

2019 Doctoral Dissertation(Abstract)

Development of a Program to Improve Functional Activities  
for Community-dwelling Elderly Using Photovoice

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## I. Introduction

In order to maintain an independent and fulfilling life in society, it is important for the elderly to maintain/improve their functional activities, including activities in living environments and communication with others through such activities. The Ministry of Health, Labour, and Welfare defines care dependency prevention as “supporting life-fulfillment and self-actualization in the elderly by promoting their activities of daily living, and participation in household affairs and social activities to enhance their quality of life, rather than simply improving their mental and physical functions”, emphasizing the necessity of promoting <activities> and <promotion>, as conventional approaches have not focused on these factors, and have instead been based mainly on rehabilitation for functional recovery to improve mental and physical functions.

To support life-fulfillment and self-actualization in the elderly as fundamental goals of care dependency prevention, programs that help them clarify their needs, find appropriate activities for themselves, continuously participate in such activities based on autonomous decision-making, and consequently improve their functional activities are required. As a basis for improving functional activities, the continuation of changed behaviors and selected activities is more necessary than temporary behavioral changes. By repeating these behaviors or activities, functional activities may be maintained and gradually improved. For this process, empowerment or the acquisition of abilities to autonomously resolve daily life problems is indispensable. Empowerment originated from the civil rights movement and feminism, and it is currently being adopted in a wide range of fields to draw potential abilities and possibilities from all people, and empower them to lead a higher-level life. The concept of empowerment is highlighted by the WHO definition of health promotion: “Health promotion enables people to increase control over their own health”.

However, established programs to promote the empowerment of elderly people, improve their functional activities, and prevent care dependency among them are not available in other countries. In Japan, only a limited number of programs, such as those to create elderly empowerment indices to establish social support networks or prevent care dependency, specifically depression, among the community-dwelling elderly (“Happy Program”) have been reported.

As a method to empower residents, action research, where researchers participate in problem-solving processes with those involved from democratic perspectives to bring continuous changes to actual settings for improvement, is available. Action research adopts numerous techniques such as workshops, interviews, and photovoice. Photovoice is a technique to promote participants’ problem-solving behaviors through group discussions on photos shot by themselves and their related narratives, which was developed by Wang et al. for public health research in the 1990’s.

In other countries, photovoice has been used to study public health science, social welfare, psychology, and other areas, involving a wide range of age groups, including the elderly. In Japan, there have been some studies using photovoice, but its use for the elderly has been limited to therapeutic photography for those with dementia and approaches to enhance resilience in victims of the Great East Japan Earthquake.

Concerning the psychological effects of photography, previous studies reported that self-image and self-esteem are improved by looking at photographs, and anxiety is reduced and positive effects on mental health are achieved by shooting them. Analysis of functional magnetic resonance images also suggested that the act of photo-shooting promotes autonomy and the sense of capability. Furthermore, talking about photographs with others while looking at them visually facilitates the sharing of their content. Thus, photovoice or shooting,

looking at, and narrating photographs promotes participants' autonomy to make their own decisions with a greater sense of capability. It also promotes mutual understanding, possibly leading to empowerment. However, programs to prevent care dependency among the elderly using photovoice have yet to be developed.

It has been reported that programs utilizing the camera function of mobile phones may improve cognitive functions. Based on this, we have continuously implemented a program partially incorporating photo-shooting to prevent care dependency since 2011. The outcomes support the usefulness of this program to improve cognitive functions and increase the level of satisfaction with learning, leading to positive changes in functional activities. They also suggest the feasibility of developing a care dependency prevention program using photovoice based on this knowledge and experience.

### Definitions of Terms

- **Functional activities:** All functions needed for an individual to live, which are classified into <mind-body functions and structures>, <activities>, and <participation> in the ICF. The present study adopted the following definition by Okawa: “<Mind-body functions and structures> refer to the functions of the body and mind or the structure of a body part. <Activities> are daily life-related acts that are useful for an individual to live, and they have 2 aspects: <abilities> and <status>. <Participation> is being involved in social events and fulfilling roles”.
- **Empowerment:** Bringing the elderly's intrinsic power out, and increasing their ability to autonomously coordinate their daily lives and make their own decisions.
- **Photovoice:** A technique to promote participants' problem-solving behaviors through group discussions on photos shot by them and their related narratives, which was developed by Wang et al.
- **Photovoice program:** A plan to hold a series of activities to prevent care dependency using photovoice.

