

Original Paper

The Role of Horticultural Therapy in Promoting Physical and Mental Health

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Abstract

Horticultural therapy is a valuable method for promoting mental health as well as physical well-being by involving individuals in the process of planting, nurturing, and appreciating plants. This practice is particularly effective in mental health education. By reviewing recent literature, this paper focuses on the role of horticultural therapy in reducing stress, regulating emotions, enhancing self-knowledge, promoting social interaction, and facilitating physical rehabilitation. The paper describes the therapy's implementation and methods for evaluating its effectiveness. The findings indicate that horticultural therapy can significantly reduce stress, improve emotional states, increase self-awareness. These results are significant for mental health education.

Keywords

horticultural therapy, mental health education, stress reduction, emotional regulation, self-awareness, social interaction, physical rehabilitation

1. Introduction

In recent years, due to social progress and shifts in lifestyle, there has been a growing focus on mental health among individuals. Concerns such as work-related stress, anxiety, and psychological disorders have become significant factors affecting personal life and professional development. In order to aid individuals in addressing physical and mental well-being challenges, the field of mental health education has evolved continuously, resulting in various therapies and techniques. Among these, horticultural therapy has emerged as a promising approach, attracting considerable attention (Song et al., 2017).

Horticultural therapy is a method of promoting physical and mental well-being through plant cultivation and interaction with the natural environment. It emphasizes the intimate connection between the individual and nature, and uses activities such as planting, caring for, and observing plants as a means to regulate emotions, reduce stress, and improve psychological well-being. Horticultural therapy provides individuals with a calm, serene, and nature-oriented environment that allows them to retreat from busy social lives and seek inner peace and relaxation. Through horticultural therapy, individuals can experience a unique sense of healing and fulfillment through close contact with nature, touching the soil and witnessing the growth of plants. This connection with plants and nature not only relieves physical tension, but also promotes emotional balance and stability (Li, 2011). Research shows that horticultural therapy helps to improve an individual's sense of well-being, self-esteem, and self-confidence, while reducing stress and depressive symptoms and promoting emotional positivity and resilience (Oh et al., 2020; Howarth et al., 2020; Kim & Park, 2018; Baird, 2016; Barton & Pretty, 2010). In addition, horticultural therapy has value in terms of social interaction. Through engagement in horticultural activities, individuals have the opportunity to communicate and collaborate with other enthusiasts or professionals, thereby building robust social networks and support systems. Such social support not only alleviates feelings of loneliness and social anxiety, but also increases the individual's sense of belonging and social support, providing emotional support and resources (Ascencio, 2020).

In summary, horticultural therapy, as an emerging approach in mental health education, exerts positive influences on individuals' overall well-being. Through close interaction with nature and engagement in horticultural activities, individuals can attain emotional balance, release stress, and fulfill their social support needs. The purpose of this article is to provide a comprehensive overview of the role of horticultural therapy in promoting physical and mental health, offering theoretical and empirical support for research and practice in the field of mental health education, in order to better address the physical and mental health challenges of contemporary society.

2. Method

In this study, we used a literature review approach to synthesize the role of horticultural therapy in promoting physical and mental health. To obtain relevant research literature, an extensive literature search was conducted that included databases and academic journals from multiple disciplinary fields. We primarily searched databases such as Web of Science, Google Scholar, ScienceDirect, and CNKI, using various combinations of key terms including "horticultural therapy," "horticultural treatment," "mental health," and "well-being."

After the literature search, we first screened the articles based on their titles and abstracts to exclude those that were irrelevant or did not meet the research requirements. We then conducted a full-text reading of the remaining articles and assessed their quality and relevance according to pre-established inclusion criteria. Our inclusion criteria were: (1) the effects of horticultural therapy in promoting physical and mental health; (2) the use of empirical research methods or systematic reviews, including

experimental studies, questionnaire surveys, interviews, and outcome reporting; (3) publication of the research articles in peer-reviewed journals.

