Journal of Innovation and Development
ISSN: 2958-4752 | Vol. 3, No. 2, 2023

A Review of Studies on the Efficacy of Horticultural Therapy Interventions based on physical and Mental Health Indicators in the Elderly

Qian Chen

Nanjing Agricultural University, Nanjing, China

Abstract: In order to better grasp the efficacy of horticultural therapy on the physical and mental health of the elderly, this paper will compile the current efficacy effects of horticultural therapy on the mental health, physical health, social interaction, and cognitive ability of various types of elderly people based on a review of the current status of horticultural therapy research on the elderly at home and abroad. It is found that, first, horticultural therapy can reduce depression and anxiety, reduce the risk of cardiovascular disease, and promote physical health in the elderly. Secondly, horticultural therapy for the physical and mental health of the elderly in China is in its infancy, while the development abroad is relatively more mature. Thirdly, there is a lack of research on the mechanism of action and more reasonable form design of horticultural therapy for the elderly both at home and abroad.

Keywords: Horticultural Therapy; Older Adults; Mental Health.

1. Introduction

China today is entering an aging society, with the number of people over 65 years old in China reaching 191 million in 2020, accounting for 13.5% of the total population. At the same time, the prevalence of Alzheimer's disease in China is 2.8% for people over 60 years old, and the number of people with the disease is the highest in the world. Empty nesters and the elderly with dementia generally lack family care and can hardly afford the high medical costs.

Horticultural therapy is a treatment method that uses "gardening" as a medium. Horticultural therapy does not aim to completely cure mental illnesses or psychological diseases of the elderly, but rather to provide a specially designed space for the elderly to improve their cognitive impairment, enhance their ability to live, and increase their sense of well-being, as well as to reduce the medical burden for the patient's family. This paper will review the benefits and therapeutic effects that horticultural therapy can have on several groups of elderly people, such as empty nesters, Alzheimer's patients, elderly people with dementia, elderly people with dementia, elderly people with frequent psychological depression and anxiety, and elderly people with poor physical conditions, which are of practical significance in promoting the progress of horticultural therapy design for elderly people in China.

2. Study on the Efficacy of Horticultural Therapy Interventions

2.1. Research on Mental Health Effects

There are many qualitative and quantitative studies on the psychological benefits of contemporary horticultural therapy for older adults. For example, Ulrich (1992) found that indoor gardening increased feelings of calmness and relaxation and improved self-esteem in older adults. Collins (2008) et al. used questionnaires to monitor the effects of 4 weeks of indoor gardening therapy on the well-being of low-income older adults living in care facilities and found that the sense of control and well-being of older adults were significantly increased after a 4-week gardening therapy intervention, and depression and life satisfaction were significantly decreased and increased after a 6-week gardening therapy intervention. improved, and after 6 weeks of horticultural therapy intervention, the subject elderly had significantly lower depression and higher life satisfaction. Kyung et al. (2018) randomly divided 36 women between the ages of 40-59 who were not taking medication for depression or anxiety into an experimental group and a control group, and the experimental group added horticultural therapy to the unmedicated group, and after 12 horticultural therapy interventions, the results found that the study group had significantly higher depression, Hyun (2020) found that horticultural therapy for elderly women with mild dementia was the most effective in reducing depression levels, usually once a week for 3 to 4 months or more.

There is also much research on the effects of horticultural therapy on the mental health of older adults within China. Gu Wenyun (2016) found that horticultural manipulative activities significantly improved depressive symptoms in older adults by measuring the GDS Geriatric Depression Scale scores of 30 older adults before, during, and after horticultural therapy, but no differences were found by gender or age. Ren Xulong (2022) found that adopting horticultural therapy reduced anxiety and depression status and improved cognitive function in rural empty nesters through a controlled experiment. Wang Jun et al. (2022) found that the degree of depression in the elderly in the horticultural therapy group was significantly lower than that in the group without horticultural therapy through a controlled experiment, while the degree of depression in the group with more than 20 people was lower than that in the group with less than 20 people gardening, indicating that horticultural therapy can significantly reduce the degree of depression in the elderly.

