation in and continuation of a preventive care program for homebound older adults. *Japanese journal of gerontology*, 40 (1), 42-53.

15. Kyoto city,  
[https://www2.city.kyoto.lg.jp/sogo/toukei/Publish/Analysis/News/086Respect\\_for\\_the\\_aged.pdf](https://www2.city.kyoto.lg.jp/sogo/toukei/Publish/Analysis/News/086Respect_for_the_aged.pdf)  
(2019.03.22)
16. Kyoto city, [https://www2.city.kyoto.lg.jp/sogo/toukei/Population/Census/basic1.html#kourei\\_s](https://www2.city.kyoto.lg.jp/sogo/toukei/Population/Census/basic1.html#kourei_s)  
(2019.03.22)
17. Yamazaki, S., Imuta, H., Hashimoto, M., Nomura, S., Yasumura, S. (2010). Development of a self-efficacy scale for going out among community-dwelling elderly. *Nihon Koshu Eisei Zasshi*, 57 (6), 439-447.
18. Inaba, Y., Obuchi, S., Oka, K., Arai, T., Nagasawa, H., Shiba, Y., Kojima, M. (2006). Development of a rating scale for self-efficacy of physical activity in frail elderly people. *Nihon Ronen Igakkai Zasshi*, 43 (6), 761-768.
19. 杉下守弘, 朝田隆. (2009). 高齢者用うつ尺度短縮版-日本版 (Geriatric Depression Scale - Short Version-Japanese, GDS-S-J) の作成について. *Japanese journal of cognitive neuroscience*, 11 (1), 87-90.
20. Cabinet Office, <http://warp.da.ndl.go.jp/info:ndljp/pid/10361265/www5.cao.go.jp/seikatsu/senkoudo/senkoudo.html> (2019.03.22)
21. Hayashi C, Maeuma R, Yamada K, Morioka I. Characteristics of health literacy, social capital, and health behavior acquired through experiences by health promotion volunteers, *Nihon Koshu Eisei Zasshi*, 65 (3) , 107-115, 2018.
22. Ministry of Health, Labour and Welfare,  
<https://www.mhlw.go.jp/toukei/saikin/hw/jinkou/tokusyu/konin16/dl/gaikyo.pdf> (2019.03.22)
23. Watanabe, M., Watanabe, T., Matsuura, T., Higuchi, Y., Shibutani, T., Usuda, K., Kono, K. (2007). Predictors of houseboundness among elderly persons living autonomously in a rural community. *Nihon Ronen Igakkai Zasshi*, 44 (2), 238-246.
24. Kubo, M., Yokoyama, M. (2006). The characteristics of homebound elderly living in the community: A logistic regression analysis. *Japanese Society for the Study Welfare*, 46 (3), 38-47.
25. Ministry of Health, Labour and Welfare,
26. <https://www.mhlw.go.jp/topics/2009/05/dl/tp0501-1g.pdf> (2019.4.5)
27. Kimura, H., Kanzaki, N. (2013). A Study on Depression Symptoms of Home-staying Seniors Aged 75 and Over. *Journal of the Japanese Association of Rural Medicine*, 61 (6), 915-924.
28. Kato, R., Takagi, C., Sakurai, N., Hoshi, T. (2012). Risk factors for falls and survival after falling in elderly people in a community. *Nihon Koshu Eisei Zasshi*, 59 (5), 305-314.
29. Masumoto, T., Yamada, Y., Yamada, M., Nakaya, T., Miyake, M., Watanabe, Y., Yoshida, T., Yokoyama, K., Yamagata, E., Date, H., Nanri, H., Komatsu, M., Yoshinaka, Y., Fujiwara, Y., Okayama, Y., Kimura, M. (2015). Fall risk factors and sex differences among community-dwelling elderly individuals in Japan. A Kameoka study, *Nihon Koshu Eisei Zasshi*, 62 (8), 390-401.
30. Dai-ichi life research institute inc, <http://group.dai-ichi-life.co.jp/dlri/pdf/ldi/2015/rp1504a.pdf>  
(2019.03.22)
31. Watanabe, M., Tanimoto, Y., Kono, R., Hirota, C., Takasaki, K., Sugiura, Y., Kono K. (2011). Objective assessment of walking in housebound elderly who are able to go out alone. *Nihon Ronen Igakkai Zasshi*, 48 (2), 170-175.
32. Yokokawa, H., Yasumura, S., Tanno, K., Ohsawa, M., Onoda, T., Itai, K., Kawamura, K., Sakata, K. (2009). Association between homebound status and newly certified need of care among elderly in a rural community: the Iwate-Kenpoku cohort (Iwate-KENCO) study. *Nihon Ronen Igakkai Zasshi*, 46 (5), 447-457.

33. Ishihama, T., Edo, K., Arai, M. (2008). Correlation between physical performance and depressive mood among elderly people at high risk of needing long-term care in Nakano City. *Bulletin of social medicine*, 26 (1), 15-23.
34. Shibui, Y., Murayama, H., Kawashima, T., Kano, N., Toratani, A., Tachibana, R., Shibuta, K., Fukuda, Y., Murashima, S. (2011). Classification of Japanese elderly in an urban area at risk of becoming homebound: knowledge for improving prevention strategies. *Nihon Koshu Eisei Zasshi*, 58 (11), 935-947.
35. Kamada, A., Tanaka, M., Akiyama, M. (2015). Elderly married people's consumer behavior as a shared activity with their spouse and subjective well-being. *Bulletin of Living Science*, 37, 125-133.
36. Higashi, K., Nagata, C. (2005). An aged male's identity crisis on his spouse's death and measures to cope with it. *Bulletin of Kumamoto University, School of Health Sciences*, 1, 47-56.
37. Ota, H. (2014). Associations between individual-level social capital and self-rated health or depression among elderly men and women. *Nihon Koshu Eisei Zasshi*, 61 (2), 71-85.
38. Ohno, M. (2002). Prevention of homebound states evaluated in terms of life-style of home-living elderly people with or without spouse. *Journal of Japan Society of Nursing and Health Care*, 4 (2), 1-10.
39. Yamagata, E. (2015). Current status and issues of measures for the housebound elderly: Focusing on Screening and Support Methods. *Doshisha policy and management review*, 17 (1), 65-83.
40. Ando, R., Uchida, Y. (2015). Differences in activities of interest to elderly people residing within the community due to whether or not they are homebound and their background circumstances. *The Kitakanto Medical Journal*, 65, 211-220.