

学位論文

Developing a Group Program for Older Males to
Participate in Social Activities in Japan:
A Mixed-Methods Study

Kenta Nomura*¹, Norikazu Kobayashi*²

*¹ Department of Occupational Therapy, Faculty of Health
Science, Mejiro University

*² Graduate school of Human Health Science,
Tokyo Metropolitan University

American Journal of Men's Health 15(2) 1-14, 2021

Received September 5, 2020; revised December 25, 2020;
accepted January 5, 2021; published April 23, 2021

DOI: <https://doi.org/10.1177/1557988321989899>

Abstract

This study analyzes the effect of social participation in a program that encourages participation in social activities as an approach to counteract the social isolation of elderly males in Japan. The design of this study was an open-label, before-and-after trial for a single group using the convergent design of the mixed-methods study. This program led to significant improvement in independent living and interest in society, but it did not help increase satisfaction with social activities. Additionally, a qualitative data identify that this program encouraged subjects to proactively participate in social activities. While it has been identified that this program may have had a considerable effect by integrating quantitative and qualitative data, it is necessary to improve the program to further promote change in the subjects' social behavior.

Keywords

male development, development and aging, men's health programs, health-care issues, men's health interventions, community outreach, healthy aging

Introduction

Social isolation is defined as the objective lack or paucity of social contacts and interactions with family members, friends or the wider community (Valtorta & Hanratty, 2012). There is much less consensus around the accepted and agreed definition of social isolation, however, this is one of the most widely used definitions (Fakoya et al., 2020). It has been reported that the effects of social isolation and loneliness on mortality are about the same as smoking, and it is becoming a common social problem in developed countries (Holt-Lunstad, 2010). Social isolation is associated with increased mortality (Stephens, 2013; Smith, 2018), and reduces the quality of life (Hawton et al., 2011). It is also associated with increased risk of cognitive decline and dementia (Glei et al., 2005; Fratiglioni et al., 2000; Kuiper et al., 2015). Isolated older people are more likely to develop functional disability, sleep disturbance and depression (Saito et al., 2013; Choi et al., 2015). Absence of social participation, which is synonymous with social isolation, leads to high psychological distress (Oshio & Kan, 2019).

Several organizations combating social isolation have been established in different countries: Monalisa (Serres, 2016), which supports and collaborates with organizations in France; Coalitie Erbij Rotterdam (Mehrabi & Béland, 2020), which

develops and disseminates knowledge and connects experts with support groups in the Netherlands; and the RISE campaign to promote actions by residents in Canada to reach out and connect with older people (Mehrabi & Béland, 2020). The problem is how to interact with other people in each country. According to the OECD (2005), Japan has the highest degree of social isolation among its member countries. Furthermore, in Japan, more than a third (35 %) state that they have felt isolated or lonely for more than 10 years, compared with a fifth of those in the United States (22 %) or the United Kingdom (20 %) (DiJulio et al., 2018). The measures for long-term care prevention introduced by the Japanese government in 2006 were unsuccessful because of the failure to identify high-risk individuals and enroll enough participants in the community-based prevention program (Saito et al., 2019). Similarly, measures against social isolation were not implemented as in other countries. They look to prevent social isolation by building a community-based integrated care system in which inhabitants support each other regardless of age or disability. Measures specific to social isolation and involving the community are currently insufficient.

To prevent social isolation, it is important to engage in social activities that promote social participation. Social participation can be understood as activities that allow

interaction in the wider society or the immediate community (Levasseur et al., 2010). Social participation refers to the levels of involvement of individuals with others in social activities. To counteract social isolation, it is important to strengthen participation by engaging in social activities.

Intervention programs to address social isolation are mainly developed as programs that strengthen social participation. Many interventions have been reported to be effective; the use of I.T., in the form of computers and smartphones; exchange programs; physical activities such as walking and Tai Chi; education related to falls prevention; cognitive behavioral therapy; psychotherapy (Elsherbiny & Maamari, 2018) in the form of reminiscence (Franck et al., 2016) and logotherapy; social activities, such as volunteer activities, and multi-factorial intervention that combines these separate approaches (Takahashi et al., 2020; Pool et al., 2017). These programs are aimed at both males and females, but participants in major studies of social isolation have tended to be skewed toward female subjects (Fakoya et al., 2020). In Japan, older males tend to be more isolated than older females (Saito et al., 2009; Takahashi et al., 2020), and therefore, male-specific programs are pressingly necessary.

According to an integrated review by Gardiner et al. (2018), successful programs include adapting to the needs of

participants, community development approaches, and engagement in productive activities (Cattan et al., 2003). In Japan, Fujiwara et al. (2009) revealed that the REPRINTS program, an intergenerational exchange program in which older people volunteer to read picture books with elementary school and kindergarten children, improves social networks and subjective understandings of health. To develop a program that meets these conditions, the author conducted an interview survey to clarify the issues that an older male living alone, who is at high risk of isolation, has in interacting with people. The results suggested that older males had a problem recognizing the problems arising in interacting with people, setting strategies for dealing with the problems, and altering daily activities. To prevent social isolation, a program based on a management process using occupational therapy that reconstructs the lifestyle and everyday seems to be effective. The purpose of this research is to verify the effect on the social participation engendered by the program.

Materials and Methods

Study Design

The study design was an open-label, before-and-after trial and a convergent design of mixed-methods research (Fig.1). The mixed-methods approach is the type of research in which

the researcher combines elements of qualitative and quantitative research approaches (e.g., the use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration (Johnson et al., 2007). The rationale for using this method is to clarify the extent of the effect from the quantitative data and then to clarify the experience of the subjects from the qualitative data. Furthermore, the rationale is to integrate both data sets and understand whether there is a needs-based intervention and the mechanism by which the subject has changed, both behaviorally and psychologically. These rationales have more important meaning for this study, which is the initial stage of effect verification (Moore et al., 2015). Both data sets were integrated after each analysis.

Subjects

The subjects were older males aged 65 and over who lived in the district located in the Tokyo metropolitan area. Physical mobility (i.e., being able to access the intervention venue independently) was a criterion for participation, and exclusion criteria were those who were hospitalized or living in care homes and those who had difficulty communicating. These conditions were assumed to be for a population that was beginning to feel constrained in social participation due to

aging. Regarding the method of recruiting the subjects, we asked the local government in the district to display posters and introduce the participants to researchers.

Twenty-one people applied to participate in the study, but one of them dropped out due to a decrease in motivation before the program started (Fig.2). There were 20 participants with an average age and standard deviation of 73.1 ± 4.9 years; six in the classroom of the university and 14 in the nursing home (Table 3).

Research Ethics

The study was conducted according to the standards of the Declaration of Helsinki and was approved by the Ethics Review Committee of Tokyo Metropolitan University (No. 17078) and Mejiro University (No. 17-050). All subjects provided written informed consent.