Following the screening and assessment process, a total of 37 relevant articles were included in our analysis. These articles cover a wide range of topics, including the impact of horticultural therapy on anxiety, depression, stress, self-esteem, and well-being, as well as its applications in various populations such as older adults, children, and college students. By synthesizing the content of these articles and incorporating existing research findings and theoretical frameworks, we have provided a comprehensive overview of the role of horticultural therapy in promoting physical and mental health, thereby offering theoretical and empirical support for research and practice in the field of mental health education.

It is important to note that due to the relatively early stage of research on horticultural therapy in the field of mental health, there are limitations in terms of the diversity of research quality and methodologies. Therefore, for further studies, we recommend employing more systematic and standardized research designs and methodologies, along with large sample empirical studies, to further validate and explore the effects of horticultural therapy in promoting physical and mental well-being.

3. Results and Discussion

3.1 The Role of Horticultural Therapy in Stress Reduction

The role of horticultural therapy in stress reduction involves multiple psychological mechanisms and effects. Firstly, horticultural activities provide an opportunity for individuals to interact with the natural environment and experience physical and mental relaxation. Through engaging with natural landscapes and plants, individuals can receive various sensory stimuli, including visual, auditory, and olfactory sensations, thereby promoting a sense of calmness and relaxation. This process of interacting with nature is called “nature immersion,” which helps reduce tension and perceived stress and improves individuals’ psychological well-being (Nagata & Liehr, 2020). According to Ulrich et al. (1991) and their Stress Restoration Theory, horticultural therapy encourages individuals to spend time in natural environments, which has been empirically demonstrated to have stress-reducing effects. Furthermore, horticultural therapy provides a beneficial form of physical activity that plays a significant role in alleviating tension and releasing stress. Engaging in activities such as planting, pruning, and tidying during horticultural interventions not only promotes physical movement and dexterity but also expends bodily tension, allowing individuals to experience pleasure and gratification derived from bodily engagement. Additionally, horticultural activities regulate individuals’ physiological hormone secretion, enhance resistance to stress by stimulating mechanisms such as blood circulation and muscle relaxation (Park et al., 2014; Park et al., 2013; Turner et al., 2002; Han et al., 2018).

Horticultural therapy provides a cognitive distraction mechanism that improves individuals’ stress response and coping strategies. Cognitive distraction is a psychological mechanism that relieves stress and emotional distress by shifting attention from negative, painful, or stressful sources to other things

or activities (Van Dillen & Koole, 2007). Engaging in horticultural activities requires individuals to concentrate their efforts and attention on assigned tasks. This cognitive shift can help individuals alleviate psychological distress and provide a temporary respite from concerns and anxieties. For example, incorporating green plants in office or study spaces has been shown to reduce stress and improve productivity (Li et al., 2022). In addition, horticultural activities cultivate individuals' sense of self-efficacy and mastery through the processes of creativity and problem-solving, thereby building their confidence and resilience (Guo et al., 2023; Lu et al., 2023).

Horticultural therapy can alleviate stress and anxiety by promoting emotional regulation and positive experiences. Engaging in horticultural activities enables individuals to immerse themselves in the beauty and tranquility of the natural environment, enhancing the pleasure of emotional experiences and helping to reduce tension and negative emotions. Moreover, emotional expression and release during horticultural activities, as well as the use of positive emotional regulation techniques, promote proactive coping with stress and anxiety, leading to increased emotional stability and adaptive ability (Oh et al., 2020; Lu et al., 2023).

In summary, horticultural therapy has been found to effectively reduce stress levels. This is achieved through numerous mechanisms and effects, including immersion in nature, physical activity, cognitive distraction, and emotion regulation. Horticultural therapy also enhances emotional stability and psychological adaptation, while providing individuals with a valuable stress management approach and promoting the maintenance and restoration of mental health. This stress-reducing effect is crucial for the physical and mental well-being of individuals.

