

Special Article - Gerontology Research

Person-Centered Approach of Horticulture Therapy Program Improves Neurorehabilitation in Elderly

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Received: April 28, 2018; Accepted: June 04, 2018;

Published: June 11, 2018

Abstract

Horticultural therapy is a non-pharmacological treatment defined as utilizing plants or garden, known as an alternative medicine to achieve specific goals that lead to person's well-being. It improves not only person's body but also mind and spirit, suggesting horticulture therapy has a potential that overcome the limitation managed only by medical treatment. In elderly population with more exposure with illness or unhealthy environment, horticulture therapy can improve the recovery of disabilities. This over views on the concept of horticulture therapy, effects of horticulture therapy on human including elderly, meta-analysis, known physiological changes, and ongoing trials to enhance the rehabilitation by person-centered horticulture therapy program in elderly.

Keywords: Horticulture therapy, Alternative medicine, Non-pharmacological treatment

Introduction

Horticulture therapy is a non-pharmacological strategy to improve therapeutic resurgence, with using the tool 'horticulture' to increase all aspect of human senses. Horticulture therapy has been known as one of the complementary and alternate medicine [1,2]. In 1978, WHO defined horticulture therapy as a concept of "preventive medicine" in the 'International Conference on Primary Health Care meeting' in Alma-Ata.

This therapy uses the plants or garden for materials or methods. Therapeutic garden, for example, the space for the treatment. In addition, the diversity of plants species and continuously changing their shapes overtime by themselves, since it is alive, horticulture therapy has enabled the clients or patients being treated without negative or obsessive feeling caused by medical management only [3-6]. Even after the horticulture treatment program, subjects have been able to care the plants that lead to continue being productive, mental refreshment and then recovery. Current medical treatments or care, physicians have applied scientifically known approved-medical materials and methods. Since these medical treatments are based on the objective information with scientifically proven, treating the disorder appears to be disease-centered, but not person-oriented.

However, therapists using alternative or complementary medicine have not used methods or tools those are proven scientifically. Thus, these in appropriate situations have been regarded that the alternative medicine has not been easily accepted as evidence-based medicine. Most physicians do not trust or believe this traditional or complementary medicine.

Horticulture therapy approaches the human-being as a whole, not separating body from mind [7]. Horticulture therapy does not consider the disease as medically proven-pathology alone, but has broader application, regardless of subject's demographic characteristics or morbidity [8,9]. Horticulture therapy is defined as goal-directed treatment with well-designed program that enables

the recovery of mind and body as are habilitation process [10]. Ralf described horticulture therapy that recovers disabled state into normal condition, which improves the activity of daily living and quality of life. From these reason, although, horticulture therapy has been one of alternative medicine, there also has been efforts to provide evidences to prove efficacy of this strategy [11-13].

Therefore, in this review, we overviewed the previously published references that might be associated with the therapeutic evidences using the horticulture therapy program.

Applied Horticulture Therapy on Human Illness

Horticultural therapy program which has been usually used for 'life satisfaction' of elders in facilities. When the same program was applied to the children or adolescent, they also showed improvement [14]. Horticulture therapy was reported to change the children's personality [15] that led to the alteration of social, psychological, and emotional behaviors [16]. Horticulture therapy was reported to improve 'self-concept' and 'learning ability' of the poor broken family's children [13]. These reports suggest that horticulture program can be of benefit not limited to elderly but also younger generation.

Applying horticulture therapy in psychiatric or neurologic disorders had been tried. Cochrane Database System Review revealed that 'benefit by horticulture therapy in schizophrenia are insufficient', thus needs to warrant well-designed trial, suggesting more evidence should be accumulated [17]. In cerebrovascular disorder, following stroke, therapeutic gardening enhanced cognitive function [18], and Ho et al. also reported gardening improved the quality of life in patients with stroke [19].

In geriatric population, horticulture activity program has been applied on the psychological well-being in a long-term care facility [20]. Horticultural activities helped solitude elderly female for a leisure on the isolation and life satisfaction [21]. It also of benefit for participation style, family strength, sense of power, self-esteem and

happiness of elderly [22]. Yoo [23] reported that horticultural therapy improved the depression and self-esteem in older adult of facilities. Even for the improvement of cognitive function and for the BPSD (behavioral problem of senile dementia), horticultural therapy is of help as non-pharmacological treatment [24].