Method of Program Development

The program was developed with reference to the methodologies for instrumentalising complex interventions and previous scenarios on effective programs to prevent social isolation or promote social activities (UMIN000040535) (Dickens et al., 2011; Cattan et al., 2005; Collins, 2014; Robyn, 2003). It is important to prevent social isolation because it is difficult to take countermeasures after falling into social isolation. Therefore, this program engages in social

activities to prevent social isolation. Participation in social activities is effective in preventing social isolation among older males in Japan (Ejiri, et al., 2018). In this research, social activity is defined as all activities in which older people voluntarily take part in their spare time, namely: interpersonal activities with others beyond family and relatives, activities carried out by participating in groups and organizations, and participation in community activities (Okamoto, 2010).

As the theory for strengthening the motivation of the subjects who engage in social activities, we used “the nine important aspects of occupational engagement” in the model of human occupation (MOHO), which is the theory of occupational therapy, namely, choose or decide, commit, explore, identify, negotiate, plan, practice, reexamine, and sustain (Kielhofner, 2008) (Table 1, Table 2). Simply doing an action is not enough for a person to change; it is important that a person chooses and is motivated, to participate in a meaningful activity in MOHO. Therefore, it is necessary to undertake activities that fulfill these nine aspects, to overcome older males’ hesitation to change and tendency to not take action. Each session of the program was structured to include these nine aspects, which must be changed for people to engage in social activities. The subjects used the checklist for the interest of the MOHO

(Kielhofner, 2008), the social activity chart with a revised occupational questionnaire of the MOHO (Kielhofner, 2008), and the “check list for vivid social activities” (Takahashi et al., 2000) as teaching materials.

Method of Program Implementation

This program was a group delivery approach and consisted of 120 minutes activities once a week for a total of 12 sessions. Each session consisted of lectures, exercises or experiences, and homework was given as required. The exercises were mainly to complete the teaching materials and discuss the themes.

At the beginning of the program, the participants consider the issues in their surrounding environment and social activities and learn the meaning of social activities in the community through discussions among themselves. Also, the participants analyze the use and importance of their time for social activities. During the program, the participants experience a change in themselves through learning about local resources and experiencing interesting social activities. At the end of the program, the participants make a plan so that they can change or maintain their social activities after the program ends. It is assumed that the effects of this program on the target population will be to reinforce their motivation to engage in social activities, to prepare and coordinate their

preparation for social activities, and to increase their experience of the social activities that interest them (Fig.1). The final individual goals and outcomes of the program were increased satisfaction with social activities and increased social participation. The intention was to develop the ability to optimize participant engagement in social activities so that they would continue to participate in society, without being isolated from it, even after the program. In this way, by developing the ability to optimize their engagement in social activities, it is expected that the target population will continue to participate in society without remaining isolated.

The program was conducted at two venues, the classroom of the university to which the author belongs and the community room of the nursing home. The maximum number of participants at each venue was 15. In both cases, the first author and a male occupational therapist facilitated the program and collected data.

Program Trials and Modifications

Before this study, a trial effect was verified in four older males. As a result, the satisfaction with social activities improved before and after the program for all four subjects, and the participation status of valuable activities improved for three subjects out of four. However, the MOS 36-Item Short-Form Health Survey (SF-36) and the social support transfer

scale (Social Support Exchange Scale : SSES) (Yaba & Ninomiya, 2010) did not identify a certain tendency (Nomura & Kobayashi, 2018). Therefore, it is necessary to reexamine the efficacy indexes. Also, the program structure was revisited so that the experience of social activities could be engaged with in parallel with lectures and exercises (Table 2).

Data Collection for the Quantitative Component

Since the concept of social isolation is not fixed and is difficult to measure, it is not possible to use the concept of social isolation as a target selection and efficacy index (Dickens et al., 2011). For the effect indicators of the program, it is necessary to measure the social participation of older males, so the following effect indicators were selected. The evaluation was conducted at the beginning and end of the program.

Baseline characteristics.

The subjects described on the fact sheet their age, hospitalization history, family living together, how often they meet family and relatives, how often they meet friends, whether they drive a car, whether they have a job, their financial status, and their completed academic background. The Kihon Checklist (KCL) (Suzuki, 2007) was used as an index to measure living functions. The KCL is composed of 25 items in seven areas of activities related to daily life, motor

function, nutritional status, oral function, withdrawal, dementia, and depression. The total score was calculated from 0 to 25 points. The higher the score, the lower the degree of independent living.

Social participation.

The Index of Social Interaction (Anme et al., 2006) and the Self-completed Occupational Performance Index (SOPI) (Imai & Saito, 2010) were used as indicators of the social participation effect.

The ISI is an index that assesses the qualitative and quantitative aspects of the relationship between humans and the environment, which is measured by the presence or absence of human relationships in the local community and the frequency of relationships with the wider environment. It consists of 18 items in five areas: independence of life, interest in society, relationship with others, security, and familiar social participation. The minimum score is 0 and the maximum score is 18. The higher the score, the stronger the personal relationship with society.

The SOPI is a scale to measure the daily participation in activities that are valuable to individuals (occupational performance). It consists of nine items that ask about the three aspects of occupational performance (occupational control, occupational balance, performance satisfaction) in three areas

of work (leisure activity, productive activity, self-care). The minimum score is 0 and the maximum score is 100. The higher the score, the better the performance of activities valuable to the individual in terms of occupational performance.

Satisfaction with social activities.

Satisfaction with social activity was used in the Social Activities-Related Daily Life Satisfaction for the Elderly (SARDSE) scale (Okamoto, 2010). This scale consists of four factors, made up of 14 items: satisfaction with learning, satisfaction with contributions to others and society, satisfaction with health and physical fitness, and satisfaction with friends. The score is at least 14 points and the maximum is 70 points, which means that the higher the score, the higher the degree of satisfaction.

Program satisfaction.

Satisfaction throughout the program was investigated by the five-point method from “5. Very satisfied” to “1. Very unsatisfied” in the final evaluation.

Data Analysis Methods

Each efficacy index was analyzed quantitatively using the Wilcoxon signed-rank test or Mann-Whitney U test. SPSS Statistics ver.24 was used for analysis, and the significance level was set to 5%. Besides, the effect size r for each measured value was calculated using the test statistic z

calculated by the nonparametric test. The effect size was judged to be small if 0.1 to less than 0.3, moderate if 0.3 to less than 0.5, and large if 0.5 or more (Cohen, 1988). Also, to identify the targets in which the program works effectively, subjects were divided into two groups, those with improved SARDSE and those with no improved SARDSE and analyzed by the Mann–Whitney U test for each effect index and basic characteristics.