3.2 The Role of Horticultural Therapy in Emotion Regulation

The role of horticultural therapy in emotion regulation is related to individuals' emotional expression, emotion regulation strategies, and emotional experiences. Drawing from emotion regulation theory, horticultural therapy offers individuals an avenue for emotional expression and provides opportunities for emotion regulation through participation in horticultural activities, ultimately alleviating anxiety and depression, cultivating positive emotional experiences, and enhancing psychological well-being. Horticultural therapy can facilitate emotional expression and release for individuals. Within horticulture activities, individuals are able to engage in tactile and sensory stimulation, such as touching and interacting with plants, which aids in diverting attention and reducing stress and tension. Additionally, horticultural activities provide an outlet for emotional expression, where individuals can express their emotions and creativity through flower cultivation, garden design, and other related activities (Li, 2011; Hou & Yu, 2006; Gavron et al., 2023). Research indicates that emotional expression can facilitate the release of negative emotions, resulting in reduced anxiety and depression. Horticultural activities, specifically focused on strawberry cultivation in limited spaces, have been shown to significantly decrease autonomic nervous system response parameters in the human body, leading to a concurrent reduction in negative emotions (Zhang et al., 2020).

Furthermore, horticultural therapy offers a positive emotion regulation strategy. Within horticultural

activities, individuals are required to concentrate their attention and immerse themselves in the task, facilitating a reduction in negative thoughts and emotional interference. Consequently, this enables emotional redirection, alleviating anxiety and depression symptoms. Concurrently, the physical activity and movement involved in horticultural activities promote individuals' physical well-being, releasing bodily tension, and enhancing the pleasure of movement, leading to an enhanced experience of positive emotions (Ascencio, 2020). Horticultural therapy also uses the aesthetics of plants and the perception of natural environments to facilitate positive emotional experiences. Research shows that engaging in activities such as watching fruit trees blossom and participating in the harvesting process during the ripening season has a positive effect on emotional regulation, leading individuals to a state of emotional equilibrium and mental relaxation (Li et al., 2008). Engaging in horticultural activities allows individuals to actively connect with the natural environment and derive pleasure from witnessing the growth and transformation of plants. This direct interaction fosters an appreciation for the aesthetic qualities of nature and creates positive emotional experiences that promote relaxation and well-being. In a broader sense, horticultural therapy demonstrates positive effects on emotion regulation. By facilitating emotional expression and release, implementing effective strategies for regulating emotions, and offering positive emotional experiences, horticultural therapy has the potential to alleviate symptoms of anxiety and depression, enhance the experience of positive emotions, and improve individuals' psychological well-being. This emotion regulation effect contributes to individuals' emotional adjustment and adaptation to stress, thereby promoting the maintenance and restoration of mental health.

3.3 The Role of Horticultural Therapy in Self-Cognition

The role of horticultural therapy in self-awareness is closely related to an individual's self-concept, self-worth, and self-efficacy. According to self-cognition theory and social identity theory, an individual's self-awareness is formed through interaction and feedback from the environment. Horticultural therapy provides a positive environment wherein individuals can experience success and growth through gardening activities, thereby deepening their understanding of their own abilities and value (Hogg & Terry, 2000).

Horticultural therapy can assist individuals in deepening their self-awareness of their own abilities. Engaging in horticultural activities necessitates the utilization of various gardening techniques and knowledge, thereby enhancing one's horticultural skills. Through successful experiences within horticultural tasks, individuals may develop a more comprehensive understanding of their actual capabilities and bolster their self-confidence in their abilities (Zhou, 1999).

Moreover, horticultural therapy also encompasses an individual's perception of self-worth. Engaging in gardening activities allows individuals to obtain a sense of achievement and fulfillment. As individuals engage in planting, nurturing plants, and observing their growth and development, they can experience the impact and significance of their contribution to plant life. Through this experience, individuals can deepen their understanding of their own value and feel the positive influence they have on the

surrounding natural environment. This heightened perception of self-worth enhances individuals' self-esteem and self-affirmation (Shu, 2022; Zhang, 2018).

Horticultural therapy also has a positive impact on individuals' self-efficacy. Self-efficacy refers to an individual's confidence and expectations in their own abilities within specific tasks, which is closely related to their performance and achievements. Through participation in horticultural activities, individuals continuously improve and develop their horticultural skills, thus enhancing their self-efficacy. By observing their own successful experiences, individuals believe in their ability to cope with difficulties and develop problem-solving skills. This confidence and expectation contribute to further enhancing individuals' self-efficacy (Guo et al., 2023; Lu et al., 2023).

