

Feasibility Study of an Online Horticultural Therapy as Dementia Prevention Involving Community-dwelling Elderly

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Abstract

Objective: The purpose of this study was to develop an online horticultural therapy program, and we assessed its practical utility, and effect on cognitive function, life satisfaction, among community-dwelling elderly.

Methods: The study's target population comprised community-dwelling elderly aged at least 65 years. The activity methods are as follows: (1) In-person briefing session (first day of activity): Each participant was lent an iPad, and instructions on how to use it were provided. Plant cultivation kits and materials on cultivation methods were also distributed. (2) Sowing seeds and watering: On the first day of the activity, participants sowed radish sprouts and radish seeds at their homes. Baby leaf seeds were sown after the radish sprouts. Each participant cared for the plants at home. (3) Zoom exchange sessions: On the 5th day of the activity, participants harvested the radish sprouts. On the 9th day, all participants attended a social gathering via Zoom. After that, participation was optional every other week. Participants were 3 females and 6 males with a mean age of 74. In the participants, demographic data, including age, gender, and experience of horticultural activity were collected, in addition to information relevant to the cognitive function (Hasegawa's Dementia Scale; HDS-R), life satisfaction (Life Satisfaction Index K; LSIK), before and after the intervention.

Results: Nine participants completed the online horticulture therapy program, on the 44th day, participants harvested the radishes and baby leaves, and each participant prepared a dish using them. Regarding LSIK, total scores and the subscale "psychological well-being" tended to significantly improve between before and after the therapy ($P < 0.05$ examined by Wilcoxon matched pair signed-rank test), where HDS-R scores tended no significant difference.

Conclusion: Participation online horticultural therapy to have increase life satisfaction is in elderly residents of the community-dwelling elderly, and it is also a method that can revitalize the lives of elderly adults in a short period of time. However, the number of participants in this study was small, and it was not a randomized controlled trial. Further studies are warranted to elucidate the effects of online horticultural therapy on the life satisfaction, and cognitive function of elderly people.

Introduction

Japan is experiencing an ageing population rate that is unparalleled in the rest of the world. It is estimated that the elderly (< 65) made up nearly 40.0% of the population in 2040 [1]. Now the number of people with dementia is rapidly increasing with the increase of the number of elderly people. The number of people around the world living with dementia is predicted to rise to 152 million by 2050 [2]. Dementia is becoming a problem that not only impacts the quality of life of individuals with dementia but also affects their caregivers and society given the rising costs of health and social care services. At present, although several medications such as acetylcholinesterase inhibitors can slow the disease's progression, AD cannot be treated completely [3]. Consequently, there is an increasing need to prevent dementia, and many municipalities in Japan have launched a dementia prevention program [4]. Participation in leisure activities has been identified as one of the factors that influence the quality of life (QOL) of elderly people. The activity that this study focuses on, "gardening," is easy and convenient to do, is a culture deeply rooted in Japanese life, and is one of the leisure activities popular among the elderly. Furthermore, gardening is also listed as one of the "purpose-in-life" population approaches in the approaches to dementia prevention. Experiencing plants and soil induces positive emotions and relaxation [5]. Horticultural therapy provided a satisfaction during the working process [6] an increases quality of life (QOL) or improves depressive symptoms [7,8] Horticultural therapy is often carried out outdoors, However, forced to curtail their activities because of the coronavirus

disease after the COVID-19 pandemic. Thus, this crisis had accelerated the adoption of online activities and remote preventive care services. Research has also been reported on online horticultural therapy in elderly care facilities [9,10]. However, there are no studies on online horticultural therapy as a preventative care measure for elderly people living at home. Hence, we developed an online horticultural therapy program, and we assessed its practical utility, and effect on cognitive function [11], life satisfaction [12], among community-dwelling elderly.

Methods

Participants

Recruitment was conducted by distributing flyers and through staff at the Community Comprehensive Support Center from April to May 2022.

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The inclusion criteria were as follows:

- ≥65 years of age or older;
- no diagnosis of dementia by a physician;
- no speech or vision disorders; and no participation in other research studies.

