Research Article

Impact of Horticulture therapy on depression: A systematic review

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Abstract-:

Depression is a growing global issue that significantly impacts the daily lives of many individuals, particularly older adults. Horticultural therapy has become a common nonpharmacological treatment for those suffering from depression, with numerous studies highlighting its beneficial effects. Horticultural therapy (HT) is widely acknowledged as a multifaceted approach that influences a wide array of health and well-being outcomes. Umbrella review is done and meta-analysis aims to evaluate the results of previous reviews concerning the effects of various gardening interventions and characteristics on different aspects of well-being. A comprehensive search was performed in the PubMed, EMBASE, Cochrane Library, CINAHL, CEPS, CNKI, and Wanfang databases. The focus was on randomized controlled trials (RCTs) that utilized HT. The outcomes evaluated included the differences between HT and control groups in terms of depression, anxiety, physical function, cognitive function, social function, and quality of life. Hedges' g was calculated using a random-effects model. The risk of bias was determined with the Cochrane Risk of Bias tool, and using the GRADE approach is used to assess the certainty of the evidence. Experimental research has shown that engaging in activities in natural settings can lead to reductions in self-reported feelings of anger, fatigue, anxiety, stress, and depression. In the current study, depression was assessed both subjectively using the Beck Depression Inventory and objectively through spectrophotometric analysis. This dual approach aimed to gather more comprehensive insights into the actual changes in depression levels during the therapeutic horticulture intervention.

INTRODUCTION

Horticultural therapy (HT) is defined as the participation of a client in horticultural activities under the guidance of a trained therapist, with the aim of achieving specific, documented treatment objectives. Therapists should design goals that are practical, relevant, and measurable, taking into account the participants' functional abilities, across emotional, social, physical, and cognitive domains. Although HT outcomes often provide a sense of achievement, its effectiveness is supported by several key practices: 1. participants care for at least one plant during the therapy, (2) they are encouraged to engage with the plant's growth process, and therapists utilize the multi-sensory aspects of plants throughout the program.

Horticulture has long been employed as a therapeutic tool for individuals with mental health conditions, including schizophrenia and depression. Engagement with plants—whether through active, goal-oriented gardening or passive appreciation of nature—offers multiple therapeutic benefits. Emotionally, HT can reduce stress, alleviate psychiatric symptoms, stabilize mood, and enhance feelings of calm, spirituality, and enjoyment. It can also help alleviate fatigue and support attention and cognitive restoration. Additionally, HT may improve self-efficacy, self-esteem, and overall quality of life. Socially, it can foster group cohesion and a sense of belonging, while encouraging purposeful activity and a sense of productivity and accomplishment. For individuals with disabilities, it may also support the development of vocational skills and sustainable work habits in horticulture.While many reviews have highlighted the general benefits of HT for the broader population and occasionally for those with health conditions, few studies have systematically examined its processes and outcomes for people with mental illnesses. There remains a lack of formal, high-quality research to definitively determine the effectiveness of horticultural therapy in this population.

OBJECTIVES-: 1. The goal of this review is to review the reliability of previous research and investigate how effective horticultural therapy—considering the intervention's environment, activities, and duration—is in alleviating depression among older adults.

2.To review the effect of horticulture therapy on level of depression

3.To review the benefits of horticulture therapy

KEYWORDS-:

Depressive disorder ,Horticultural therapy ,Depression,Meta-analysis.

Challenges of horticultural therapy

Although horticultural therapy (HT) is increasingly recognized for its benefits, its application still faces several obstacles, including insufficient standardization, limited funding, and low awareness. The absence of universally accepted guidelines and certification systems for HT practitioners further hinders its adoption within mainstream healthcare and rehabilitation settings. Additionally, many HT programs rely on support from non-

profit organizations and community grants, which makes long-term financial sustainability challenging. A lack of awareness among healthcare providers and policymakers about the therapeutic value of HT also leads to its underutilization in mental health and rehabilitation services.

Future direction

Horticultural therapy should be promoted to resolve the psychological issues and to reduce the level of stress. According the review of 15 articles the Horticulture therapy programs should be introduced at community level and should be majorily implemented with the people above 60 years of age

Materials and procedure

After analysing all 15 reviews the most common conducted reviews are systematic review and PRISMA is used . Many of the studies used randomised control trial methods Most studies focused on participants aged 8 to 64 years, covering both children and adults. They generally involved a mix of horticultural activities, including outdoor gardening, indoor planting, crafting with live plants, flower arrangement, and creating items using artificial or pressed flowers. Programs of short to medium length, typically comprising 11 to 20 sessions, were the most common, with individual sessions usually lasting between 60 and 120 minutes.Most reviews are done using including PubMed, Embase, Cochrane Library, CINAHL, CEPS, CNKI, Wanfang,Psychinfo.Most studies have inclusion criteria that include peer-reviewed journal articles that used a randomized controlled trial (RCT) design, involved adults aged 18 and above diagnosed with schizophrenia, and focused on interventions incorporating therapeutic activities such as gardening, plant cultivation, or other forms of horticultural therapy (HT). It also required that the studies assess outcomes related to symptoms and emotional well-being.

