International Journal of Nursing & Clinical Practices
Original Article Open Access

The Effect of a Horticultural Activities Program for the Community Elderly

Junko Masuya[1*] , Kikuko Ota[2] and Yuriko Mashida[2]

[1]Faculty of Health Sciences, Tokyo Metropolitan University, 7-2-10, Higashiogu, Arakawa-ku, Tokyo 116-8551, Japan
[2]Faculty of Nursing and Medical Care, Keio University, 4411, Endo, Fujisawa-shi, Kanagawa 252-082, Japan

Abstract

Objective: The purpose of this study was to examine the effect of a horticultural activities program for the community elderly.

Methods: The community elderly were invited to participate in a 6-week horticultural activities program. The Intervention groups contained seven participants (3 women and 4 men ; mean age, 69 years). In the participants, demographic data, including age, gender, and experience of horticultural activity were collected, in addition to information relevant to the Geriatric Depression Scale (GDS-15), the Activities of Daily Living (ADL-20) scale, quality of life (QOL), and the Mini-Mental State Examination (MMSE), before and after the intervention.

Results: Regarding QOL, the participants exhibited a significant improvement in "satisfaction with life" after the intervention ($P < 0.05$). Regarding GDS-15 score, the participants exhibited a significant decrease after the intervention ($P < 0.05$). ADL-20, and MMSE scores remained unchanged after the intervention in both groups.

Conclusions: Participation in horticultural activities reduced depression and increased life satisfaction in elderly residents of the community elderly. However, the number of participants in this study was small, and it was not a randomized controlled trial. Further studies are warranted to completely elucidate the effects of horticultural activities on the psychologic, physical, and cognitive function and QOL of elderly people.

Publication History:

Received: December 21, 2017
Accepted: December 27, 2017
Published: December 29, 2017

Keywords:

Elderly people, Horticultural activities, Controlled trial, Community

Introduction

Japan is one of the most rapidly aging countries in the world. The proportion of elderly individuals aged 65 years in Japan is currently about 26.7%, and is expected to rise to 30.0% by 2030 and 39.9% by 2060, when l of every 2.5 people will be elderly [1]. It is considered important that elderly people are able to lead lives that are as normal as possible. Therefore, the prevention of dementia has become more important [2]. Many elderly people suffer from depression related to grief or loneliness. Thus, in health-care settings such as nursing homes and day care centers, "nonpharmacologic" approaches are being introduced to help maintain the mental condition of elderly people with dementia [3]. Nonpharmacologic therapies include music, reminiscence, art, and reality orientation therapies, and have been shown to improve quality of life (QOL) and prevent disability among elderly people. Among these therapies, horticultural activities encourage interaction between people and plants [4]. Recently, several studies have described the benefits of horticultural activities for elderly people with dementia, which include improvements in psychologic [5], physical [6], social [7], and cognitive [8] function. Based on these studies, participation in horticultural activities appears to represent a promising method for preventing dementia. However, there is no research that examines the effect of horticultural activities for the community elderly.

Methods

Participants

The participants (n =7) were elderly residents of the community. The distribution of participants is shown in Table 1. 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.

Department	Response category	n (%)
Gender	male	4 (57%)
	FeMale	3 (43%)
Age (year)	60-69	2 (29.0%)
	70-79	4 (57.0%)
	80-	1 (14.0%)
Gardening experience	Very little to some experience	5 (71.0%)
	A lot of experience	2 (29.0%)

Table 1: Distribution of Participants.

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, seven provided informed consent to participate.

Demographic data, including information on favorite plants and any experience with plants and plant care, were obtained in advance from each participant.

Intervention methods

The specialist had several years' experience of caring for elderly people as a nurse, was trained in horticultural techniques, The research

***Corresponding Author:** Dr. Junko Masuya, Faculty of Health Sciences, Tokyo Metropolitan University, 7-2-10, Higashiogu, Arakawa-ku, Tokyo 116-8551, Japan; E-mail: masuya@tmu.ac.jp

Citation: Masuya J, Ota K, Mashida Y (2017) The Effect of a Horticultural Activities Program for the Community Elderly. Int J Nurs Clin Pract 4: 265. doi: https://doi.org/10.15344/2394-4978/2017/266

collaborator evaluated the behavior of each participant. The basic session flow and schedule are shown in Table 2. It was necessary that the seed or plant material used had the following properties: "easy to germinate," "easy to grow," "suitable for the season," "caused sensory stimulation" (seeds and plants of various sizes, form, color, and smell), and "well-known."