Qualitative data were analyzed using the Steps for Coding and Theorization developed by Otani (2019). This analysis method consists of four-step coding using a matrix and a procedure that describes the storyline and theory by spinning the constructs. This method was developed to solve the problems of qualitative analysis such as coding, theorizing and opacity of the analysis process. It highlights the steps of the analysis using a matrix, including a mechanism to support the analysis of language. In addition, this method has the characteristic of preventing the arbitrary selection of data by researchers because all the collected data are used. This qualitative analysis was used in the research to extract the categories of public health nursing that strengthen the power of the community (Okamoto et al., 2019) and to clarify the concept of the care environment for caregivers (Nagai et al., 2020). The reason for using Steps for Coding and Theorization

is that the storyline makes it clear what the subject has experienced. The analysis procedure considered one answer as one segment in a column of text and coded from the first step to the fourth step. The important words in the each segment was written in the first step named "Words to focus on in the text". The words in the first step were reworded by analysts or a variety of words in the disciplines associated with the words; the second step is entitled "Words outside the text to reword the segment in the first step". The background, conditions, causes, effects, comparisons, and characteristics to explain the words are included in the second step," Finally, the third step is named "Words to explain the segment in the second step". The theme was created based on the segment in the third step ;the fourth step is called "Themes and constructs." Then, to group the columns of the fourth step's themes and constructs, each row (from text to the fifth step question/issue) was rearranged vertically. All lines (from the first step to the fourth step) were reviewed and the storyline and theory were described using all words in the fourth step.

Data Collection for the Qualitative Component

The free descriptions written on the 1st, 9th and 12th sessions of the program were qualitatively analyzed. The questions in the first session were "Is there anything you have trouble doing in social activities?" and "What do you expect from this

program?” The question for the ninth session was, “What kind of changes have you had in your feelings and social activities since you started participating in this program, and why do you think that has changed?” Questions for the 12th session were “What social activities did you have trouble with before that were solved by participating in this program?” and “What are the social activities you would like to start or continue after the program ends?”

Results

Program Implementation Results

The program started in May 2019 and ended in July as planned. The participation rate was 90.8%, 10.9 times per person, and there were no subsequent withdrawals. During the program period, two subjects rested multiple times due to operations and injuries. The family composition was seven living alone, eight living with a wife or parent, and five living with three children and a wife. Rate of satisfaction with the program after it had been run was “very satisfied” in 28% of the subjects, “somewhat satisfied” in 61% of the subjects, “neither” in 11% of the subjects, and “somewhat dissatisfied” and “very dissatisfied” in 0% of the subjects.

Quantitative Results

The total ISI score improved significantly ($p = .011$), and a

substantial effect was recognized ($r = .57$) (Table 4). In addition, lower-order items of ISI, “subjectivity of life” ($p = .038$, $r = .46$) and “interest in society” ($p = .046$, $r = .45$), improved significantly and the effect improved. The effect size was medium. There were no significant differences in the other effect indexes, SARDSE, lower-order items of ISI, KCL, SF-36, and SOPI, and the effect size was small or almost nonexistent.

The results of the difference test between the two groups, those with improved SARDSE, and those with no improved SARDSE, were that the 10 subjects with improved SARDSE had significantly lower SARDSE ($p = .022$), ISI interest in society ($p = .025$) and SOPI ($p = .015$) in the initial evaluation of the program (Table 5).

Qualitative Findings

Table 6 presents part of the analysis sheet via Steps for Coding and Theorization. First, the summary of the storyline is described below. Participants applied for the program in the hope of learning from each other and looking for future policies and sought to participate in this program for themselves at the beginning of the program. Through conversations between participants in similar circumstances, the scope and ideas of social activities expanded. Participants began to actively participate in social activities and changed

their attitude to match their daily activities. The experience of social activities in the latter half of the program provided an opportunity to strengthen the focus on the community. Throughout the program, participants were directed to solve their individual challenges related to social activities.

The following sentence is the storyline. The underline indicates excerpts from “<4> Theme/Concept.”

Participants participated in the program searching for their own policy, expectations that spread the idea of life, expectations for dialogue. Participants started exploring the purpose of participating as a member of the community at the beginning of the program. A rare place of empathy with someone who seeks the same problem and encounters with people who can talk about a common topic were recognized as enjoyable intergenerational exchanges. Gathering on a fixed day of the week was the joy of regular participation and an experience of returning to a young age. This program, which is rooted in the local community, motivated the participants to learn the local culture and about the problems of older people. Participants started to feel the change little by little, and the change that allows them to talk to each other naturally occurred. Participants were able to feel moderate stress due to conversation and fun and mental stability by conversation. The changes related to social activities were understanding

that they were one's own problems as well as revealing one's problems. Changes in life were "improvement of motivation and positiveness," "improvement of motivation by peers," and "living with a positive feeling."

Based on these changes, the participants changed as follows: extroverted thinking of life, diversification of perspective, learning the secrets of lively participants, imitation of active participation. Participants became participating in other activities by becoming more sensitive to information on local resources by improving sensitivity to social participation. Besides, the participants have active engagement with multi-disciplinary communities through participation and development through participation. Participants changed their perceptions as follows even if social participation was not promoted: deepening the meaning of social activities already underway, activating social activities, reaffirming the importance of connecting with people, less resistance to residents' association activities. Participants also changed as a way of preparing to strengthen social participation in the acquisition of strategies to interact, improvement of self-management awareness, establishment of attitude not to procrastinate, and acquisition of coping when physical condition is lost. Some participants had the feeling that their behavior changes the situation, or awareness of the

importance of trying even if they fail.

The experiences of interesting social activities at the end of the program were opportunities to feel the power of group behavior, discover the fun of group behavior, rediscover one's own familiar city, and gain motivation to walk more. Some of the participants experienced, by accessing local resources, playing one's role and feeling nostalgic about work and experiences that triggered nostalgia, and they hope to experience that again at the local museum.

Through the program, participants acquiring information on local resources, acquiring hints on social activities, and progress toward solving problems related to social activities. Some of them said the problem was unsolved or the solution was unclear, but the program encouraged the participants in finding social activities that suit them, contemplation of the social activities of the rest of your life, expectations to be useful in the future. Some participants had the willingness to use one's experience for others. Participants felt a sense of accomplishment at the end of the program and had the will to continue social activities and the will to resume social activities to maintain activity after the program ended. Some participants felt negative changes such as unclear changes and no changes in their daily lives, and positive ones such as a sense of physical and mental effects and extension of healthy

life expectancy. The program led to change in the way of using their time; changes to the days that excite interest, changes from extra time to finite time, and adjustment to activate the annual schedule of activities.