## II. Objective and Significance of the Study

### 1. Objective

To develop a care dependency prevention program using photovoice to empower the community-dwelling elderly and maintain/improve their functional activities.

### 2. Significance

The development of a program to empower the community-dwelling elderly may help to maintain/improve their functional activities, promote their health, and improve their QOL. It may also empower communities through these processes.

### 3. Study procedure

This is series of 3 studies.

In Study 1, basic data regarding the elderly's photography-related activities were collected, and the status of such activities was examined to evaluate the applicability of photography as a medium for the elderly. In Study 2, a photovoice program was created as part of a care dependency prevention program, and its effectiveness to improve the elderly's functional activities was examined. In Study 3, the photovoice program was revised based on the results of Study 2, and a care dependency prevention program to empower the community-dwelling elderly and improve their functional activities was developed.

## III. Study 1: Community-dwelling Elderly's Photography-related Activities

### 1. Objective

To collect basic data regarding the community-dwelling elderly's photography-related activities, clarify the attributes of those who enjoy photo-shooting, and evaluate the applicability of photography as a medium.

## 2. Participants

### 1) Inclusion criteria

Residents aged 65 or older, who had attended health promotion lectures and those who had participated in activities, such as club activities, within the district.

### 3. Methods

An anonymous, self-administered questionnaire survey was conducted to collect the following data: attributes, scores of the Tokyo Metropolitan Institute of Gerontology Index of Competence (TMIG-IC), communication with other family members and friends, being/not being fond of photography, and status of habitual photo-shooting. The obtained data were analyzed using the chi-square test to clarify the correlations among being/not being fond of photography, the status of photo-shooting, possessing/not possessing a camera, and each variable.

The study period was from October 20, 2016 to September 16, 2018.

## 4. Results

### 1) Number of responses and participants' attributes

There were 70 (41.4%) males and 99 (58.6%) females, for a total of 169 participants with a mean age of  $74.6 \pm 5.7$  (range: 65 to 94). The number of those living alone was 40 (23.7%).

The mean total TMIG-IC score was  $12.4 \pm 1.4$ , and scores related to instrumental activities of daily living, intellectual activity, and social role were  $4.9 \pm 0.4$ ,  $3.9 \pm 0.4$ , and  $3.6 \pm 0.8$ , respectively.

### 2) Photography-related items

Among all participants, 120 (71.0%) possessed a digital camera, 140 (82.2%) possessed mobile phones with a camera, 105 (62.1%) possessed both, and 14 (8.3%) possessed neither. Excluding 1, all were very fond/fond of photography, and 38 (22.5%) frequently, 69 (40.8%) sometimes, 35 (20.7%) rarely, and 27 (16.0%) never shot photographs. Thus, more than 60% of all participants enjoyed photo-shooting.

### 3) Relationship between photography appreciation and attributes/living conditions

The rates of enjoying photo-shooting ( $p < 0.001$ ), possessing a digital camera ( $p = 0.001$ ), and possessing a mobile phone with a camera ( $p = 0.030$ ) were significantly higher among participants who were very fond of photography compared with those who were moderately fond of it. There were no significant differences among different sex/age-based groups.

### 4) Relationship between photo-shooting and attributes/living conditions

The rates of living with others ( $p = 0.018$ ), achieving a full intellectual activity-related ( $p = 0.001$ ), social role-related ( $p = 0.011$ ), or total ( $p = 0.017$ ) TMIG-IC score, and actively communicating with 5 or more other family members/relatives ( $p = 0.017$ ) were significantly higher among participants who enjoyed photo-shooting than among those who did not. No significant differences were observed based on the sex, age, subjective health, or outpatient medical service use.

