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## Original article

# Effectiveness of the activities of supporters trained to prevent dementia

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## ABSTRACT

**Introduction:** We held a class for supporters in dementia prevention to nurture people who can carry out activities that prevent dementia and restrict its advancement. The objective was for enrollees who have completed the class to be able to visit the homes of older adults who have difficulty leaving their homes and help them carry out activities that prevent dementia. The trained supporters then evaluated the cognitive and psychological effects of interaction.

**Method:** The participants were local residents of Nara and Aichi Prefectures. In the supporter training to prevent dementia, we held 12 training sessions a year at Nara Medical University in Nara Prefecture and Shubun University in Aichi Prefecture. Supporters gather older people in the community to practice dementia prevention activities, and visit the homes of older adults who have difficulty leaving their homes to help the latter carry out activities that prevent dementia.

**Results:** A total of 128 people were enrolled in the training for supporters in dementia prevention. Pre- and post-training supporter evaluations showed significant improvements in both dementia-related skills and availability ( $p=0.000$ ). In terms of the comparisons before and after visiting 31 older adults people with difficulty leaving their homes, the results of the immediate recall test for cognitive function among the older adults who participated in the activities designed to prevent dementia improved from 4.5 to 7.2, whereas the results of the belated recall test improved from 3.9 to 6.6 ( $p=0.000$ ).

**Conclusion:** Training for supporters in dementia prevention significantly improved skills. A characteristic of the older adults who had difficulty leaving their homes was that their levels of activity and conversation were low, but the change to their daily lives, increased conversation, and improved activity through the visits of the supporters affected their minds and bodies and significantly improved their cognitive function.

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## 1. INTRODUCTION

The global population of people with dementia is increasing rapidly. As Japan ranks first in the world in population aging, dementia prevention is a national problem. Japan has formed a partnership with the United Kingdom in an effort to develop regions where people can live with peace of mind even if they have dementia [1]. The greatest issue faced by the current development of regions is the shortage in human and material resources to support people with dementia and their families. For people with dementia to live with peace of mind, they must be surrounded by people who can support them, and rather than as single individuals, these supporters must preferably comprise a group that can work together to improve the support given [2]. However, in many cases, there are no supporters or people who can listen. This issue drives the minds of people with dementia and their families into a corner, and the number of cases in which families suffer from depression is not low [3]). As a countermeasure, the government has aimed to nurture supporters in dementia prevention, but the number of people who do not actually end up carrying out support activities is overwhelming. Therefore, in this research, we held a class for supporters in dementia prevention to nurture people who can carry out activities that prevent dementia and restrict its advancement. Enrollees continuously participated in this class for one year, and after completing the class, they visited the homes of older adults who had difficulty leaving their homes to help the latter carry out activities that prevent dementia. The supporters also evaluated the

cognitive and psychological effects of interaction.

For older adults who have difficulty leaving their homes, various parts of life become troublesome, which tends to lead to staying at home, which, in turn, makes them susceptible to decreased physical and cognitive function [4]. The number of opportunities for them to think, such as by making plans, decreases drastically, and marked decreases in their interactions with people lead to their emotions not changing much, leading to social isolation [5]. To resolve these issues, the first task to prioritize is to increase the number of supporters. The present research aimed to nurture supporters who can provide support that could keep older people from becoming isolated and help the latter maintain their physical and mental functions even if they cannot leave their homes. The study also aimed to shed light on the effects of activities that prevent dementia.

## 2. METHODS

### 2.1. PARTICIPANTS

Local residents of Nara and Aichi Prefectures

**Inclusion criterion:** People under 75 years of age

**Exclusion criteria:** People with limited activities; People who have difficulty taking 12 consecutive lectures

### 2.2. SUPPORTER TRAINING TO PREVENT DEMENTIA

We held 12 training sessions a year at Nara Medical University in Nara Prefecture and Shubun University in

Aichi Prefecture.

### 2.3. ACTIVITIES BY SUPPORTERS

- Facilitating workshops with regional residents
- Holding voluntary gatherings in the region
- Visiting homes of older adults who cannot leave their homes

### 2.4. CONTENT OF RESEARCH

- Self-evaluation before and after supporter training: five-point Likert scale
- Interviews with residents at workshops: Supporters conducted group interviews with the public. Voluntary gathering activities involving music, singing, and creative activities were held in each residential region.
- Reports on voluntary activities: Six months later, supporters submitted reports on their voluntary activities after the training.
- Interviews and cognitive tests were conducted by visiting older adults.
- Cognitive tests for older adults: immediately and belatedly recalling 10 words

### 2.5. EVALUATION METHODS

Interviews and supporter activity reports were analyzed qualitatively. We compared the supporters' Likert scale tests before and after the training (paired t-test). We compared the cognitive tests for the older adults before and after the program (paired t-test). Statistical significance in the comparison test was set at less than the 5% level.