Time	Content	
1-2 min	Welcome participants to the activities	
5 min	Introductions	
5 min	Taking care of plant and observation, sensory stimulation	
15-20 min	Grow vegetables from seed that germinate easily and are easy to grow Transplant flowers into individual pots, pruning and harvesting of plants Pruning and harvesting of plants	
5 min	Sharing the workmanship of plants	
1-2 min	Closing ceremony	
Session	Schedule	
	Work to arouse memories	New work
Week1		seeding of baby leaf
Week2	Thinning of baby leaf	Transplant succulent plant
Week3	Fertilizer to the baby leaf	Transplant season flower
Week4	Thinning of baby leaf	Seeding white radish sprouts
Week5	Harvesting and tasting of red radish sprouts	
Week6	Harvesting and tasting of baby leaf	

Table 2: Design of the horticultural activities program.

Evaluation methods

Depressive symptoms, activities of daily living (ADL), QOL, and cognitive function of the participants were evaluated. Depressive symptoms were measured using a set of 15 items termed the Geriatric Depression Scale (GDS-15) [9]; ADL was rated using a set of 20 items termed the ADL-20 [10]; QOL was assessed via a set of seven items in the 100-mm visual analogue scale [11]; and cognitive function was evaluated using the MMSE [12]. GDS-15, ADL-20, QOL scores were evaluated by the each participant, and MMSE scores were evaluated by the researcher.

Statistical analyses

We tested the statistical significance of all alignment results using the Wilcoxon signed-rank test. A SPSS 24.0 statistical software was used for data analysis. A probability (p) value of < 0.05 was considered statistically significant.

Results

The participation rate for the horticultural activities program was 100% because no patient dropped out during the study period. The GDS-15, ADL-20, QOL, and MMSE scores are shown in Table 3. ADL-20, and MMSE scores did not significantly change after the intervention compared with those at baseline.

The GDS-15 scores showed significant improvements immediately after the intervention (median, 0.0; range, 0–2) compared with those at baseline (median, 2.0; range, 1–7; $p < 0.05$). There were significant improvements in the QOL scores immediately after the intervention (median, 640; range, 370–640) compared with those before participation (median, 600; range, 360–680; $p < 0.05$).

Evaluation	Before median (range)	After 6 weeks median (range)	P-value
MMSE	29 (27-30)	30 (27-30)	0.32
GDS-15	2 (1-7)	0 (0-2)	0.02
ADL-20	12 (12-13)	12 (11-13)	0.10
QOL	600 (360-680)	640 (370-690)	0.03

Table 3: Change in Geriatric Depression Scale-15, Activities of Daily Living-20, quality of life, and Mini-Mental State Examination scores.

GDS-15, Geriatric Depression Scale-15; ADL-20, Activities of Daily Living-20; QOL, quality of life; MMSE, Mini-Mental State Examination.
*P < 0.05, Wilcoxon signed-rank test.

Discussion

Our results demonstrate the benefits of participation in a horticultural activities program on short-term depression and QOL in elderly people. The GDS-15 score and QOL score significantly improved after the intervention. In a 1.5-month, once-weekly intervention (totaling 6 sessions), Sugihara et al. [13, 14] reported an improvement in the GDS-15 score. In this study, a total of six sessions of the horticultural activities program were administered over a 1.5-month period. The term of this study was shorter than those previously described; therefore, our results, which indicate the efficacy of a short-term horticultural activities program on depression, are a new finding.

The significant improvement in the GDS-15 score evident in this study may be attributable to the fact that participants were able to take care of plants and share their experiences, such as deriving satisfaction in their growth and pleasure in harvesting their produce, with others. The physical activity of elderly people and their communication with others tend to decrease when living in a facility, resulting in decreased psychologic function. In this context, the improvement in GDS-15 score obtained in this study is of great significance.