In summary, horticultural therapy plays a significant role in individuals' self-perception. Through participation in horticultural activities and the acquisition of successful experiences, individuals deepen their understanding of their own abilities and worth, thereby enhancing their self-confidence and self-esteem. This improvement in self-perception helps to promote individuals' psychological well-being and self-development.

3.4 The Role of Horticultural Therapy in Social Interaction

The role of horticultural therapy in social interaction is closely associated with individuals' social cognition and sociological learning. In accordance with social cognitive theory and social learning theory, one's social skills and prosocial behaviors can be nurtured and developed through opportunities for social engagement and interaction. Horticultural therapy offers a beneficial social environment that fosters emotional interaction, cooperative behavior, and the cultivation of social skills through horticultural activities and collaborative efforts among individuals.

Horticultural therapy creates opportunities for social communication among individuals. Within horticultural activities, individuals engage in teamwork, share and exchange horticultural knowledge and experiences, thereby establishing a platform for social interaction. These exchanges can reduce feelings of interpersonal alienation, enhance emotional communication and understanding among individuals, and strengthen interpersonal relationships (Lin, 2016; Chu, 2022). According to social relationship theory, there is a strong link between positive interpersonal relationships and an individual's happiness and psychological well-being (Zhang, 2014).

Horticultural therapy contributes to improving individuals' social skills. By interacting with team members, individuals acquire skills in coordination and collaboration, resource sharing, and communication within a team. These social interactions cultivate teamwork skills, including task delegation, leadership, conflict resolution, and effective communication techniques. These skills can benefit individuals beyond the context of horticultural therapy, helping them better adapt to and engage in society.

Furthermore, horticultural therapy also promotes prosocial behavior in individuals. Prosocial behavior refers to an individual's inclination to help and support others. Engaging in horticultural activities enhances individuals' sensitivity to the needs of others and fosters empathy. Through cooperation with

team members, individuals learn to share horticultural accomplishments, provide assistance, and encourage others. Cultivating prosocial behavior aids individuals in establishing positive interactions with others, thus enhancing social connections (Ding, 2023).

In conclusion, horticultural therapy holds significant implications for social interactions. By providing opportunities for social engagement, enhancing interpersonal relationships, improving social skills, and fostering prosocial behavior, horticultural therapy creates a beneficial environment for social cognition and social learning in individuals. These effects further enhance psychological well-being and happiness, laying the foundation for individuals to integrate and thrive in society.

3.5 The Role of Horticultural Therapy in Physical Rehabilitation

Horticultural therapy can be utilized as an adjunctive method in rehabilitation treatment to aid individuals in rebuilding muscle strength and improving physical functioning. This can be elaborated upon in the following ways:

1. **Movement rehabilitation:** The role of horticultural therapy in physical rehabilitation primarily manifests in the restoration of movement and rebuilding of muscle strength. Horticultural activities involve planting, pruning, and carrying weights, among others, which provide excellent stimulation for the utilization and activation of muscle groups. Through these activities, individuals can engage in exercises that target actions in areas such as the hands, wrists, and shoulders, ultimately enhancing muscle coordination and strength (Park et al., 2014; Park et al., 2013; Turner et al., 2002; Han et al., 2018). The therapeutic effects of horticultural therapy play a crucial supportive role in the process of physical rehabilitation.
2. **Neurorehabilitation.** Horticultural activities provide an environment that offers sensory stimulation and cognitive demands. During these activities, individuals engage in perceiving plants, soil, and the environment through sensory pathways such as touch, vision, and hearing. They also need to make decisions, plan, and execute horticultural tasks. This process of perception and cognition can stimulate the activity of the nervous system, promoting the connectivity of neurons and their plasticity development. Consequently, it facilitates the enhancement and improvement of neurorehabilitation (Meneghello et al., 2016).
3. **Rehabilitation psychological support.** Horticultural activities provide a quiet, relaxing, and natural environment that helps individuals alleviate stress and anxiety, thereby improving their psychological state. These activities can evoke positive emotional experiences in individuals, such as a sense of satisfaction, achievement, and self-affirmation, which enhances the effectiveness of psychological health and rehabilitation. Moreover, horticultural activities also provide opportunities for social interaction, enhancing individuals' social support and social engagement. The positive impact on the rehabilitation process should not be overlooked (Li, 2015; Wei et al., 2020; Suchocka et al., 2019).
4. **Environmental Facilitation:** Horticultural activities have the potential to create a warm, comfortable, and orderly environment that contributes to individuals' perception of safety and comfort. Therapeutic gardens or landscapes can provide visual and aesthetic pleasure, thereby reducing levels of anxiety,