Discussion

Characteristics of Participants

The average age of the 20 subjects in this study was 73.1 ± 4.9 years, and the median KCL score at the initial evaluation was 4.5. KCL has a positive correlation with the criteria for a frailty diagnosis by Fried et al., four to seven points indicate pre--frailty, and eight points or more indicate actual frailty (Satake et al., 2016). The results suggest that subjects were older males with pre-frailty who live at home. Besides, seven subjects were living alone, eight were living with their wife or parent, and five were living with their wife and children. The frequency of meeting with family members and relatives is polarized to 10 people for “every day” and eight people for “less than once a month,” and the “frequency of meeting friends” varies. Therefore, it was confirmed that the frequency with which the subjects met with another person varied greatly. Also, at the beginning of the storyline, “*Participants participated in the program for the purpose of searching for own policy, expectations that spread the idea of life,*”

expectations for dialogue.” Therefore, it seems that the subjects did not have clear goals as regards social activities but were motivated to have an opportunity to think about their future life together with others.

Effect of the Program : ISI

The total ISI score improved significantly ($p = .011$) and a considerable effect size was observed ($r = .57$). In addition, independence of life ($p = .038$, $r = .46$), interest in society ($p = .046$, $r = .45$), which are lower items of ISI, improved significantly, and a moderate effect size was observed. “Independence of life” is composed of four items: the living arrangements, positiveness, consideration for health, and well-regulated life. In the second part of the program, “Looking back on the activities that a day comprises,” the participants gave careful consideration to how to organize their lives and consider their health. Also, the subjects considered that they were healthy and punctilious through their homework. Therefore, it is considered that the “independence of life” has improved. “Interest in society” consists of five items: subscription to books and magazines, use of appropriate tools, subscription to newspapers, conscious social contribution, and hobbies. ISI is an index that measures the qualitative and quantitative aspects of the

relationship between human interactions and the environment in the local community, but the independence of life and interest in society represents the qualitative aspect. Therefore, the participants strengthened the qualitative connection with the community through the program. For example, the participants voluntarily arranged their own life and strengthened their awareness of social contribution.

There were no significant differences in the other effect indicators of ISI, namely SARDSE, and SOPI, and the effect size was small or minimal. The difference between the 10 subjects with improved SARDSE and the nine subjects without improved SARDSE was significantly lower for the total scores of SARDSE ($p = .022$), SOPI ($p = .015$), lower items of ISI; “interest in society” ($p = .025$), “sense of security in life” (Table 5). In other words, subjects with higher levels of social activity satisfaction and social participation before this program may be less affected, and conversely, subjects with lower levels of social activity and social participation may be more affected. In Arnetz's (Arnetz, 1985) study, a social activity activation program for older adults of both sexes, subjects with lower initial levels of social activity improved their social activity levels. The present study and Arnetz's study were similar in that subjects with low levels of early social activity improved their levels of social activity. Since

SOPI includes “control of worthwhile activities,” the program was more effective for subjects who were not in prior control of their lives. This is the difference between the present study and that of Arnetz (1985). In the future, it will be necessary to add the level of social participation and the degree of control of life to the criteria for selecting participants to target groups that are highly effective in this program.

Mechanism of the Change

The storyline presents that “*Participants learning the secrets of lively participants, imitation of active participation. Participants became participating in other activities by becoming more sensitive to information on local resources by improving sensitivity to social participation.” “Through the program, participants acquiring information on local resources, acquiring hints on social activities, and progress toward solving problems related to social activities.” In other words, the participants became more active participants in social activities and increased their attention to the community through their experience of social activities. This indicates that the program provided experiences that strengthened the participant’s commitment to social action. The reason for this is the influence of the nine important aspects of occupational engagement in the MOHO (Kielhofner, 2008), which was used to increase motivation for social*

activities. The subjects maintained a high attendance rate until the end of the program, and 89% of the subjects were satisfied with the program, indicating that the program effectively met their needs. However, there was no significant improvement in SARDSE and satisfaction with social activities did not improve. The program's storyline does not describe the "<4>Themes/Constructive Concepts" that correspond to "Commit" and "Negotiate" in the nine important aspects of occupational engagement. To commit means to obligate oneself to a course of action for accomplishing a goal or a personal project or fulfilling a role or establishing a new routine. To negotiate means to engage in give-and-take with others that creates mutually agreed perspectives and/or finds a middle ground between different expectations, plans, or desires. This suggests that it is necessary to set clear goals and incorporate some ideas for working toward them into the program.

Limitations

There are three limitations of this study. First, because the program consists of one session per week for a total of 12 weeks and is a before-and-after trial for a single-group, the effect of a separate program or media from the main program is not excluded. Also, the effect may not be due to the program, but to the gathering effect. Thirdly, the generalizability is limited because the program was implemented in only one

district in Japan and because the sample size was small.

Conclusions

The purpose of this study was to examine the effect on social participation of a program that encourages participation in social activities among older male participants. The design of this study was an open-label, before-and-after trial for a single group using the convergent design of mixed-methods study. By the outcome evaluation using quantitative data, this program significantly improved the independence of life and interest in society, and recognized a significant effect, but did not improve satisfaction with social activities. Through a process assessment with qualitative data, this program provided the participants with the experience of enhancing their commitment to social activities and was properly implemented. While it has been clarified that this program may have a considerable effect by integrating quantitative and qualitative data, it is necessary to improve the program to further promote change in the participants. It is necessary to identify more beneficial effects on social participation by conducting a controlled trial.

Acknowledgements

We would like to thank the staff of the local government and

the nursing home who cooperated with this study. We gratefully acknowledge the helpful advice from members of the Graduate School of Human Health Science, Tokyo Metropolitan University. Finally, we would like to thank all the research participants and hope for their continued social activities.

Research funds (expenses)

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

COI

The Author(s) declare(s) that there is no conflict of interest

Reference

Anme, T., Shinohara, R., Sugisawa, Y. & Itoh, S. (2006).

Social interaction and mortality : A seven-year longitudinal study of elderly people. *Japanese Journal of Public Health*, 53(9), 681-687.

Arnetz, B. B. (1985). Gerontic Occupational Therapy

Psychological and Social Predictors of Participation and Therapeutic Benefits. *American Journal of Occupational Therapy*, 39(7), 460-465.
<https://doi.org/10.5014/ajot.39.7.460>

Cattan, M., Newell, C., Bond, J. & White, M (2003). Alleviating social isolation and loneliness among older people. *International Journal of Mental Health Promotion*, 5(6), 20-30.
<https://doi.org/10.1080/14623730.2003.9721909>

Cattan, M., White, M., Bond, J. & Learmouth, A. (2005). Preventing social isolation and loneliness among older people: A systematic review of health promotion activities. *Ageing and Society*, 25, 41-67.
<https://doi.org/10.1017/S0144686X04002594>

Choi, H., Irwin, M. R., & Cho, H. J. (2015). Impact of social isolation on behavioral health in elderly: Systematic

review. *World journal of psychiatry*, 5(4), 432.