### 5) Relationship between possessing a camera and attributes/living conditions

The rates of being male ( $p = 0.025$ ), living with others ( $p = 0.016$ ), being very fond of photography ( $p = 0.014$ ), and enjoying photo-shooting ( $p < 0.001$ ) were significantly higher among participants who possessed both a digital camera and mobile phone with a camera than among those who did not. No significant differences were observed based on the sex or

TMIG-IC score.

## 5. Discussion

The community-dwelling elderly leading an independent life were often fond of photography and possessed a camera. Furthermore, those who enjoyed photo-shooting had a slightly higher level of intellectual activity and actively communicated with others. On the other hand, neither the sex nor age was associated.

The rate of possessing a camera exceeded 90%, and this is consistent with the results of a market survey, confirming that the elderly has a keen interest in photo-shooting and it is an activity familiar to them. The present study revealed that the level of interest in photography is higher among the elderly with a certain level of activity. As the utilization of media may promote autonomy, this study demonstrated the usefulness of incorporating photography as a medium into care dependency prevention programs.

## IV. Study 2: Effects of Photovoice Incorporated into a Care Dependency Prevention Class - A Focused Group Interview (FGI) with Participants -

### 1. Objective

To examine the feasibility of improving the elderly's functional activities by incorporating photovoice into a care dependency prevention class.

### 2. Participants

Care dependency prevention class sessions were held for residents aged 65 or older without a long-term care grade. Among those who had attended all sessions, we asked 1 or 2 members of each group to cooperate with an FGI.

### 3. Methods

#### 1) The care dependency prevention class and photovoice program

The care dependency prevention class combined walking and mini-lectures with photovoice. Participants were divided into groups of 5 or 6. A total of 13 sessions were held between May 10 and October 25, 2017. Participants created walking records and reported them to other members when attending the class. Mini-lectures addressed life- and health-related issues. The photovoice program consisted of: learning about camera functions and methods to print out photographs, shooting photographs according to each theme, exchanging opinions regarding these photographs with other group members, and creating a collection of photographs at the end of the class. There were 8 photography themes: the first 4 themes were freely determined in each group, and the last 4 themes, "exercise", "roles", "enjoyment", and "health", were presented by us to guide participants toward reflection upon themselves and their lives.

#### 2) Data collection/analysis

After the last session, an FGI was conducted with some participants to ask them about their impressions of photovoice and the class. Their statements during the interview were recorded to create narrative records and qualitatively analyze them using the K-J method.

### 4. Results

There were 12 (35.3%) males and 22 (64.7%) females, for a total of 34 participants. The FGI was conducted with 7, 2 males and 5 females.

The narrative records created from the FGI data were classified with 79 data labels, which were integrated into 6 levels through a 4-stage process, outlining the following structure: [The promotion of thinking] (<considering difficulty in learning about photo-shooting as a

good stimulus to the brain>) also promoted [mutual understanding] (<actively communicating with other participants based on interactions and enjoyable experiences>), in addition to [self-understanding] (<deepening self-insight and learning/setting goals with future perspectives>), leading to [the expansion of perspectives and behaviors] (<beginning to go out and participate in activities more actively, and becoming more interested in the community>). On the other hand, [challenges of participants] (<the necessity of improving the method to determine themes and photography techniques>) and [challenges of the program] (<the necessity of creating more opportunities for participants to look at photographs shot by all other participants, hold discussions, and create a collection of photographs as experience-sharing>) were also identified.

## 5. Discussion

[The promotion of thinking], one of the 6 labels, regards the characteristics of photovoice where participants ponder over each theme before photo-shooting and determine shooting targets by themselves. [Mutual understanding] and [self-understanding] explain that participants become aware of their own problems based on communication with others, supporting the effectiveness of the photovoice program to empower them. [Challenges of participants] and [challenges of the program] represent participants' increased motivation to improve themselves and the program. This also suggests that they autonomously participate in the program as an outcome of empowerment. Furthermore, [the expansion of perspectives and behaviors], such as beginning to go out and participate in activities more actively, confirms that the effects of empowerment spread and improve their functional activities.