Numerous domestic and international studies have shown that horticultural therapy can promote the mental health of both healthy elderly and Alzheimer's patients, mainly by improving their depression levels, increasing their self-esteem, reducing their anxiety and increasing their sense of

well-being and control over their lives. Numerous domestic and international studies have shown that horticultural therapy can promote the mental health of both healthy elderly and Alzheimer's patients, mainly by improving their depression levels, increasing their self-esteem, reducing their anxiety and increasing their sense of well-being and control over their lives. Among them, Hyun even explored that the most effective duration and period of horticultural therapy is more than 3 to 4 months and once a week.

2.2. Research on Physical Health Effects

Han (2018) studied 28 Korean older adults with mental health problems at two geriatric mental health centers in Suwon, South Korea, and the experimental group participated in a previously designed 10-session horticultural therapy program, showing that in the horticultural therapy group, cortisol levels significantly decreased after horticultural therapy, demonstrating that a horticultural therapy program with low to moderate intensity horticultural therapy improves physical function in older adults Aguilar-Farias (2019), by measuring the metabolic equivalent of daily activity (MET) in middle-aged and older adults and comparing it with the physical activity outline CPA, found that the METs of elderly people who started horticultural therapy were significantly lower than the CPA and belonged to the low to moderate intensity exercise, and the physical function (measured by the senior fitness test) and hand-eye The physical function (measured by the senior fitness test), hand-eye coordination (measured by the Purdue pegboard test) and manual dexterity were significantly improved after the exercise. Therefore, horticultural therapy can promote the health of the elderly by increasing their moderate exercise. This suggests that horticultural therapy can effectively reduce the risk of cardiovascular disease in the elderly.

Domestic studies in China on the efficacy of horticultural therapy on the physical health of the elderly are not as numerous as those abroad, but the results are strikingly similar. By testing the pulses of 40 elderly people before and after horticultural therapy, Mei-Ling Hsiu (2006) found that diastolic blood pressure and mean arterial pressure were significantly higher in those who underwent horticultural therapy, suggesting that horticultural therapy can improve the cardiovascular status of the elderly. By conducting a comparative experiment of horticultural therapy on elderly people in several nursing homes, Yang Sen (2016) found that horticultural therapy significantly promoted cardiorespiratory fitness, mobility, blood glucose and lipids, and memory in elderly people who participated in horticultural therapy, and that body mass index and waist-to-hip ratio were reduced.

Horticultural therapy also has a great promotion effect on the physical health of the elderly. Studies have shown that horticultural therapy, which is a low- to medium-intensity exercise, can effectively exercise the muscles and mobility of the elderly, thereby reducing their blood lipids and blood glucose and promoting cardiorespiratory function. Horticultural therapy has been shown in both domestic and international studies to reduce the risk of cardiovascular disease in the elderly by raising cholesterol concentrations, as well as improving cardiorespiratory function and memory, and Park's study even showed that horticultural therapy can relieve pain in people, which can also have a beneficial effect on reducing pain in the elderly with some diseases.

2.3. Research on the Health Effects of Social Interactions

Predny (2004) et al. studied the interaction between the elderly and children in horticultural therapy and found that horticultural therapy was effective in facilitating communication between the elderly and children. Bassi (2016) measured the social network of the elderly using the Lubben Social Network Scale and found that both horticultural therapy and occupational therapy for 6 consecutive weeks increased the sociality and activity engagement of the elderly. Lai (2018) By controlling the psychological well-being of the elderly in the horticultural therapy group and the general social group, it was hoped to explore the effect of horticultural therapy on social engagement and social competition, extension and intimacy of the elderly to make a study, but no significant results were found.

While foreign studies on the efficacy of horticultural therapy on the social interaction of the elderly are scarce and some hold opposing views, domestic studies in China have found significant facilitation effects on the social interaction of the elderly with dementia and empty nesters. For example, Zhang Yingying (2017) conducted horticultural therapy activities for eight mildly demented elders in a care home in Shanghai for eight sessions of 1 h each, which included basic horticultural manipulation activities, plant observation and recording, and plant material crafting. After the activities were evaluated using the horticultural therapy estimation scale, the results found significant effects of social interaction and improved social support of the elderly, and similar results were found by Ma Yuqiang (2017). Li, Yujie (2021) found that planting plants could promote empty nesters are social interaction, thus alleviating the improvement of their mood.