<https://doi.org/10.5498/wjp.v5.i4.432>

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Hillside: Academic Press.

Collins, E. (2014). Preventing loneliness and social isolation in older people. *Insight*, 25. Retrieved December 20, 2020, from <https://www.iriss.org.uk/resources/insights/preventing-loneliness-social-isolation-older-people>.

Dickens, A. P., Richards, S. H., Greaves, C. J., & Campbell, J. L. (2011). Interventions targeting social isolation in older people: a systematic review. *BMC Public Health*, 11(647). <https://doi.org/10.1186/1471-2458-11-647>

DiJulio, B., Hamel, L., Muñana, C., & Brodie, M. (2018). Loneliness and Social Isolation in the United States, the United Kingdom, and Japan: An International Survey . *Henry J Kaiser Family Foundation*, 7. Retrieved

December 20, 2020, from

<https://www.kff.org/other/report/loneliness-and-social-isolation-in-the-united-states-the-united-kingdom-and-japan-an-international-survey/>

Ejiri, M., Kawai, H., Fujiwara, Y., Ihara, K., Hirano, H.,

Kojima, M., & Obuchi, S. (2018). Predictors of social isolation among older people living in urban area: a prospective study. *Japanese Journal of Public Health*, 65(3), 135-133. https://doi.org/10.11236/jph.65.3_125

Elsherbiny, M. M. K., & Maamari, R. H. A. (2018). Predictors

of social isolation among older people living in urban area: a prospective study. *Japanese Journal of Public Health*, 65(3), 135-133.

https://doi.org/10.11236/jph.65.3_125

Fakoya, O. A., McCorry, N. K., & Donnelly, M (2020).

Loneliness and social isolation interventions for older

adults: a scoping review of reviews. *BMC Public Health*,
20(129). <https://doi.org/10.1186/s12889-020-8251-6>

Franck, L., Molyneux, N., & Parkinson, L. (2016). Systematic review of interventions addressing social isolation and depression in aged care clients. *Quality of Life Research*, 25, 1395-1407. <https://doi.org/10.1007/s11136-015-1197-y>

Fratiglioni, L., Wang, H. X., Ericsson, K., Maytan, M., & Winblad, B. (2000). Influence of social network on occurrence of dementia: a community-based longitudinal study. *The Lancet*, 355(9212), 1315-1319. [https://doi.org/10.1016/S0140-6736\(00\)02113-9](https://doi.org/10.1016/S0140-6736(00)02113-9)

Fujiwara, Y., Sakuma, N., Ohba, H., Nishi, M., Sangyoon, L., & Naoki, W. (2009). REPRINTS: Effects of an Intergenerational Health Promotion Program for Older Adults in Japan. *Journal of Intergenerational*

Relationships, 7, 17-39.

<https://doi.org/10.1080/15350770802628901>

Gardiner, C., Geldenhuys, G., & Gott, M. (2018). Interventions to reduce social isolation and loneliness among older people: an integrative review. *Health and Social Care in the Community*, 26(2), 147–157.

<https://doi.org/10.1111/hsc.12367>

Glei, D. A., Landau, D. A., Goldman, N., Chuang, Y. L., Rodríguez, G. & Weinstein, M. (2005). Participating in social activities helps preserve cognitive function: An analysis of a longitudinal, population-based study of the elderly. *International Journal of Epidemiology*, 34, 864-871. <https://doi.org/10.1093/ije/dyi049>

Hawton, A., Green, C., Dickens, A. P., Richards, S. H., Taylor, R. S., Edwards, R., Greaves, C. J., & Campbell, J. L. (2011). The impact of social isolation on the health status

and health-related quality of life of older people. *Quality of Life Research*, 20(1), 57–67.

<https://doi.org/10.1007/s11136-010-9717-2>

Holt-Lunstad, J., Smith, T. B. and & Layton, J. B. (2010).

Social relationships and mortality risk: a meta-analytic review. *PLOS Medicine*, 7(7).

<https://doi.org/10.1371/journal.pmed.1000316>

Imai, T., & Saito, S. (2010). Measuring the quality of participation in activities in everyday life : Developing the Self-completed Occupational Performance Index (SOPI). *The Journal of Japanese Occupational Therapy Association*, 29(3), 317-325.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007).

Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1(2), 112-133.

<https://doi.org/10.1177/1558689806298224>

Kielhofner, G (2008). *Model of Human Occupation: Theory and Application* (4th Edition ed.). Philadelphia: Lippincott Williams & Wilkins.

Kuiper, J. S., Zuidersma, M., Voshaar, R. C. O., Zuidema, S. U., Heuvel, E. R. V. D., Stolk, R. P., & Smidt, N. (2015). Social relationships and risk of dementia: A systematic review and meta-analysis of longitudinal cohort studies. *Ageing Research Reviews*, 22, 39–57.
<https://doi.org/10.1016/j.arr.2015.04.006>

Levasseur, M., Richard, L., Gauvin, L., & Raymond, E. (2010). Inventory and Analysis of Definitions of Social Participation Found in the Aging Literature: Proposed Taxonomy of Social Activities. *Social Science & Medicine*, 71(12), 2141–2149.
<https://doi.org/10.1016/j.socscimed.2010.09.041>

Mehrabi, F., & Béland, F. (2020). Effects of social isolation,

loneliness and frailty on health outcomes and their possible mediators and moderators in community-dwelling older adults: A scoping review. *Archives of Gerontology and Geriatrics*, 90, 104119.
<https://doi.org/10.1016/j.archger.2020.104119>

Moore, F.G., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O’Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *BMJ*, 350:h1258.
<https://doi.org/10.1136/bmj.h1258>

Nagai, T., Ishii, Y., Ichida, H, Komori, A., & Yamada, T. (2020). Generating the construct of occupation of "nursing care" engaged by family caregivers. *Japanese Occupational Therapy Research*, 39(1), 26-37.

Nomura, K., & Kobayashi, N. (2018). Developing the group

program to participate in social activities for elderly males living alone ; Preliminary study. *The Program of The 53rd Japanese Occupational Therapy Congress & Expo in Fukuoka 2019*.