Physiologic Changes by the Horticulture Therapy

There have been efforts to provide evidences for the mechanism how the therapeutic effects of horticulture therapy are mediated. The basic concept of horticulture therapy as 'healing garden' because gardening activities enhance the rehabilitation outcomes [25]. To address whether the autonomic nervous system is involved to modulate rehabilitation by horticulture therapy, heart rate had been collected and analyzed in patients participating in cardiopulmonary rehabilitation program with horticulture therapy [26]. A meta-analysis showed that gardening was beneficial for health, and physiological effect of natural environments or nature therapy have shown to be effective [27,28]. Garden therapy for neuro-disability in Scandinavia has tried to explore the effect of horticulture therapy on neurodegeneration [29]. A flower arrangement task increased activity in the right prefrontal cortex using near-infrared spectroscopy [30]. These evidences suggest that activities of nervous system can be altered, associated with improvement by horticulture therapy program

Review of Trials

To address the efficacy of horticultural therapy, a systematic review of randomized controlled trials was performed [31]. In Cochrane database systemic review, they found one single blind study. In this study, there was no clear evidence of difference in "Personal Well-being" index. However, the confidence intervals were wide (95% CI -10.35 to 8.55). 'Depression Anxiety Stress scale' was changed in horticultural treated-group than that in the control group (1 randomized controlled trial, n=22). However, due to the low quality and insufficient evidence, it is not enough to draw conclusion whether horticulture therapy is of benefit or not. Larger number of randomized trials is warranted [17]. Multi-center randomized controlled trial with a 3-month follow-up protocol was experimentally designed. The study participants will be 48 subjects diagnosed with schizophrenia (first episode) and additional 48 subjects with a high-risk mental state, from Santiago, Chile, aged between 15 and 35 years.

In depressive elderly with memory problems, a 20-week randomized controlled trial to detect the effects of exercise and horticultural intervention on the brain and mental health has been under investigation. It included 90 community-dwelling adults aged 65 years or older. They were allocated 1:1:1, randomized to one of three experiments: 'exercise', 'horticultural activity', or 'educational control' group. The outcome of this study would determine the clinical importance and efficacy of physical exercise and horticultural activity [32].

Promising result of horticulture therapy combing with the field of positive psychology has been reported [33]. Further improvement in the category of 'self-respect' and 'quality of life' in elderly women. It first suggests that, even in normal aged-population, these kinds of program can enhance the ability of mental health, and horticultural

therapy is a potential tool in geriatric population.

Summary and Conclusion

Horticultural therapy is known to achieve goals by improving person's body, mind and spirit. Several evidences applied for the recovery or rehabilitation process suggest that horticulture therapy can be a non-pharmacological strategy to improve therapeutic resurgence, increasing all aspect of human sense [34,8,9].

Limitations caused by medical treatment might be further improved. It can be a one of strategies to enhance the functional activities of daily living, and person-centered approach of horticulture therapy program improves neurorehabilitation in elderly.

Acknowledgement

This is supported by the research grant 2018 from Yuhan Corporation.

References

- Gester WM, Gordon RJ. Alternative therapies; why now?. Gordon RJ, Nienstedt BC, Gesler WM, editors. In: *Alternative Therapies: Expanding Options in Health Care*. Springer Publishing Compong. Inc., New York, USA. 1998; 3-12.
- Gordon J. Alternative medicine and the family physician. *American Journal of Fam Physician*. 1996; 54: 34-37.
- Kaplan R. The restorative environment: Nature and human experience. *Environment and Behaviour*. 1991; 23: 3-26.
- Hill C, Relf D. Gardening as an outdoor activity in geriatric institutions. *Activities. Adaptations and Aging*. 1982; 3: 47-54.
- Relf PD. The use of horticultural in vocational rehabilitation. *J. Rehab*. 1981; 47: 53-56.
- Mackenzie EB, Agard C, Portella D, Mahangar JB, Carson L. Horticultural therapy in long-term care settings. *Journal of American Medical Directors Association*. 2000; 1: 69-73.
- KHTWA. Korean Horticultural Therapy & Wellbeing Association. 2006.
- Lee SM. An analysis of the effects of horticultural therapy to each client and the economic value by income approach. Ph.D. Dissertation. Dankook Univ, Chunan, Korea. 2007.
- Relf PD. A comparison of the evolution of therapy and rehabilitation through the care of plants and animals in the United States. *ACTA Horticultural*. 2008; 775: 31-36.
- Son KC. Supervisor education. Several problems of horticultural therapy. KHTWA. 2009.
- Cho MK. Horticultural therapy as non-pharmacological treatment for the improvement of cognitive function and BPSD in dementia. Ph.D. Dissertation, Konkuk Univ, Seoul, Korea. 2008.
- Choi AN, Park HJ. The effects of music therapy on the changes in brain waves and emotion, and reduction of depression and anxiety for the post-traumatic stressed adolescent. *Korean Home Management Association*. 2008; 26: 13-25.
- Lee MJ. Effect of horticultural therapy on self-concept and learning ability of the poor broken family's children. MS Diss, Catholic Univ, Daegu, Korea. 2006.
- Yoon STY, Kim HY. Effect of horticultural therapy program linked to children on life satisfaction of elders in facilities. *J. Korean Soc. People Plants Environ*. 2009; 12: 9-14.
- Yoon SK. The effect on the plant culture working on changes in children's personality. MS thesis. Seoul National University of Education, Seoul, Korea. 2001.
- Park EJ, Yoo YK. Effects of horticultural activities on the social, psychological,