### 2.6. ETHICAL CONSIDERATIONS

The outline of the research, voluntary nature of participation, anonymity, and agreement regarding the publication of results were explained to the prospective participants both in writing and verbally, and their consent was subsequently obtained. The study protocol was approved by the ethical review board of Nara Medical University.

### 2.7. CLINICAL TRIAL REGISTRATION

This study was registered with the clinical trial registration database University Hospital Medical Information Network: registration number UMIN000037544.

## 3. RESULTS

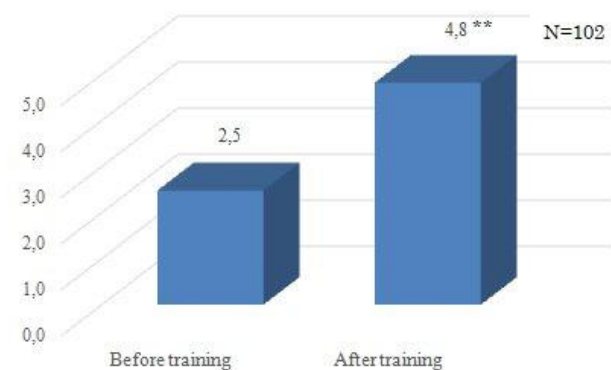
A total of 128 people enrolled in the training for supporters in dementia prevention. We analyzed the responses of 102

enrollees that could be compared before and after the program (Figure 1).



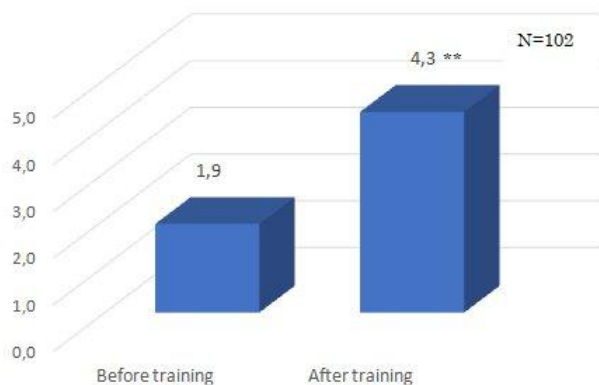
*Figure 1: Supporter Training course for the prevention of dementia.*

The participants were 11 men and 91 women with an average age of  $67.2 \pm 10.5$  years. For the self-assessment of supporters before and after the training, the average rating on a five-point scale for skills related to dementia improved from 2.5 to 4.8, and the average for the level of ability to apply these skills in practice increased from 1.9 to 4.3 ( $p=0.000$ , Figure 2 and 3). As shown in the figures, supporters' skills and level of practice were confirmed, and actual activities to prevent dementia were started. After completing the training, the supporters served as facilitators at workshops with regional citizens. A number of supporters also began activities at voluntary gatherings.



*Figure 2: Skills for the prevention of dementia. Paired p-test, \*\* significant at 1% level.*

After completing the training, supporters served as facilitators at workshops with regional citizens. There were also supporters who began activities at voluntary gatherings.



**Figure 3:** Practice level of activities for the prevention of dementia. Paired *p*-test, \*\* significant at 1% level.

### 3.1. WORKSHOP INTERVIEW

The results of the interviews with regional residents at workshops were classified into the five categories of “understanding of the methods to prevent dementia,” “understanding the content of regional activities,” “confidence to conduct activities,” “starting with what can do,” and “understanding the significance of interaction and conversation.”

### 3.2. VOLUNTARY ACTIVITY REPORTS

The free response results were classified into the four categories of “fun activities are important,” “good for myself and the region,” “I want this to continue because volunteer activities also serve to prevent dementia,” and “it is worth doing.”

### 3.3. INTERVIEWS DURING VISITS OF OLDER PATIENTS

Next, home visit activities were put in practice with the cooperation of members of the Dementia Prevention Support Net, which has carried out supporter activities over the years. The results of the home visits for the older adults who had difficulty leaving their homes were as follows.

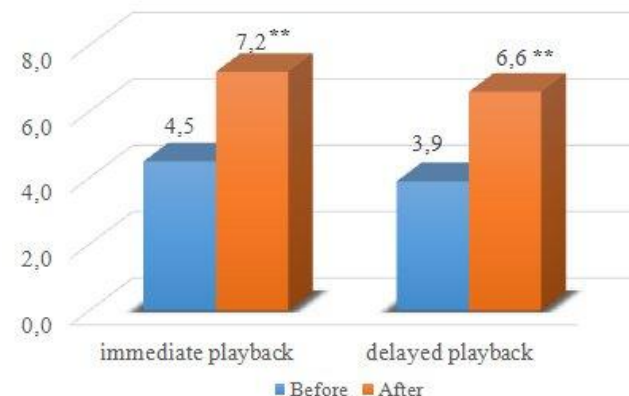
The supporters gathered 31 older adults, composed of 8 men and 23 women, with an average age of  $80.5 \pm 4.68$  years.