stress, and negative emotions. It is suggested that landscapes can serve as a medium and support for psychological and emotional health. Additionally, horticultural activities may foster a sense of responsibility and self-management abilities among individuals, promoting their active and optimistic involvement in the rehabilitation process by participating in plant care and horticultural tasks (Linda, 2013; Li et al., 2021; Liu, 2022).

In general, the role of horticultural therapy in physical rehabilitation is primarily manifested in the areas of movement rehabilitation, neurological rehabilitation, rehabilitation psychology support, and environmental facilitation. Horticultural activities, through the use and movement of muscles, stimulation of perception and cognition, psychological support and social interaction, as well as environmental facilitation, contribute to promoting physical rehabilitation and health recovery.

4. Conclusion

Based on comprehensive research evaluation, horticultural therapy has been demonstrated to be an effective practice method in psychological health education, showing positive impacts in stress management, emotional regulation, self-awareness, social interaction, and physical rehabilitation. Horticultural therapy, through providing intimate contact with plants and natural environments and engaging in gardening activities, mobilizes the involvement and attention of multiple sensory channels in individuals, eliciting positive stimuli and experiences related to vision, hearing, touch, and smell. These stimuli help shift individuals' attention, alleviate mental and physical stress, and promote relaxation and balance in both the body and emotions.

In addition, horticultural therapy provides an opportunity for individuals to engage in emotional sharing, social interaction, and cooperative assistance with other horticultural participants, facilitators, or learners, thus enhancing their social support and sense of proximity. This is particularly beneficial for individuals who may experience social isolation or lack social skills, as it helps improve their social adaptability, self-esteem, and self-confidence. In terms of self-awareness and emotional regulation, horticultural therapy offers individuals a chance to reflect upon and observe their inner states through engaging in practical activities. It encourages individuals to become aware of their emotions, thoughts, and behaviors, helping them recognize negative emotions and thoughts and cultivate positive emotions and thoughts through a sense of achievement and satisfaction derived from horticultural activities.

Although horticultural therapy has been supported by some evidence in its application in the field of psychological health education, its specific mechanisms of action still require further research to be elucidated. This may include factors such as the impact of plant bioactive compounds, changes in participants' attention and perception, and the interactive effects among participants. Therefore, future research needs to adopt more systematic and comprehensive study designs and methods to further deepen our understanding of the mechanisms of horticultural therapy. Additionally, long-term and large-scale studies are crucial to validate and consolidate the prospects of horticultural therapy in the field of psychological health education. Currently, the size of the studies is relatively small, and the

duration of the research is short, often making it difficult to fully assess the long-term effects and stability of horticultural therapy. Hence, it is necessary to conduct larger-scale research projects, tracking and observing participants' psychological health status and quality of life, in order to better evaluate the long-term impacts of horticultural therapy and further explore its scope of application and differential effects.

In summary, horticultural therapy exhibits significant positive effects in stress reduction, emotional regulation, self-awareness, social interaction, and physical rehabilitation, positioning it as a valuable practice in the field of psychological health education. However, in order to better understand its mechanisms of action and promote its widespread application in this domain, further in-depth and comprehensive research is needed, including long-term and large-scale studies to validate and enhance our understanding and utilization of horticultural therapy.

5. Summary

Horticultural therapy, as an emerging method in psychological health education, plays a crucial role in promoting overall well-being. By engaging in horticultural activities, individuals can alleviate stress, regulate emotions, enhance self-awareness, foster social interactions, and support rehabilitation. However, further research is needed to explore various aspects, such as the mechanisms of action in horticultural therapy. It is believed that with ongoing and in-depth research, horticultural therapy will gain wider application and dissemination in the field of psychological health education, providing increased support and assistance for individuals' physical and mental well-being.

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