Thus, the photovoice program empowered the participants and improved their functional activities, supporting its usefulness in care dependency prevention programs.

## V. Study 3: Development of a Care Dependency Prevention Program Using Photovoice to Improve Community-dwelling Elderly's Functional Activities

### 1. Objective

To develop a care dependency prevention program with photovoice fully incorporated to promote the community-dwelling elderly's autonomous participation and improve their functional activities

### 2. Participants

#### 1) Recruitment

We asked an association of residents to distribute leaflets for recruitment and encourage residents to participate.

#### 2) Participant allocation

Applicants were divided into photovoice and lecture groups using a table of random numbers.

#### 3) Grouping

Members of the photovoice group were divided into sex/age/living condition-based sub-groups of 5 or 6.

Such grouping was not performed for the lecture group.

### 3. Methods

#### 1) Development of a photovoice program

Based on the results of previous studies on photovoice and Study 2, themes, content, and facilitation techniques were devised.

### (1) Purposes of the program

To provide content that is interesting to many elderly people rather than a specific group, and to help participants maintain/improve their functional activities by reviewing their entire lives through dementia prevention as a starting point.

### (2) Main points of the program

- Although themes for photo-shooting were basically set by us to meet the purposes of the program, some were autonomously determined by participants based on the results of Study 2.
- The sessions proceeded as follows: presenting themes for photo-shooting, shooting photographs, and discussing these photographs with other group members. Participants mainly discussed what targets they shot, why they chose those targets, and what thoughts they had after shooting the targets.
- We previously confirmed fundamental rules for discussions, such as accepting others' statements without criticism, with participants.
- We also explained to participants that some of them may experience distress or pain during this program, but such experiences may lead to positive results regarding their understanding.

### (3) Content of the program

Orientation: Providing an outline of the program

Session 1: Providing guidance for participation: themes and points to be noted concerning photography (photo-shooting techniques, ethical issues, and safety measures to be adopted)

Session 2: <Dementia-related issues/objects>

Confirming rules for discussions and discussing the photographs they shot

Session 3: <Favorite, continued, or important things/activities>

Session 4: <Life/health-related issues>

Sharing the status of each group among all participants (staff members introduced their activities using PowerPoint) and holding discussions on the photographs they shot

Session 5: <Hopes/goals/activities to continue>

Session 6: <Challenges of the community>

Holding discussions to determine 10 principles for leading an active and healthy life

Session 7: Presentations: Presentation by the representative or all members of each group

Session 8: Opinion exchange

Facilitators:

One facilitator was allocated to each group. All facilitators were previously trained.

### 2) Period

After providing an orientation at the beginning, 8 sessions lasting for 1 hour were held between May 16 and July 25 for the photovoice group, and between May 14 and July 23 for the lecture group.

### 3) Methods

A cognitive function test was conducted during the orientation, followed by a baseline survey during Session 1, outcome survey during Session 8, and focused group interview after it. The focused group interview was conducted separately for the 2 groups.

#### (1) Quantitative survey items

- a. Participant background: gender, age, number of family members, health self-assessment
- b. Process evaluation: Attendance rate, attendance frequency, satisfaction
- c. Impact assessment: walking motivation time, WHO-5, K6, awareness of cognitive decline

d. Results evaluation: Five cogs, activity ability index, frequency of going out, number of activities

e. Composition of qualitative research Collect data from FGI, case study, and group work final product from the viewpoint of process evaluation, impact assessment, and result evaluation. FGI is a qualitative integration method (KJ method), and case and group work final product is qualitative. Analyzed descriptively.

(2) Qualitative survey

a. Process evaluation: The attendance rate and level of satisfaction were calculated.

b. Some cases were extracted from participants' field notes.

c. FGI: An FGI was conducted with 5 to 6 participants to examine their impressions of the class, opinions regarding it, changes in their feelings or lives, and future activities.