- and emotional behaviors in kindergarten pupil. *J. Korean Soc. People Plants Environ.* 2007; 10: 124-130.
17. Liu Y, Bo L, Sampson S, Roberts S, Zhang G, Wu W. Horticultural therapy for schizophrenia. *Cochrane Database Syst Rev.* 2014; 19.
18. Detweiler MB, Warf C. Dementia wander garden aids post cerebrovascular stroke restorative therapy: a case study. *Altern Ther Health Med.* 2005; 11: 54-8.
19. Ho SH, Lin CJ, Kuo FL. The effects of gardening on quality of life in people with stroke. *Work.* 2016; 54: 557-567.
20. Barnicle T, Midden KS. The effects of a horticulture activity program on the psychological well-being of older people in a long-term care facility. *Hort Technology.* 2003; 13: 81-85.
21. Lee ES, Sim WK. Effects of group horticultural activities as leisure on the isolation and life satisfaction of the solitude elderly female. *J. Korean Soc. People Plants Environ.* 2004; 7: 31-37.
22. Kim KH. The relationship among leisure participation style, family strength, powerlessness, self-esteem and happiness of elderly. Ph.D, Kookmin Univ, Seoul, Korea. 2004.
23. Yoo YK, Jeong HY. Effect of horticultural on the depression and self-esteem in older adult of facilities. *J. Korean Soc. People Plants Environ.* 2010; 13: 7-15.
24. Cho MK. Horticultural therapy as non-pharmacological treatment for the improvement of cognitive function and BPSD in dementia. Ph.D. Dissertation, Konkuk Univ, Seoul, Korea. 2008.
25. Söderback I, Söderström M, Schäländer E. Horticultural therapy: the 'healing garden' and gardening in rehabilitation measures at Danderyd Hospital Rehabilitation Clinic, Sweden. *Pediatr Rehabil.* 2004; 7: 245-260.
26. Wichrowski MJ, Hass WF, Mola A, Rey MJ. Effects of horticultural therapy on mood and heart rate in patients participating in an inpatient cardiopulmonary rehabilitation program. *J. Cardiopulm Rehab.* 2005; 25: 270-274.
27. Shanahan DF, Franco L, Lin BB, Gaston KJ, Fuller RA. The Benefits of Natural Environments for Physical Activity. *Sports Med.* 2016; 46: 989-995.
28. Hansen MM, Jones R, Tocchini K. Shinrin-Yoku (Forest Bathing) and Nature Therapy: A State-of-the-Art Review. *Int J Environ Res Public Health.* 2017; 14.
29. Spring JA. Design of evidence-based gardens and garden therapy for neurodisability in Scandinavia: data from 14 sites. *Neurodegener Dis Manag.* 2016; 6: 87-98.
30. Morita Y, Ebara F, Morita Y, Horikawa E. Increased activity in the right prefrontal cortex measured using near-infrared spectroscopy during a flower arrangement task. *Int J Psychiatry Clin Pract.* 2018; 22: 34-39.
31. Kamioka H, Tsutani K, Yamada M, Park H, Okuizumi H, Honda T, et al. Effectiveness of horticultural therapy: a systematic review of randomized controlled trials. *Complement Ther Med.* 2014; 22: 930-943.
32. Makizako H, Tsutsumimoto K, Doi T, Hotta R, Nakakubo S, Liu-Ambrose T, et al. Effects of exercise and horticultural intervention on the brain and mental health in older adults with depressive symptoms and memory problems: study protocol for a randomized controlled trial *Trials.* 2015; 16: 499.
33. Han SJ. The effect of positive horticultural therapy on the self-respect, personality and latent of elderly women. *J of people, plans, and environment.* 2017; 20: 149- 157.
34. AHTA. American Horticulture Therapy Association. 2003.