The interview results were classified into the four categories of “worried about dementia because they stay home,” “lack of conversation,” “lack of activity,” and “shopping is troubling.” The main causes for the difficulty in leaving home were related to mobility, namely, issues with walking and ways of going out.

### 3.4. COGNITIVE TESTS BEFORE AND AFTER INTERVENTION THROUGH HOME VISITS

The maximum score for the cognitive test was 10. Immediate recall was improved from 4.5 points to 7.2 points ( $p=0.000$ ), whereas belated recall improved from 3.9

points to 6.6 points ( $p=0.000$ ) (Figure 4).



**Figure 4:** Comparison before and after cognitive test scores. Paired *p*-test, \*\* significant at 1% level.

## 4. DISCUSSION

Training for supporters in dementia prevention significantly improved skills related to dementia prevention and also increased the supporters’ ability to apply these skills in practice. In putting their skills in practice, such as by serving as facilitators at workshops with regional residents, the supporters received high praise during interviews with residents. Sufficient results were obtained from workshops with residents regarding the level of understanding and motivation to participate. Notifying residents and gaining their understanding were found to be essential for regional activities. Moreover, the workshops clarified that the advancement of regional welfare would not be possible without the spontaneity of regional residents, as previously reported as well [6].

A persistent issue is that connections among regional residents are becoming rare [7]. The supporter activities were expected to aid in this regard. The results of the interviews that were part of the supporters’ activity reports contained content such as “good for myself and the region” and “it is worth doing.” Earlier research has confirmed the importance of these factors for continuing activities [8, 9]. We expect that these activities will be enhanced further.

The results of the interviews with the older adults during home visits revealed the following concerns: “worried about dementia because they stay home,” “lack of conversation,” “lack of activity,” and “shopping is troubling.” Indeed, being house bound, lack of conversation, and lack of activity all lead to decreased cognitive function. Meanwhile, shopping is not even a minimum social connection. These scenarios lead to a high risk of functional decline owing to cognitive disuse [10]. In addition, loneliness has a correlation with weakness [11, 12], and many adverse effects, such as depression [13], advancement of dementia [14], and increased inflammatory activity [15], have been reported for loneliness.

Daily changes from visits by supporters, an increase in

conversation volume, and an increase in activity have a positive effect on the mind and body. Regarding the activation of many areas of the brain, conversation involves not only the language center but also the frontal motor cortex to move the mouth and tongue, and the auditory area of the temporal lobe to listen to people [16]. Additionally, simply seeing a smile during communication has been reported to increase cerebral blood flow [17]. Further, conversations improve the ability to think and focus, as well as revitalize the psyche; increased activity during visits leads to the maintenance of daily activity [18] and improved mood [19].

In the present program, the older adults played games that train cognitive abilities with their supporters at home. The results of the comparison of cognitive tests performed before and after these games showed a significant increase in scores for both immediate and belated recall tests. Older adults who have difficulty going out are more likely to experience difficulty in their daily lives owing to accelerated deterioration of their mental and physical functions [20, 21], and the prevention of this is the greatest significance of the present intervention.

As both the supporters and older adults indicated that the activities were worthwhile and the interactions were fun serves, the intervention has a major cause for continuation. Deeper interaction will have cognitive and psychological effects. By promoting the reciprocal action of conversation, the synergistic effects of improved health conditions [22-24], longer life span [25], and prevention of depression [26] can be attained, in addition to improved cognition.

As this intervention improved the cognitive function and psychological state of the older adults and provided supporters with psychological satisfaction, we propose it as a course of action for future regional activities.

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## 5. CONCLUSION

Training for supporters in dementia prevention significantly improved skills related to dementia prevention and also increased the ability to apply these skills in practice. The range of regional activities for supporters is expanding. Their self-awareness that these activities are worthwhile and help both the region and themselves served as our motivation to expand these activities.

The older adults who had difficulty going out were characterized by low activity and few opportunities for conversation. Increased conversation and improved activity through the visits of the supporters affected the older adults' minds and bodies, as well as significantly improved their cognitive function. Deeper interaction between the supporters and the older adults at home would further enhance the effects of these activities.

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## 6. ACKNOWLEDGMENTS

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participated in this project. We also thank the members of the Dementia Prevention Support Net who cooperated.

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## 7. CONFLICT OF INTEREST

All authors declare no conflicts of interest.

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