OECD. (n.d.). *Society at a Glance OECD Social Indicators 2005 Edition*. Retrieved January 17, 2020, from OECD iLibrary: http://www.oecd-ilibrary.org/social-issues-migration-health/society-at-a-glance-2005_soc_glance-2005-en

Okamoto, H. (2010). Development of Social Activities-Related Daily Life Satisfaction Scale for the elderly and evaluation of its reliability and validity. *Japanese journal of public health*, 57(7), 514-525.
https://doi.org/10.11236/jph.57.7_514

Okamoto, R., Kageyama, M., Koide, K., Iwamoto, S., Goda, K., Shiomi, M., Kusano, E., Tanaka, M., Tokimasa, M., Kiya,

M. & Koetaka, H. (2019). Public Health Nursing Art to Enhance "Strength of Community" in Japan. *The Open Nursing Journal*. 13(1), 177-185.
<https://doi.org/10.2174/1874434601913010177>

Oshio, T., & Kan, M. (2019). Which is riskier for mental health, living alone or not participating in any social activity? Evidence from a population-based eleven-year survey in Japan. *Social Science & Medicine*, 233, 57-63.
<https://doi.org/10.1016/j.socscimed.2019.05.049>

Otani, T. (2019). *Pardigm and Design of Qualitative Study from research Methodology to SCAT* (2 ed.). The University of Nagoya Press.

Pool, M. S., Agyemang, C. O., & Smalbrugge, M. (2017). Interventions to improve social determinants of health among elderly ethnic minority groups: a review. *European Journal of Public Health*, 27(6), 1048–1054.

<https://doi.org/10.1093/eurpub/ckx178>

Robyn, A. F. (2003). Interventions to reduce social isolation in older people: Where is the evidence?. *Ageing and Society*, 23, 647-658.

<https://doi.org/10.1017/S0144686X03001296>

Saito, J., Haseda, M., Amemiya, A., Takagi, D., Kondo, K., & Kondo, N. (2019). Community-based care for healthy ageing: lessons from Japan. *Bulletin World Health Organization*, 97, 570–574.

<https://doi.org/10.2471/BLT.18.223057>

Saito, M., Kondo, K., Ojima, T., Kondo, N., & Hirai, H. (2013). Different association between the loss of healthy life expectancy and social isolation by life satisfaction among older people: A four-year follow-up study of AGES project. *Japanese Journal of Gerontology*, 35(3), 331–341.

- Saito, M., Shmizu, Y., Yamaguchi, M., & Takei, S. (2009).
Prevalence and Characteristics of the Socially Isolated
Elderly in a Large Urban Area. *Japanese Journal of
Social Welfare*, 50(1), 110-122.
https://doi.org/10.24469/jssw.50.1_110
- Satake, S., Senda, K., Hong, Y. J., Miura, H., Endo, H.,
Sakurai, T., Kondo, I., & Toba, K. (2016). Validity of the
Kihon Checklist for assessing frailty status. *Geriatr
Gerontol International*, 16(6), 709-715.
<https://doi.org/10.1111/ggi.12543>
- Serres, J. F. (2016). A National mobilization against isolation:
The momentum of MONALISA. *Gérontologie et société*,
38149(1), 155-167. Retrieved 12 30, 2019, from
Monalisa: <https://www.monalisa-asso.fr/>
- Smith, S. G., Jackson, S. E., Kobayashi, L. C., & Steptoe, A.
(2018). Social Isolation, Health Literacy, and Mortality

Risk: Findings From the English Longitudinal Study of Ageing. *Health Psychology*, 37(2), 160–169.
<https://doi.org/10.1037/hea0000541>

Steptoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences of the United States of America*, 110, 5797-5801. <https://doi.org/10.1073/pnas.1219686110>

Suzuki, N. M. (2007). Comparison of ability-based and performance-based IADL evaluation of community-dwelling elderly using the Kihon Checklist and TMIG Index of Competence. *Japanese journal of geriatrics*, 44, 619-626. <https://doi.org/10.3143/geriatrics.44.619>

Takahashi, T., Nonaka, K., Matsunaga, H., Hasebe, M., Murayama, H., Koike, T., Murayama, Y., Kobayashi, E., & Fujiwara, Y. (2020). Factors relating to social

isolation in urban Japanese older people: A 2-year prospective cohort study. *Archives of Gerontology and Geriatrics* , 86.

<https://doi.org/10.1016/j.archger.2019.103936>

Valtorta, N., & Hanratty, B. (2012). Loneliness, isolation and the health of older adults: do we need a new research agenda?. *Journal of the Royal Society of Medicine*, 518–522. <https://doi.org/10.1258/jrsm.2012.120128>

Yaba, S., & Ninomiya, K. (2010). Development of social support exchange scale for community-dwelling elderly. *Japanese journal of international nursing care research*, 9(4), 11-18.