The researchers explained the study’s objectives and methods and that the potential participants had the freedom of choice to participate in the study. After interviewing each participant, ten provided informed consent to participate.

Demographic data, including information on gardening experience, were obtained in advance from each participant.

Intervention methods

(1) In-person briefing session (first day of activity): Each participant was lent an iPad, and instructions on how to use it were provided. Plant cultivation kits and materials on cultivation methods were also distributed. (2) Sowing seeds and watering: On the first day of the activity, participants sowed radish sprouts and radish seeds at their homes. Baby leaf seeds were sown after the radish sprouts. Each participant cared for the plants at home. (3) Zoom exchange sessions: On the 5th day of the activity, participants harvested the radish sprouts. On the 9th day, all participants attended a social gathering via Zoom. After that, participation was optional every other week.

Evaluation methods

To investigate the effects of the online horticulture therapy, the outcome measure was the change of cognitive function [11] using the HDS-R score and life satisfaction [12] using the LSIK score, was evaluated by author.

Statistical analyses

Statistical analyses were performed using Statistical Package for the Social Sciences, version 22.0 (SPSS Statistics; IBM). Descriptive analyses were median and interquartile range. The Wilcoxon test (non-normal distribution) were used to compare pre-intervention and post-intervention results with a significance level of 5%.

Results

A total of 10 participants were included in this study, one out of the ten participants dropped out of the activity midway through. The participants (n=9) were elderly residents of the community. The distribution of participants is shown in Table 1. Participants were 3females and 6mens with a mean age of 74. Nine participants completed the online horticulture therapy program, on the 44th day,

Table 1: Demographic data.

Department	Response category	n(%)
Gender	men	6(67%)
	female	3(33%)
Age(year)		
	60-69	2(22.0%)
	70-79	7(78.0%)
Gardening experience	yes	7(78.0%)
	no	2(22.0%)

participants harvested the radishes and baby leaves, and each participant prepared a dish using them (Figure 1). LSIK total scores and the subscale “psychological well-being” tended to significantly improve between before and after the therapy ($P < 0.05$ examined by Wilcoxon matched pair signed-rank test), where HDS-R scores tended no significant difference in any scores was noted. Although there was no statistically significant difference, it can be interpreted that cognitive function was maintained. (Table 2).

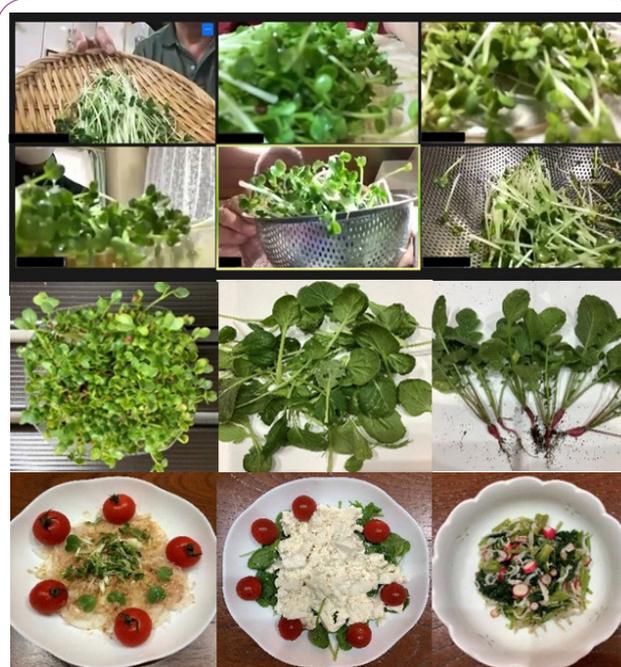


Figure 1: Harvested vegetables and dishes made with them.

Table 2: Distribution of Participants.