There are fewer studies about horticultural therapy on social interaction of the elderly, some foreigners found that horticultural therapy can promote social interaction of the elderly, some experiments felt that there was no significant relationship between the two, but Chinese scholars found through experiments that horticultural therapy can significantly improve social interaction of the elderly with dementia and empty nesters.

2.4. Research on the Health Effects of Cognitive Function

Alzheimer's disease, also known as Alzheimer's disease, usually affects the elderly and is characterized by a decline in cognitive ability. (2006) found that attention recovery improved with a corresponding increase in immersion when viewing natural scenes. Bassi (2018) found that horticultural therapy activities also significantly improved the concentration of the elderly through a study of horticultural therapy against the quality of experience of nursing home elderly. Kim et al. (2018) found that certain recall materials and singing evoked word recall in older adults with mild dementia, and extracted and investigated neurotoxin levels in the elderly and found a reduction in levels, but these materials did not provide full clarity on dementia-induced neurotoxic substances. park found (2019) that a 20 min low- to medium-intensity horticultural therapy intervention significantly increased blood levels in the elderly that were associated with memory-related BDNF protein and PDGF protein concentrations, both of which are thought to be associated with memory performance. Horticultural therapy is effective in enhancing cognitive performance in Alzheimer's disease

patients, and Tseng (2020) designed a horticultural board game to help patients recover cognitive performance, which was shown to be effective after the trial.

Domestic studies on the efficacy of horticultural therapy in restoring cognitive levels in older adults remain consistent with foreign studies. Jiang Na (2022) found that horticultural therapy was effective in improving depressive symptoms and promoting physical and mental well-being in older adults with mild to moderate cognitive disorders through a comparative experiment and a Mental State Examination Scale survey. Wei Ling (2019) found that horticultural therapy interventions for the elderly with early dementia could improve their cognitive abilities and concentration. An Ran (2019) measured the effect of horticultural therapy on the cognitive ability of elderly with mild cognitive impairment by both the Rivermead Behavioral Memory Test Scale and the Memory Satisfaction Questionnaire subjective and objective, and found that horticultural therapy enhanced cognitive impairment in the elderly, and this enhancement continued after two weeks.

Domestic and international studies have generally demonstrated that horticultural therapy can improve the cognitive ability of healthy elderly or elderly with dementia. Among them, Park found that horticultural therapy can improve the memory of elderly by increasing the concentration of BDNF protein and PDGF protein through the experiment. Although domestic studies on the effects of cognitive ability have also reached relevant conclusions, they have remained at the stage of survey and questionnaire collection, and few have explored the underlying mechanisms. Meanwhile, there is a lack of studies at home and abroad on what forms of horticultural therapy can improve or treat the cognitive function of the elderly.

3. Summary

In summary, this paper has provided a comprehensive review of research on horticultural therapy on the physical and mental health of the elderly, which is currently a relatively popular direction in horticultural therapy, and relevant studies have focused on four aspects of the effects of horticultural therapy on the mental health, physical function, social interaction and cognitive ability of the elderly, leading to the following conclusions:

1. Many studies have proved through quantitative experiments that horticultural therapy has positive effects on the physical and mental health of the elderly, and such positive effects include mental health, physical health, social interaction and cognitive ability. Among them, social interaction is less studied and some scholars are against its gaining effect, while the other three aspects have many quantitative experiments to prove that they can play a good role. In terms of physical health promotion, horticultural therapy can indirectly improve the physical health of the elderly by promoting increased physical exercise, and can also directly improve the physical status of the elderly, such as improving physical function and manual dexterity, and preventing and alleviating geriatric diseases such as cardiovascular diseases, Alzheimer's disease and inflammation in the elderly. In terms of mental health promotion efficacy, horticultural therapy interventions can significantly improve the elderly's sense of life control, happiness, life satisfaction, reduce loneliness, and improve the elderly's emotional condition and reduce their sense of tension. In terms of social health, long-term horticultural therapy interventions have been found to significantly improve the social quality of the elderly in most studies. In terms of cognitive ability promotion efficacy, horticultural therapy has a positive effect on blood protein concentrations related to cognitive performance in the elderly.