Fig.1 Program Description and Mechanism of Effect

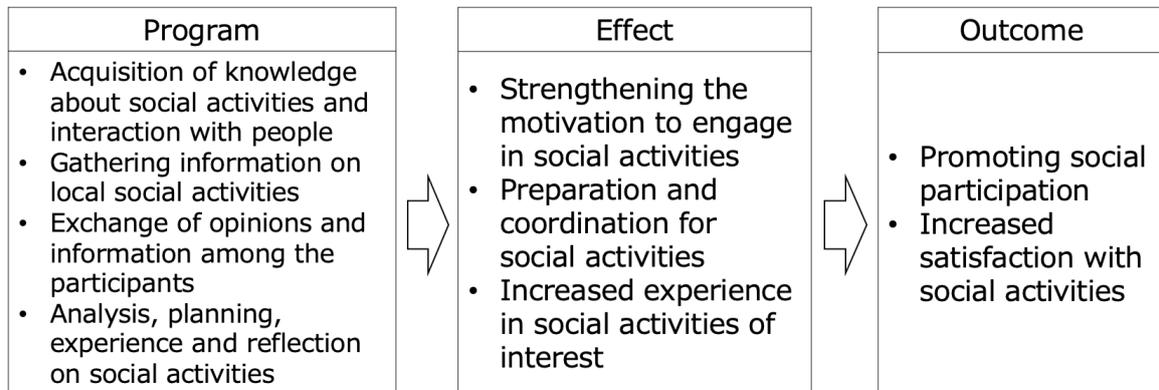


Fig.2. The flow chart of the recruit subjects according to the CONSORT

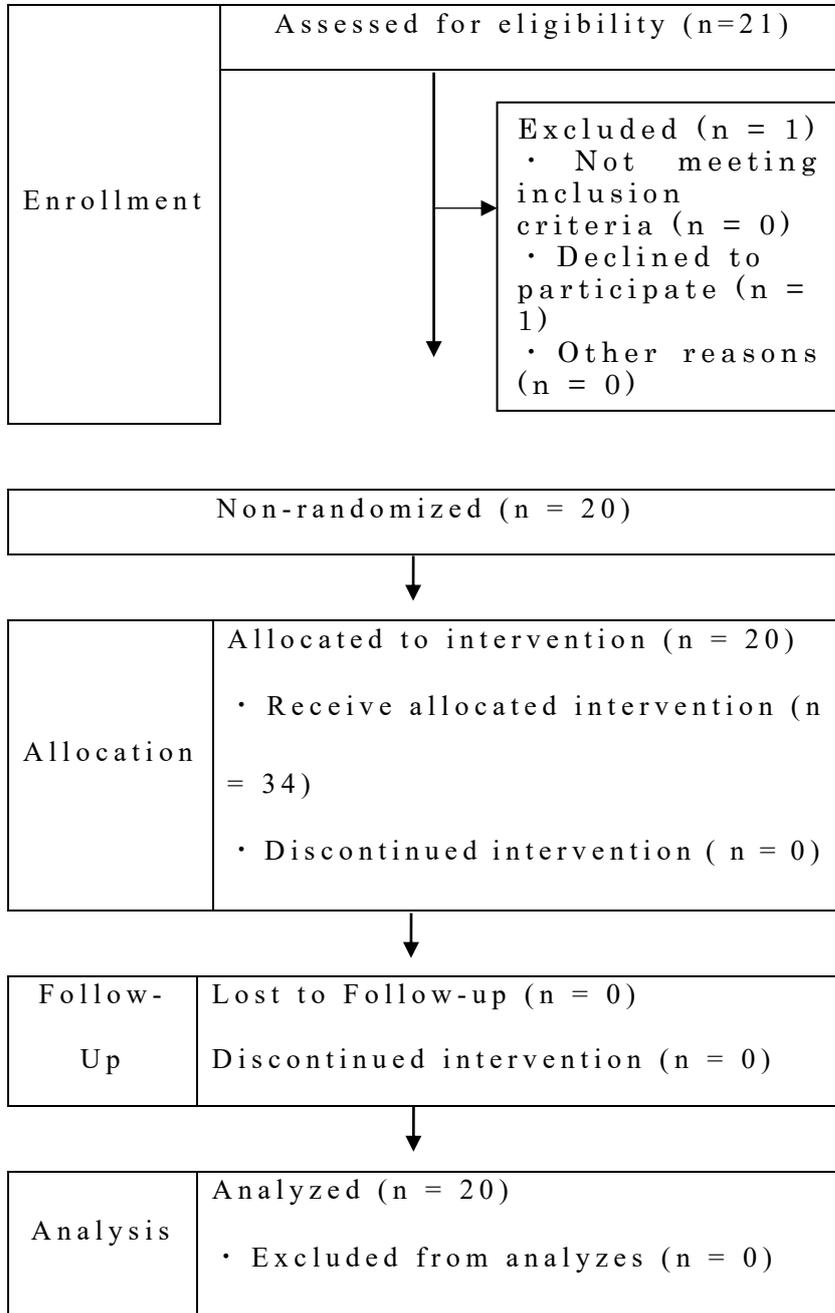


Table 1 The nine important aspects of occupational engagement

Choose/decide	To anticipate and select from alternatives for action (e.g., choose an activity form or select goals).
Commit	To pledge oneself to a course of action for accomplishing a goal or a personal project or fulfilling a role or establishing a new routine.
Explore	To explore new objects, spaces, and/or social groups and activities; do things with altered performance capacity: try out new ways of doing things, and examine possibilities for participation of activities in one's own context.
Identify	To identify novel information, alternatives for action, and new attitudes and feelings that provide solutions for and/or give meaning to occupational performance and participation.
Negotiate	To engage in give-and-take with others that creates mutually agreed perspectives and/or finds a middle ground between different expectations, plans, or desires.
Plan	To establish an action agenda for performance and/or participation.
Practice	To practice a certain performance or consistently participate in an activity with the effect of increasing skill, ease, and effectiveness of performance.
Reexamine	To critically appraise and consider alternatives to previous beliefs, attitudes, feelings, habits, or roles.
Sustain	To sustain effort in an activity or participation despite uncertainty or difficulty.

Kielhofner, G (2008). *Model of Human Occupation: Theory and Application* (4th Edition ed.). Philadelphia: Lippincott Williams & Wilkins.

Table 2 Program contents and occupational engagement

Session	Program contents	Occupational engagement (Kielhofner, 2008)
1	Opening Ceremony/Initial Evaluation Lecture: Program content and background Homework: Impressions of the first day of the program and expectations for the program (free description)	Choose/decide Negotiate Commit
2	Theme: Looking back on the activities that a day comprises Lecture: Healthy life, interaction with people and social activities Exercise: Complete and discuss the occupational questionnaire Homework: Being Healthy and Careful (Free Description)	Explore Identify
3	Theme: Knowing the relationship between social activities and health Lecture: Effects of social activities Exercise: Completing and discussing the checklist for vivid social activities Homework: Record on social activity chart	Explore Identify
4	Theme: Comprehending interesting social activities Lecture: Interest, fun and obstacles Exercise: Completing and discussing the checklist for interest Homework: Record on the social activity chart	Explore Identify Negotiate
5	Theme: Knowing the system for social activities Lecture: System for social activities by officials Exercise: Discussing social activity systems	Explore Identify Negotiate
6	Theme: Learning about social activities in the community Lecture: Introduction of lectures and places to go by coordinators would support the lives of older people Exercise: Selecting social activities that subjects can participate in	Choose/decide Explore Identify Negotiate Plan
7	Experience: Engaging in interesting social activities ①	Explore Practice
8	Experience: Engaging in interesting social activities ②	Explore Practice

9	<p>Theme: Looking back on past social activities</p> <p>Lecture: Inactive social activities and countermeasures</p> <p>Exercise: Measures to maintain and incept social activities</p> <p>Homework: Record on social activity chart</p>	<p>Choose/decide</p> <p>Reexamine</p> <p>Sustain</p>
10	<p>Experience: Engaging in interesting social activities ③</p> <p>Homework: Record on social activity chart</p>	<p>Practice</p> <p>Sustain</p>
11	<p>Theme: Planning after the program</p> <p>Exercise: Discuss plans after the program</p> <p>Homework: Record on social activity chart</p>	<p>Choose/decide</p> <p>Commit</p> <p>Negotiate</p> <p>Sustain</p> <p>Plan</p>
12	Closing Ceremony/Final Evaluation	<p>Commit</p> <p>Negotiate</p> <p>Plan</p>

Table 3 Baseline Characteristics (n = 20)