	Before	After	p-value
HDS-R	29(27-29)	30(27-30)	0.090
LSIK	4(3-5)	6(4-7)	0.018*
Satisfaction with life overall	2(1-3)	2(2-3)	0.786
Psychorological well-being	1(0-2)	2(1-3)	0.028*
Evaluation of aging	1(0-2)	1(1-2)	0.813

Data presented as median (minimum-maximum)

HDS-R: Hasegawa's Dementia Scale

LSIK: life satisfaction index K

* $P < 0.05$

Discussion

These results suggest that participants’ life satisfaction improved after the online horticulture therapy, are consistent with other studies on site horticultural therapy in older adults [5-7]. We treated community-dwelling elderly using the online horticulture therapy. The program allowed them to easily participate in horticulture therapy in each my home, and it seems to have the merit of inducing social contact while preventing infection. During the study, all participants watered my plants at their own initiative, and apparently, they acquired a new role and purpose of life. Also, this activity is likely to be very meaningful for elderly people who require some kind of assistance with mobility. Furthermore, online horticultural therapy is considered to have significant

advantages as it is easily accepted as an activity for preventing dementia and preventive care for elderly adults in the community, and it is also a method that can revitalize the lives of elderly adults in a short period of time. On the other hand, some research subjects were unable to participate in the activities on the day due to internet connection problems at home, and some requested that face-to-face activities be held occasionally. Based on this, it was deemed necessary to improve the internet environment at home and to consider hybrid activities as a method of activity.

Limitation

This study has some limitations. First, the small sample size and convenience sampling may limit the generalizability of the findings. Second, the one-group pretest-posttest design, which lacks a control group, limits causal inferences. Therefore, future studies with experimental and control groups are needed to strengthen the program's reliability.

Conclusion

The purpose of this study was to examine the effects of participation in the online horticultural activities program on cognitive function and life satisfaction of community elderly people. Participation online horticultural therapy to have increase life satisfaction, and it is also a method that can revitalize the lives of elderly adults in a short period of time.

Competing Interests

The author declare no competing interests relevant to this article.

References

1. Asai S, Toyoda M, Hayashi M (2021) Psychological Effects of Home based Horticultural Therapy Program Looking Ahead After COVID-19. *JpnSocReveget Tech* 47: 298-303.
2. Hassan A, Qibing C, Tao J (2018) Physiological and psychological effects of gardening activity in older adults. *Geriatr Gerontol Int* 18: 1147-1152.
3. Katoh S, Shimogaki M, Onodera A, Ueda H, Oikawa K, et al. (1991) "Development of the Revised Version of Hasegawa's Dementia Scale (HDS-R)" *Jpn Geriatr Psychiatr Med* 2: 1339-1347.
4. Koyano W (1990) Structure of a life satisfaction index: Invariability of factorial structure. *Japanese J Gerontol* 12: 102-116.
5. Masuya J, Ota K, Mashida Y (2019) Effect of horticultural activities as care and dementia prevention for community-dwelling elderly. *Journal of Japanese Society for Dementia Care* 18: 651-660.
6. Tse MM (2010) Therapeutic effects of an indoor gardening programme for older people living in nursing homes. *J Clin Nurs* 19: 949-958.
7. Miyake Y, Isomura Y, Fleming L (2022) Virtual Horticultural Therapy: A Qualitative Study Capturing University Students' Perspectives on Benefits, Challenges and Future Issues. *Health Education and Public Health* 5: 488-495.
8. National Institute of Population and Social Security Research, "Total Fertility Rate by Age Group of Mother (Japan)", (2025). https://www.ipss.go.jp/syoushika/tohkei/Popular/P_Detail2025.asp?fname=T02-09.htm.
9. Suzuki T, Makizako H, Doi T, Park H, Lee S, et al. (2015) Community-based intervention for prevention of dementia in Japan. *J Prev Alzheimers Dis* 2: 71-76.
10. Van Dyck CH, Swanson CJ, Aisen P, Bateman RJ, Chen C, et al. (2023) Lecanemab in early Alzheimer's disease. *N Engl J Med* 388: 9-21.
11. Brown VM, Allen AC, Dwozan M, Mercer I, Warren K (2004) Indoor gardening and older adults effect of socialization, activities of daily living, and loneliness. *Journal of Gerontological Nursing* 30: 34-42.
12. World Health Organization (2019) Risk Reduction of Cognitive Decline and Dementia. Geneva: WHO Guidelines.