2. Domestic studies on the effects of horticultural therapy on the physical and mental health of the elderly have been relatively popular in recent years, but they started late, and the research is not as complete and adequate as foreign studies, and the amount of literature is also small, and many of them stay on the surface to analyze whether there is a connection between the two, without digging deeper into the inner mechanism.

A large number of studies have focused on the effects of horticultural therapy on the physical and mental health of the elderly, but there is little literature exploring what forms of horticultural therapy are more beneficial to the physical and mental health of the elderly. For example, what kind of characteristics of horticultural activities can promote the physical and mental health of the elderly; what kind of color, smell and touch of plant materials can bring out the beneficial effects of horticultural therapy on the elderly; whether there are differences in the physical and mental health effects of long-term activities with different content composition, organization and duration; whether the effects of horticultural therapy on different groups of the elderly such as the elderly with dementia and the frail elderly Whether the effectiveness of horticultural therapy is different for different groups of the elderly such as the elderly with dementia and the frail elderly; the process, causes and mechanisms of the interaction between horticultural therapy interventions on the mental and physical health indicators of the elderly, and other research questions still need to be explored in more subsequent studies.

The development of horticultural therapy in China is still in its infancy, and there are relatively few studies in this area in the literature, so we still need to make continuous efforts. At present, horticultural therapy for aging is a trend, and this review can provide references and opinions for the future development of horticultural therapy for the elderly.

References

[1] Ulrich S., Biophilia, biophobia, and natural landscapes [J]. The Biophilia Hypothesis, 1993, 7: 73-137.

[2] Park S. A., Lee A., Parkhg G., et al. Benefits of gardening activities for cognitive function according to measurement of brain nerve growth factor levels[J].International Journal of Environmental Research and Public Health, 2019,16(5) : 760.

[3] De Kort Y. A. W., Meijnders A. L., Sponselee AAG, IJsselsteijn W A. What's wrong with virtual trees? Restoring from stress in a mediated environment. [J].2006;26:309-320.

[4] Detweiler, M. B., Sharma, T.,Detweiler, J. G.,Murphy, P. F., Lane, S.,Carman, J.,Chudhary, A. S.,Halling, M. H.,Kim, K. Y.What is the evidence to support the use of therapeutic gardens for the elderly?[J].Psychiatry Investig,2012, 9(2),100-110.

[5] Heród, A., Szewczyk-Taranek, B.,Pawłowska, B.Therapeutic horticulture as a potential tool of preventive geriatric medicine improving health, well-being and life quality--A systematic review[J].Folia Horticulturae,2022,34(1),85-104.

[6] Kim, J. M., Yun, S. Y.,Choi, B. J.,Cho, M. S.The Effects of Horticultural Activity with Reminiscence Materials and Singing Time on the Ability to Recall Words and Depression in the Elderly with Mild Dementia[J].Journal of People, Plants, and Environment,2018,21(6)515-521.

[7] Zhang Yingying. Research on the design of horticultural therapy applications for the elderly living environment in Harbin City [D]. Northeast Agricultural University,2018.

[8] Xiu Meiling, Li Shuhua. A preliminary study on the effects of horticultural manipulation activities on the physical and mental health of the elderly[J]. China Garden,2006(06):46-49.

[9] Ding Yu. The application of horticultural therapy in the landscape design of senior communities[J]. Modern Horticulture, 2017(07):122-123.

[10] Guo Xianmei, Li Hui,Wang Jingyi,Li Huan. A review of research on rehabilitation landscape for the elderly [J]. Modern Horticulture, 2022,45(17):24-26.

[11] Liu Yuzhu. Landscape design analysis of urban nursing homes based on the emotional needs of the elderly [J]. Popular literature and art, 2022(19):60-62.