In this study, QOL scores significantly improved after the intervention. To the best of our knowledge, no previous study has reported a significant improvement QOL score after horticultural

activities in the community elderly people. The results of this study, which demonstrated the efficacy of a short-term horticultural activities program on QOL, constitute a new observation. The horticultural activities continuously provided a sense of responsibility in the daily care of plants. Additionally, the participants were able to eat and share their harvest with others. These factors may underlie the significant improvements observed in QOL score. Considering that with advancing age, people lose interest in their surroundings, the improvements in QOL score obtained in this study are of great significance.

The purpose of this study was to examine the effects of participation in a horticultural activities program on the psychologic, physical, and cognitive function and quality of life of elderly residents of nursing homes. Our results indicate the benefits of the horticultural activities program on short-term depression and "satisfaction with life." The results of this study are consistent with those reported by Sugihara et al. [16], who concluded that a time-limited program of horticultural activities may allow for short-term improvements, but did not promote long-term improvements. Thus, to maintain this effect, it may be necessary to provide a sustained intervention.

The major limitations of this study were the small number of participants and the nonrandomized nature of the trial. Therefore, further, randomized controlled trials involving a greater number of participants are necessary to confirm the effects of a long-term horticultural activities program for elderly people.

Conclusion

The purpose of this study was to examine the effects of participation in a horticultural activities program on psychologic, physical, and cognitive function and quality of life of community elderly people. These results indicate the ability of horticultural activities to improve short-term depression and QOL, and suggest that this program may be an effective treatment modality to improve depression and QOL with life in the elderly population.

Competing Interests

The author declears that they have no competing interest exists.

References

1. The estimation of population in Japan, National Institute of Population and Social Security Research.
2. Urakami K (2007) Prevention of dementia. Psychogeriatrics 7: 93-97.
3. Jinbo D, Kimura Y, Taniguchi M, et al. Effect of aromatherapy on patients with Alzheimer's disease. Psychogeriatrics 2009; 9: 173-179.
4. Masuya J, Ota K (2014) Efficacy of horticultural activity in elderly people with dementia: A pilot study of the influence on vitality and cognitive function. International Journal of Nursing & Clinical Practices 1: 101.
5. Sugihara S, Aoyama H, Sugimoto M, et al. (2006) The psychological, cognitive and immunological effects of hortcultural therapy on the elderly living in a nursing home. Japanese Journal of Geriatric Psychiatry 17: 967-975.
6. 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. J Gerontol Nurs 30: 34-42.
7. Tse MM (2009) Therapeutic effects of an indoor gardening programme for older people living in nursing homes. J Clin Nurs 19: 949-958.
8. Yamada S, Toba K (2005) A prospective comparison of day care and freely chosen occupational therapy for elderly patients with dementia. Nihon Ronen Igakkai Zasshi 42: 83-89.
9. Sheikh JI, Yesavage JA (1986) Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. Clinical Gerontologist 5: 165-173.
10. Eto F, Tanaka M, Chishima M, Igarashi M, Mizoguchi T, et al. (1992) Comprehensive activities of daily living (ADL) index for the elderly. Japan Journal of Geriatrics 29: 841-848.
11. Matsubayashi K, Okumiya K, Osaki Y, Fujisawa M, Doi Y (1997) Quality of life of old people living in the community. Lancet 350: 1521-1522.
12. Folstein MF, Folstein SE, Mchugh PR (1975) "Mini Mental State". A practical method for grading the cognitive state of patients for the clinicians. J Psychiatr Res 12: 189-198.
13. Sugihara S, Aoyama H, Sugtmoto M, et al. (2006) The psychological, cognitive and immunological effects of horticultural therapy on the elderly living in a nursing home. Japanese Journal of Geriatric Psychiatry; 17: 967-975.
14. Sugihara S, Aoyama H, Takeda S, et al. (2005) The psychological and behavioral effect of horticultural therapy on the elderly living in a nursing home. Japanese Journal of Geriatric Psychiatry 16: 1163-1173.