Characteristic	Category	Sample
Age, mean (SD)		73.1 (4.9)
KCL, average (SD)		4.4 (2.9)
Gender, n (%)	Male	20 (100.0)
Hospitalization history for the past year, n (%)	Yes	2 (10.0)
	No	18 (90.0)
Family living together, n (%)	Living alone	7 (35.0)
	Living with wife	7 (35.0)
	Living with parent	1 (5.0)
	Living with wife, son and daughters	5 (25.0)
Frequency of meeting family and relatives, n (%)	Every day	10 (50.0)
	At least twice a week	0 (0.0)
	Once a week	2 (10.0)
	2-3 times a month	0 (0.0)
	Once a month	0 (0.0)
	Less than once a month	8 (40.0)
Frequency of meeting friends, n (%)	Every day	6 (30.0)
	At least twice a week	2 (10.0)
	Once a week	3 (15.0)
	2-3 times a month	4 (20.0)
	Once a month	1 (5.0)
	Less than once a month	4 (20.0)
Car driving, n (%)	Yes	18 (90.0)
	No	2 (10.0)
Paid work, n (%)	Yes	4 (20.0)
	No	16 (80.0)
Financial status, n (%)	Very comfortable	0 (0.0)
	A little comfortable	14 (70.0)
	A little uncomfortable	4 (20.0)
	Very uncomfortable	2 (10.0)
Educational status, n (%)	Graduated from university	6 (30.0)
	Graduated from high school	13 (65.0)
	Graduated from junior high school	1 (5.0)

Table 4 Results of outcome evaluation

Effect index	Median (IQR)		n	p	z	r
	pre	post				
ISI total	14.5 (12.0–16.8)	16.0 (14.3–16.8)	20	.011*	2.54	.57
Independence of life	4.0 (2.3–4.0)	4.0 (4.0–4.0)	20	.038*	2.07	.47
Interest in society	4.0 (3.0–4.8)	5.0 (3.3–5.0)	20	.046*	2.00	.45
Relationship with others	2.5 (1.0–3.0)	3.0 (5.0–3.0)	20	.272	1.10	.25
Security of life	4.0 (2.6–4.0)	3.5 (3.0–4.0)	20	.527	0.63	.14
Familiar social participation	2.0 (1.3–2.0)	2.0 (1.3–2.0)	20	.414	0.82	.18
SOPI	75.0 (41.7–83.3)	75.0 (58.3–75.0)	20	.587	0.54	.12
	Means ± SD		n	p	t	r
SARDSE	50.6 (10.6)	51.6 (7.2)	19	.853	0.18	.04

* : < 0.05 ISI: Index of Social Interaction, SOPI: Self-completed

Occupational Performance Index, SARDSE: Social Activities-

Related Daily Life Satisfaction for the Elderly

Table 5 Results of exploratory statistical analysis

Variable	Median (IQR)		p
	Group with improved satisfaction with social activities (n = 10)	Group with no improved satisfaction of social activities (n = 9)	
	Gender	74.5 (69.5–78.25)	
Family living together ^{※1}	2.0 (1.0–3.0)	2.0 (1.0–2.0)	.368
Frequency of meeting family and relatives ^{※2}	1.5 (0.0–5.0)	5.0 (0.0–5.0)	.471
Frequency of meeting friends ^{※2}	2.5 (0.0–5.0)	3.0 (2.0–5.0)	.346
Financial status ^{※3}	3.0 (2.0–3.0)	3.0 (2.0–3.0)	.881
ISI total	12.5 (10.3–15.3)	16.0 (13.5–18.0)	.554
Independence of life	3.5 (1.7–4.0)	4.0 (3.0–4.0)	.237
Interest in society	3.0 (3.0–4.0)	4.0 (3.5–5.0)	.025*
Relationship with others	2.0 (0.8–3.0)	3.0 (1.0–3.0)	.632
Security of life	2.0 (0.0–2.0)	2.0 (2.0–2.0)	.114
Familiar social participation	3.0 (1.8–4.0)	4.0 (3.0–4.0)	.111
SOPI	50.0 (34.7–73.6)	80.6 (68.1–86.1)	.015*
SARDSE	48.0 (38.5–51.3)	59.0 (50.0–64.5)	.022*

* : < 0.05 ※1 1: Alone, 2: Two persons, 3: More than three persons
 ※2 5: Every day, 4: At least twice a week, 3: Once a week, 2: 2-3 times a month, 1: Once a month, 0: Less than once a month
 ※3 4: Very comfortable, 3: A little comfortable, 2: A little uncomfortable, 1: Very uncomfortable

ISI: Index of Social Interaction, SOPI: Self-completed Occupational Performance Index,
 SARDSE: Social Activities Related Daily Life Satisfaction for the Elderly.

Table 6 A part of the analysis sheet by steps for coding and theorization

No	Text	<1> Words to focus on in the data	<2> Words outside the data to reword <1>	<3> Words to explain <2>	<4> Themes and constructs that emerge from <3>	<5> question / issue
1	It was helpful to meet various people	It was helpful / Meet / Various people	Encounter people with similar or dissimilar circumstances / Useful for my life	A place for new encounters with local people / A decrease in new encounters after aging	Diversification of perspective	How many opportunities do they have for living outside the program?
2	I want to find something that can contribute to society	I want to find / Contribute to society	I want to find something useful in the community	One's role in the area / Fewer opportunities to realize the role	Exploring the purpose of participating as a member of the community	What kind of social contribution do they envision?
3	I was relieved to realize that there are people who are in the same or similar circumstances in terms of looking for various things.	Looking for various things / Same circumstances / I was relieved to realize	Dialogue and empathy with people in similar circumstances / Connections between people with similar challenges	A rare place for empathy with people seeking the same circumstances and challenges / Absence of person to consult / Peer effect	A rare place of empathy with someone who seeks the same problem	Do they not really talk to the people who they have companionship?
4	Yes. I'm less lazy. I was shy and thought too much about the people around me.	I'm less lazy. / I was shy.	Change in feelings / Willingness to go out / Strengthening of extroversion	Japanese personality tendency / Reserve group of social withdrawal	Extroverted thinking of life	Why don't they go out if they are shy?

100	It was found that social connection is important for maintaining physical condition. Instead of staying home, I decided to participate in various events and maintain social connections.	Maintaining physical condition. / social connections / Instead of staying home / various events / I decided to participate	Social exchange / Local events / Self-development / Physical condition management	Social exchange / Local events / Self-development / Physical condition management	active engagement with multidisciplinary communities / improvement of self-management awareness	What other experiences can improve self-management awareness?
Storyline	(Described in the text)					
Theory description	<i>Participants start <u>exploring the purpose of participating as a member of the community at the beginning of the program.</u> / <u>A rare place of empathy with someone who seeks the same problem and encounter with people who can talk about a common topic</u> were recognized as “enjoyable intergenerational exchanges”. / Gathering on a fixed day of the week are <u>joy of participating habitually</u> and <u>an experience of returning to a young age.</u> / This program, which is rooted in the local community, bring to the motivates participants <u>to learn local culture</u> and <u>improvement of motivation to learn problems of the elderly.</u> (Omitted below)</i>					
What to pursue	How many opportunities do they have for living outside the program? / What kind of social contribution does he envision? / Do they not really talk to the people who they have companionship? / Why don't they go out if they are shy? (Omitted below)					