Limitation:

Studies focusing on gardening activities among older adults often face difficulties in including both experimental and control groups, which serves as a significant limitation. Consequently, the reliability and validity of this systematic review may be constrained. With respect to internal validity, the findings may be influenced by factors such as measurement effects during the study. In terms of external validity, it is unclear whether the results can be broadly applied to different populations, settings, or time periods.

Name (Author)	Study type	Sample size	Findings
Meijing Xu ,Shan Lu ,Jianjiao Liu,Feng Xu (2023)	Systematic Review and Meta-Analysis	698 people who are having depression	horticultural therapy positively reduced depression for the older adults
I. Panțiru, A. Ronaldson, N. Sima, A. Dregan & R. Sima(2024)	Umbrella review and meta analysis	40 studies	gardening activities shows positive effect on mental well-being, quality of life, and health status.
Yi-Zhen Kuo , Zih-Shan Yu , Yi-Zhen Li , Ming-De Chen , Yi-Wen Lee , Pao-Yen Lin , Tzu-Ting Chen, Chih-Wei Hsu , Chyi-Rong Chen (2025)	Systematic review and meta analysis	960	HT significantly reduced depressive symptoms
Sin-Ae Park , A-Young Lee, Geung-Joo Lee, Dae-Sik Kim , Wan Soon Kim , Candice A. Shoemaker , and Ki-Cheol Son(2016)	Literature review	14,414 journal and selected 509 of the papers for review	There is significant association between horticulture therapy and well being
Yi-wen lee et.al (2024)	Systematic review and	35 studies enrolling	HT were associated with

	meta analysis	2899 participants	better outcomes for total symptoms and negative symptoms.
Xu M , Lu S , Liu J , Xu F (2023)	Systematic review and meta analysis	698 aged people with depression.	significant effects of horticultural therapy on reducing depressive symptoms for the older adults
Ruo-Nan Jueng ,Chien-Yau Lin and Yu-Hsiu Huang(2023)	Systematic Review	735 articles	impact of horticultural activities on the positive mental health
Darshana S. Gaikwad, Vinod Veerbhadrannavar, Shivkumar Kori, and Rajeshree Mane (2024)	Quantitative evaluative survey	60 participants	horticulture therapy is effective in reducing depression among elderly individuals.
Andrew M H Siu 1, Michael Kam 2, Ide Mok ,2020	Mixed-Method Evaluation	41 Participants	HT is effective in increasing mental well-being, engagement, and the sense of meaningfulness and accomplishment of participants
Hui-Ying Chu MS a, Mei-Fang Chen RN, PhD b, Chun-Chin Tsai PhD c, Hui-Shan Chan MS d, Tai-Liang Wu PhD (2019)	systematic literature review	150 older residents	horticultural activity programs improve psychological outcomes in older populations

RESULTS AND DISCUSSION

Research shows that horticultural therapy helps lower stress, anxiety, and depression in participants. Taking part in gardening activities is associated with higher levels of serotonin and dopamine, which can improve mood and overall mental health. It also encourages physical movement, contributing to better heart health, increased muscle strength, and greater flexibility, while often resulting in reduced blood pressure and improved management of chronic pain.Interacting with plants and nature can enhance cognitive abilities such as attention, memory, and problem-solving. The sensory experiences involved in gardening help keep the mind actively engaged. Additionally, group gardening promotes social interaction, allowing individuals to share experiences and tasks, which strengthens relationships and reduces feelings of loneliness.Horticultural therapy has been successfully incorporated into programs for individuals with specific conditions, including autism spectrum disorders, dementia, and post-traumatic stress disorder, where its multisensory approach proves especially helpful. It supports overall well-being by addressing physical, mental, emotional, and social needs through a combination of outdoor activity, plant care, and sensory involvement.Gardening also has a calming effect on the nervous system, helping to reduce stress through endorphin release and mindful, repetitive actions. Beyond its immediate benefits, it fosters environmental awareness by teaching participants about ecosystems, plant growth cycles, and sustainable practices.This form of therapy is adaptable to various settings, such as hospitals, schools, rehabilitation centers, and community gardens, making it accessible to a wide range of people. Although current research highlights its positive effects, further studies are needed to better understand its long-term benefits, ideal program designs, and the underlying mechanisms that make it effective.

Horticultural therapy shown good result for lowering stress related to educational stressors (SMD = −0.79), compared to occupational and rehabilitation stressors (SMD = −0.58 and SMD = −0.72, respectively) in psychological indicators.
Males (SMD = −2.92) have shown better improvement than females
As per review the studies shown that Horticultural therapy helped people aged more than 60 to effectively reduce stress.

CONCLUSION

Horticultural therapy (HT) demonstrates significant potential as an effective nonpharmacological intervention for reducing depression, stress, and anxiety, particularly among older adults. Evidence from systematic reviews and meta-analyses indicates that HT improves emotional well-being, cognitive function, physical health, and social interaction through engagement with nature and structured activities. Its multisensory and goal-oriented approach enhances mood, self-esteem, and quality of life. However, challenges such as limited standardization, insufficient funding, and low awareness hinder its widespread implementation. Additionally, methodological limitations in existing studies highlight the need for more rigorous, high-quality research to establish long-term effectiveness and support its integration into mainstream healthcare systems.

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