4) Analysis

a. Quantitative survey: A repeated measures analysis of covariance was performed using a general linear model with each outcome variable as a dependent variable, the group (photovoice/lecture) and point (baseline/post-intervention) as fixed factors, and the baseline value of each outcome variable as a covariate to examine interactions among group-related (inter-group) and temporal (intra-group) factors. Subsequently, considering possible variations in the effects of the program between participants who had attended all sessions and those who had not, the former were similarly analyzed for both groups.

b. Process evaluation: The attendance rates at different points during the program were compared. Additionally, 1 case was extracted from participants' field notes to qualitatively analyze personal changes.

c. FGI: The interview data were classified as narrative records for analysis using the K-J method.

#### 4. Results

##### 1) Participants' attributes

A total of 77 applicants were divided into photovoice (39) and lecture (38) groups using a table of random numbers. After special arrangements for some participants, 41 belonged to the photovoice group and 36 belonged to the lecture group. Seven and 6, respectively, cancelled after the orientation, and 3 and 2, respectively, withdrew during the program. Excluding those with suspected dementia or MCI, 23 photovoice and 28 lecture group members were analyzed. In the photovoice group, there were 10 males and 13 females. In the lecture group, there were 7 males and 21 females. The age, duration of education (years), or number of family members did not markedly vary between the groups, but the rate of answering <I am not healthy> when asked about subjective health was higher in the lecture group, being significantly different ( $p < 0.01$ ).

On examining subjective changes in cognitive functions among all participants and those who had attended all sessions, the functions slightly improved in the photovoice group, whereas they declined in the lecture group, revealing significant interactions ( $p < 0.001$ ,  $p = 0.01$ ). When limited to those who had attended all sessions, the duration of being motivated to walk increased in the photovoice group, whereas it decreased in the lecture group, revealing significant interactions ( $p = 0.05$ ). No significant differences were observed in the other indices.

In FGI, 93 groups of photo voices were generated and aggregated into 7 sheets, resulting in "results of interaction", "deepening of awareness of problems", "change of inner power". There was a spillover to "Utilization" and "Utilization for local activities." In the lecture group, 64 sheets were consolidated into 6 sheets, "Accepting aging", "Positive evaluation



for cognitive function tests”, “Cognitive function tests” “Recognized by”, “Good points of the classroom”, etc. In one representative case, the situation of proactively tackling issues and incorporating new activities was shown.

There are 48 contents of the final product of group work, "How to hold feelings and mind", "Desirable activities", and "Interest and participation in social roles".

## 5. Discussion

Group work outcomes were qualitatively and descriptively analyzed. Both the photovoice and lecture groups showed high attendance rate and satisfaction levels, and positively evaluated the program in the qualitative survey, supporting its high quality in both cases: photovoice- and lecture-based.

Subjective cognitive functions were maintained in the photovoice group, indicating that the approach did not increase their anxiety over these functions. The increased duration of being motivated to walk signifies that the period during which participants recognized themselves as being able to walk increased. This may be regarded as enhanced self-efficacy. As such changes were limited to and marked among participants who had attended all sessions, a greater effect may have been achieved with a higher attendance rate. During the FGI with the photovoice group, <interactions with others>, <a deepened objective self-insight>, and <the development of a new sense of value> were observed. Furthermore, the case analysis revealed <the development of behaviors for autonomous practice> and <increased motivation>. Thus, vicarious experience, such as listening to other members and sharing their experiences through discussions, may have enhanced self-efficacy as a result of empowerment in the photovoice group, unlike the lecture group.

The quantitative survey did not reveal significant changes in functional activities. Based on this, the 2.5 month-program may not have been long enough to evaluate improvements in the parameters. Marked variations in individual traits among elderly people and difficulty in controlling influencing factors should also be noted. The qualitative survey clarified spread effects on the photovoice group, such as the promotion of their activities and participation, but these effects were not achieved in the lecture group. On examining group work outcomes, [desirable activities] and [interest and participation in social roles] were observed as activities/participation-related contents, suggesting future improvements in participants' functional activities.

The results confirm the usefulness of the care dependency prevention program using photovoice to empower the community-dwelling elderly, and maintain/improve their functional activities. As future perspectives, it may be necessary to examine the continuous effect of this program.